sustainability

Research on Corporate Sustainability

Edited by
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About the Editor

Sooksan Kantabutra

Sooksan Kantabutra has been researching and publishing in the areas of corporate sustainability, sustainable leadership, social entrepreneurship, and sustainability organizational culture at Mahidol University in Thailand since 2003. Since the field of corporate sustainability is predominantly empirical, he has made contributions that include the theory of corporate sustainability, the organizational theory of resilience, the organizational theory of vision, and the theory of sustainability organizational culture.

Preface to "Research on Corporate Sustainability"

This edited volume, "Research on Corporate Sustainability", contains reports written by experts in their areas of specialization. I start the volume by introducing a report on the interim system theory of corporate sustainability that fills in a fundamental gap in the predominantly empirical field of corporate sustainability. The theory has been continuously refined by covering the dynamic aspects of a sustainable organization and its environment.

The edited volume continues by introducing three reports on organizational resilience, an area that is relatively unknown. Organizational resilience is critical as it is widely regarded as a sustainability outcome. The first report, entitled "How Has the COVID-19 Crisis Transformed Entrepreneurs into Sustainable Leaders?", is authored by Murtaza Haider, Randall Shannon, George P. Moschis and Erkko Autio, while the second report, entitled "Enhancing Organizational Resilience through Mindful Organizing", is authored by Siriwut Buranapin, Wiphawan Limphaibool, Nittaya Jariangprasert and Kemakorn Chaiprasit. Finally, this organizational resilience collection is concluded with the third report, entitled "Integrative Review of Absorptive Capacity's Role in Fostering Organizational Resilience and Research Agenda", which is authored by Nay Chi Khin Khin Oo and Sirisuhk Rakthin.

Another collection of reports is concerned with sustainable tourism and community development, as sustainable community development can often be sustained through the people who live in surrounding communities. The first report on this topic, entitled "Unpacking Key Sustainability Drivers for Sustainable Social Enterprises: A Community-Based Tourism Perspective", is authored by Trin Thananusak and Suparak Suriyankietkaew, while the second report, entitled "Bibliometric Analysis of Corporate Social Responsibility in Tourism", is authored by Chanin Yoopetch, Suthep Nimsai and Boonying Kongarchapatara, all of whom have also contributed to another report, entitled "Tourism Forecasting Using the Delphi Method and Implications for Sustainable Tourism Development". Finally, the report entitled "A Quest for a Sustainable Social Enterprise Model: The Case of Amphawa Chaipattananurak, the Kingdom of Thailand", is authored by Phallapa Petison and Sooksan Kantabutra. The social enterprise concept is often criticized for not being sustainable, particularly in a financial sense. This final report offers a model that may help in sustaining a social enterprise elsewhere.

The third collection within the edited volume contains three reports on corporate brand and reputation, which is increasingly being considered as a corporate sustainability outcome. The first report, entitled "How Disclosure Types of Sustainability Performance Impact Consumers'Relationship Quality and Firm Reputation", is authored by Warat Winit, Erboon Ekasingh and Jomjai Sampet, while the second report, entitled "Three-Pillar Sustainability and Brand Image: A Qualitative Investigation in Thailand's Household Durables Industry", is authored by Preechaya Chavalittumrong and Mark Speece. This collection is concluded with the final report, entitled "Enhancing the Prospect of Corporate Sustainability via Brand Equity: A Stakeholder Model", which is authored by Warat Winit and Sooksan Kantabutra.

The edited volume concludes with two reports on sustainable supply chain management and climate finance, which are seen as being highly supportive of sustainable development overall. The first report, entitled "Sustainable Supply Chain Management in a Circular Economy: A Bibliometric Review", is authored by Monrudee Theeraworawit, Suparak Suriyankietkaew, and Philip Hallinger, while the second report, entitled "A Review of the Global Climate Finance Literature", is authored by Roy Kouwenberg and Chenglong Zheng.

All reports are peer-reviewed and ensured to be of the highest quality by an experienced team of Article Editors who come from leading international universities, as shown below.

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Sooksan Kantabutra
Editor

Review

Toward a System Theory of Corporate Sustainability: An Interim Struggle

Sooksan Kantabutra

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Abstract: In response to the prevailing sustainability problems that are difficult to solve since they are characterized by complex interdependencies, and the effort to solve one aspect of a sustainability problem may lead to other problems, the present study's objective is to develop an interim, system-based theory of corporate sustainability to fill in significant gaps in the corporate sustainability field. The paper starts by outlining the gaps, introducing a theory building approach, followed by discussing components of the emerging theory. As a system-based theory, the emerging theory is demonstrated through the Corporate Sustainability system, comprising Sustainability Culture, Resilience and Corporate Sustainability Performance subsystems. These subsystems interact to ensure a continuous delivery of sustainability performance outputs and outcomes. The resulting theory is highly dynamic in nature with a feedback loop of learning to reflect the actual reality of high-velocity environment. Implications for corporate practitioners and theorists are also discussed.

Keywords: corporate sustainability; theory building; resilience; sustainability practices; sustainability performance; sustainability organizational culture; sufficiency economy

1. Introduction

Corporate sustainability has become an overarching goal for corporate leaders since, for their corporations to survive and thrive, they need to daily deal with uncertainties or "wicked problems" [1] introduced by the high-velocity environment. These uncertainties are a result of the deep interconnections among the society, the environment and the economy, which in the past were viewed as three separate entities, and are often characterized by contraposition and multiple tensions [2–4] as a result of the prevailing imbalanced development of the three domains, mounting social pressure, and growing stringent regulations. To survive in such a context, corporate leaders are required to effectively respond to these concurrent, multiple and yet conflicting demands via a holistic, system-based perspective [5–8].

While many relevant theories [9–14] have been introduced, no single holistic, system-based approach exists to help scholars and practitioners to understand the process of corporate sustainability and allow them to advance toward sustainability as soon as needed [15,16]. In the domain of corporate sustainability alone, only a limited number of interim theories is reported scholarly [15,17]. This limited theoretical knowledge indicates a need for a more comprehensive theory to explain the process of corporate sustainability since researchers, whether adopting the positivist or phenomenological paradigm in any field, often need a full-blown theory to start forming their research. The full-blown theory helps the researchers to comprehend, describe and predict situations, behavioral actions and/or context. It guides the researchers to either go against orthodoxy or to continue with it to enrich the current knowledge domain.

Specifically, scholars have employed a number of sustainability-related theories [15], such as stakeholder theory [9], stewardship theory [13], institutional theory [14], and legitimacy theory [11], and practitioners need to use these theories together on their own

discretion to achieve corporate sustainability [16]. None of them alone appears as a holistic approach that scholars can use to inform the development of their studies and practitioners can adopt/adapt toward corporate sustainability as quickly as appears needed [15].

Although an interim theory of corporate sustainability was introduced in 2020 [15] and has since informed the development of various studies around the globe [18–32], it is only an interim struggle [15]. Therefore, the present study's objective is to construct a more complete theory of corporate sustainability as another "interim struggle" serving as a platform for further scholarly enlightenment. The study starts by outlining knowledge gaps and significant contributions, and introducing our theory building approach that deals with limitations of the previous theoretical development. Then, it continues by introducing components of the theory, managerial implications, and directions for future research.

2. Knowledge Gaps and Significant Contributions

First, while an organization in reality is an open system with open boundaries [33], and a transfer over the boundaries between the organization and its surrounding context exists [34] (Dubin, 1976), no theory of corporate sustainability that takes organizations as an open system exists. In particular, corporations typically run into sustainability problems frequently instigated by external forces [35] such as institutional pressures, an ideal theory of corporate sustainability should consider external forces. The present theory development includes external forces as part of the emerging corporate sustainability theory, reflecting the reality of the organization as an open system [33], allowing constant interaction between the environment and the system, the first contribution.

Second, since scholars point out the pivotal role that organizational culture plays in ascertaining organizational sustainability, no existing theory of corporate sustainability addresses the cultural element of shared basic assumption, generally recognized as a fundamental element of an organizational culture [36,37]. The present theory development addresses the shared sustainability assumptions as a culture component, the second contribution.

Third, in terms of sustainability performance management, numerous studies have adopted the Triple Bottom Line (TBL) concept [38,39] and its associated concepts (e.g., the Sustainable Development Goals, Sustainability Reporting, Environmental, Social, and Corporate Governance or ESG [40] to measure sustainability performance. However, Wu, Zhu, Tseng, Lim and Xue [41] argue that the traditional facets of the TBL are not adequate in addressing the highly complex sustainability issues, characterized by constant uncertainties [42]. With the prevailing misuse of the concepts of performance measurement and performance management as interchangeable concepts [43], numerous scholars have focused their efforts on sustainability performance measurement system [44–50] as opposed to sustainability performance management system [51–53], required to deal with the high complexity and uncertainty [54,55]. Essentially, sustainability requires to be managed within a system. Consequently, its performance requires to be systematically managed and measured [46]. To address this gap, a holistic system sustainability perspective is required to go beyond the "fixation and myopia" [56]. The present theory development proposes a corporate sustainability management subsystem as part of the Corporate Sustainability system, the third contribution.

Within the Corporate Sustainability system, since stakeholder benefits and trust are predictive of brand equity [57], and brand equity is becoming widely regarded as a sustainability outcome [58,59], the present theory development integrates stakeholder benefits and trust into the theory, the forth contribution. A stakeholder is any group or individual that can affect or is affected by the operation of an organization, ranging from suppliers, clients, shareholders, employees, communities, civil groups, governments, media, future generations and so on [9]. They are anyone who have a stake in the organization [9]. The Stakeholder theory [9] argues that a firm should create value for all stakeholders, not just shareholders to improve its competitiveness. Stakeholder trust in particular has been considered as a main driver for sustainable business excellence [60]. Well beyond the widely used TBL concept, stakeholder trust essentially denotes a novel corporate sustainability paradigm that directs the

attention of corporate leaders and managers toward a higher level of stakeholder-corporation relationship quality, as opposed to simply stakeholder satisfaction [60].

Since (a) organizational resilience is frequently viewed as an outcome of the process of corporate sustainability [58], (b) scholars and practitioners have little knowledge about how organizational resilience can systematically be achieved via day-to-day management [61–63], and (c) an organizational theory that describes the resilience phenomenon in an organization via everyday practices is still lacking [32], the present theory development is the first corporate sustainability theory to include organizational resilience as an outcome of the process of corporate sustainability and to explain the day-to-day process to ensure organizational resilience, the fifth contribution.

Even though it is evident that, to ensure corporate sustainability, corporations are required to manage simultaneous, often paradoxical, demands from a wide range of stakeholders [64,65], no existing theory of corporate sustainability incorporates organizational ambidexterity [66], itself an under-developed area [67]. Since empirical evidence has demonstrated that, especially in dynamic environments, organizational ambidexterity gains the utmost performance effects [68–71], the present theory development is the first theory of corporate sustainability to address organizational ambidexterity, the sixth contribution.

Finally, in terms of theory building approach, since the focal theory of corporate sustainability is concerned with cultural beliefs and values, the Mindsponge framework [72] is adopted to help in understanding how and why a person engrosses and refuses certain values. In addition, since the sustainability problems are wicked problems or problems that are difficult to solve as they are characterized by complex interdependencies, and the effort to solve one aspect of a wicked problem may lead to other problems, the systems-approach is required for treating such a wicked problem [1]. With the integrated theory building approach between the General Systems Theory [33] and the Mindsponge approaches [72], the emerging system theory of corporate sustainability has more power to explain the corporate sustainability phenomenon, the seventh contribution to the field, given that the existing theory of corporate sustainability [15] is not system-based.

Therefore, the present theory development contributes to the corporate sustainability field by filling in these fundamental gaps in the corporate sustainability literature.

3. Theory Building Approach

Dealing with the limitation in the theoretical corporate sustainability literature, the General Systems theory is adopted [33], given that it considers organizations as an open system, as the main approach to construct our corporate sustainability theory in response to the highly dynamic nature of organizations [73]. It focuses on organizational systems and the interactions among them. This approach addresses the limitation of the existing theory of corporate sustainability [15] by enhancing its dynamic nature.

The General Systems Theory process emphasizes the construction of postulates, universal concepts and principles. It is particularly suitable for organizational studies such as the present study because the General Systems approach assumes that a system, such as an organization, is a consequence of dynamic interrelationships between system's components and the system's entirety, within which these components are commonly determine. It is assumed that systems govern and adapt themselves continuously via feedback. System interactions are core to this approach.

Since a system is bordered by an environment [33], all environmental elements influence the system fully or partially. Other systems can also be included in the environment, each of which has its own border. The boundary distinguishes each system from other systems and the environment, and defines a system. The environmental effects are to be considered when developing a theory and its theoretical process. In the present study, the Corporate Sustainability system is the focal system, comprising the Sustainability Culture, Resilience and Corporate Sustainability Performance subsystems.

All systems and subsystems in this present theory development are considered as an open system because they permit effects from the high-velocity environment to flow across

their border [33]. In a given system, an input goes into the system to produce an output, the process of which is called throughput, to achieve its goals. Clearly, the system and the environment interact constantly.

The General Systems Theory is uniquely characterized by feedback and equilibrium [33], making it suitable for the present organizational study. Allowing the self-regulating system to function, feedback information about an output is fed back into the system. To finish a feedback loop, an equilibrium is reached in the system when its internal structures and collaborations among its part are of homogeneity. A new equilibrium can also be reached when the system responds timely to an environmental change via the feedback loop. In essence, this new equilibrium prepares the system for the new environment.

Next, the theory's boundary, inputs, throughputs and outputs and their causal relationships are identified [33]. Most importantly, required for a self-regulating system, feedback and equilibrium are identified. Since the focal theory is concerned with individual beliefs and values, I also adopt the Mindsponge framework [72] to help in understanding how and why a person engrosses and refuses certain values. With the integrated approach between the General Systems Theory and the Mindsponge approach, the emerging system theory of corporate sustainability has more power to explain the corporate sustainability phenomenon, a contribution to the theory building field.

Related theoretical, conceptual and empirical literature are drawn to form the emerging theory's body by comparing and contrasting an entire range of conjectures, whether they be possible, rational, experiential, and/or even philosophical [74]. Through such a process, highlighting can be identified [75], which later become the core elements of the system theory. Guided by Whetten [74]'s qualities of a simple theory, the questions below are developed to guide the theoretical development.

- What are the input, throughput and output components relevant to ensuring corporate sustainability?
- Why and how are the components related?

Based on the literature review, each core theory element is identified and defined. Included is also a definition of the corporate sustainability concept. I next define the theory's boundaries, suggesting what the system theory predicts and does not predict. Then, the system state dynamics in sustainable organizations are explored, meaning that the nomological network among the observed components of the theory is explained. Eventually, to recognize the presumed laws of interaction, I conclude the present theory development by expressing the resulting theory graphically and in propositions.

4. Defining Corporate Sustainability

At the macro level, scholars have described the sustainability concepts in a wide variety of ways, including the strong sustainability by Ott [76] and the model of the steady state economy by Daly [77]. With such a variety, sustainability is however commonly described along the lines of environmental, economic and social dimensions [78]. At the micro, organizational level, sustainability is defined in the present study as a holistic approach that considers ecological, social and economic dimensions, recognizing that all must be considered together to find lasting prosperity [79]. In the sustainable enterprise literature, sustainability often refers to sustainable wellbeing for all stakeholders including the society and future generations [58,64,65]. This sustainability definition is reflected in the definition of corporate sustainability in the present study, which is discussed more below.

Like the sustainability concepts, the definitions of corporate sustainability have flourished [80] and yet no commonly agreed definition exists, certainly affecting theorizing and researching in the field. In particular, the literature on society and business is filled to the brim with a large variety of confusing and sometimes overlapping concepts of corporate social responsibilities and corporate sustainability [15], complicating the much-needed knowledge production in this field even further. The two concepts are confusing because they both are about being responsible for the society at large [81]. However, they are not the same. The corporate sustainability concept is more inclusive than the corporate social

responsibility concept because it suggests both a balance between leading and managing for short- and long-term results, and responsibility inside and outside the corporation [81].

In the present study, I adopt the definition by Kantabutra and Ketprapakorn [15] because it is well constructed in the core theories of corporate accountability [82,83], stakeholder [9], and relevant corporate social responsibility and sustainable development concepts. Corporate sustainability is a set of management notions that recognize that businesses must grow profitably, with a higher level of emphasis on the three domains of development and their reporting to the society [84]. Accordingly, corporate sustainability here refers to "the leadership and management approach that a corporation adopts so that it can profitably grow and at the same time deliver social, environmental and economic outputs [15], p. 3". In other words, corporate sustainability is the leadership and management approach that a corporation adopts to ensure the wellbeing for all stakeholders (e.g., minority groups, less privileged individuals). I use this definition to guide the present theory development.

5. Fundamental Components of Corporate Sustainability System

The fundamental components of the Corporate Sustainability system are introduced one by one in this section. I in this particular order explain the theory's boundaries, inputs, the Sustainability Culture subsystem, the Resilience subsystem, and the Corporate Sustainability Performance subsystem.

Considered as necessary in achieving corporate sustainability, the three subsystems of Sustainability Culture, Resilience and Corporate Sustainability Performance as well as the relationships among them are drawn from the literature. Sustainability organizational culture is a pre-condition for the development of a sustainable corporation [15,36]. A strong organizational culture also enhances the prospect of organizational resilience [58,85,86], in turn improving the prospect of corporate sustainability [15,87]. Finally, corporate sustainability performance needs to be monitored and managed in order to achieve corporate sustainability [51,53]. All subsystems function as part of the Corporate Sustainability system.

These elements are discussed one by one, followed by an elaboration on their dynamic relationships as justified by supportive logical, empirical, and/or epistemological arguments. Eventually, all components are integrated into a comprehensive theory of corporate sustainability.

5.1. Theory's Boundaries

As for the boundaries, the theoretical sphere for the present theory encompasses only the organizational components that are conducive to corporate sustainability [33], which is the objective of the present theory's development [34]. The focal theory is composed of three core subsystems. Within the main Corporate Sustainability system, I postulate that certain organizational culture components in the Sustainability Culture subsystem lead to forming the Resilience subsystem that improves sustainability performance via the mechanism of the Corporate Sustainability Performance subsystem. The open boundaries allow for an information transfer between the Corporate Sustainability system and its environment [34]. This transfer triggers required adjustments in the system. Consequently, the system adapts according to the changes to reach a new equilibrium after each trigger.

In the following sections, I critically review the literature and use the relevant literature to meaningfully construct the theory components and their relationships. I then identify, define and designate each component of the system as input, throughout or output [33]. The Sustainability Culture subsystem is special in that its elements are additionally organized by the cultural levels [37]: assumptions, values and beliefs, and artifacts. The Mindsponge framework [72] is adapted to help in understanding why individuals accept or reject certain values, increasing the power to explain the cultural phenomenon. The Corporate Sustainability system's feedback loop and how the system reaches an equilibrium are also discussed.

5.2. Inputs

Enhancing the existing interim theory of corporate sustainability [15], the Corporate Sustainability system has four inputs into the system: human resources, social and environmental issues, institutional settings and socio-cultural values.

Human resources are human beings. Each human being is full of cultural values and beliefs, or a mindset, forming his/her own identity [88]. Human resources enter into an organizational workforce with their mindsets, which may be similar or different from those already residing in the organization. According to the present theory, the Sustainability Culture subsystem is an organizational mechanism that aligns the mindsets of individual human beings with the organizational mindset, including goals, values, beliefs and attitudes [89,90]. Though the Mindsponge's mechanism to be discussed in the following section, individuals who find themselves unfit [64] with the existing corporate goals, values, beliefs and attitudes will depart from the subsystem to return to the external environment.

Social and environmental issues (e.g., expanding social gaps, environmental degradation, poverty, and gender) are an input into the Sustainability Culture subsystem as they are prevalent in the workplace today [91]. Certainly, these issues impact corporations and require them to take an action effectively.

Additionally, such as institutional factors as institutional policies and labor union, and external factors of the government, the general public, the media, or professional associations, or so called institutional settings [92–94], influence the Sustainability Culture subsystem. Corporations that cannot conform to these institutional factors can possibly be threatened. According to DiMaggio and Powell [95], Oliver [96] and Scott [97], they can eventually affect corporate survival. Clearly, the prospect of corporate sustainability is influenced by these institutions over time. In effect, they put pressure on corporate leaders to enhance the sustainability values and practices of their corporations.

Socio-cultural values refer to the forces from the society and economy [98] influencing the Sustainability Culture subsystem. In general, these forces change gradually over time, dependent on many factors (e.g., economic development, modernization stages) [98]. Individualism, liberty, creativity, risk tendency, and harmony are examples of socio-cultural values.

Since (a) the only way to ensure sustainability that outlives any one individual is by developing and nurturing a strong organizational culture [99], (b) organizational culture is a precondition for sustainable corporation development [36], and (c) organizational culture is the only greatest important determinant of organizational failure or success [100], the Corporate Sustainability system begins with a sustainability organizational culture subsystem, introduced below.

5.3. Fundamental Components of Sustainability Culture Subsystem

The four inputs of human resources, social and environmental issues, institutional settings, and socio-cultural values enter into the Sustainability Culture subsystem defined as a system with required cultural components aiming at improving the prospect of corporate sustainability. As shown in Figure 1, the Sustainability Culture subsystem comprises assumptions and, beliefs and values for sustainability, as expressed in the sustainability vision and values, and sustainability artifacts as expressed through corporate sustainability practices. Each and their relationships are discussed below.

5.3.1. Sustainability Assumptions

While the cultural level of shared basic assumptions is widely regarded as fundamental in driving sustainability success [36,37], the organizational culture literature in the sustainability context has not specifically addressed them, except one by Ketprapakorn and Kantabutra [101]. Building on the prior theory development, I explain how sustainability assumptions lead to improving the corporate sustainability prospect below.
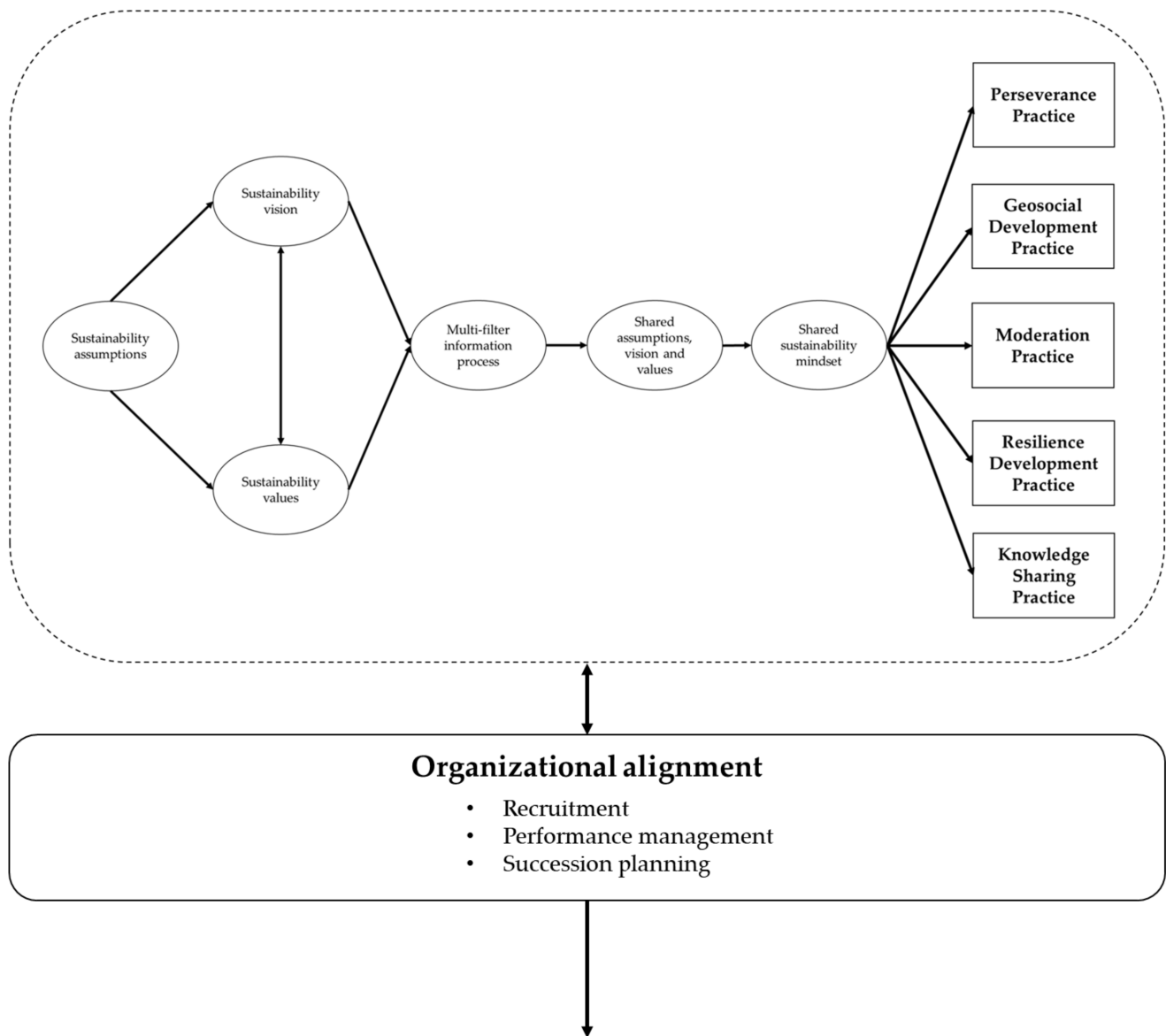
Figure 1. Sustainability Culture subsystem elements and their relationships.

Culture is a set of frequently-unstated assumptions, or a pattern of shared basic assumptions, that members of the culture commonly learn, share and develop [102] after they face the problems of adaptation introduced by the external environment, and organizational integration [103]. Over a period of time, after this pattern has been confirmed as effective in dealing with the problems, it is considered valid and turned into an experience to be shared to new members as the acceptable way to view, think and feel concerning the problems. In essence, an organizational culture, the shared, taken-for-granted assumptions, is continuously developed as the residue of success in dealing with the problems [37]. Therefore, my goal in the present study is to develop the assumptions that are shared and taken-for-granted about sustainability.

The prevailing problems of organizational integration and external adaptation in the sustainability context are certainly associated with sustainability, including market changes, unpredictable crisis and mismanagement [104]. The world has also witnessed numerous bankruptcy cases as an evidence for the problems. Even with the best and brightest organizational members, some global corporations have fallen to the ground. Really, an instantaneous need to fight for generating and conserving sustainable industries is evident [105].

According to the present system theory, when the environment such as institutional pressures changes, the change introduces sustainability problems to the corporations. The change requires organizational efforts to adapt to the dynamic environment. As they continue to solve the sustainability problems through a period of time, their organizational members create a structure of common basic assumptions, which later becomes core to the Sustainability Culture subsystem. These common basic assumptions are developed as the organizational members learn through their experience in dealing with the sustainability problems. At this cultural level, the perceptions and thoughts concerning sustainability among organizational members are required to be positive [36]. The emotional involvement with the sustainability assumptions is also very critical [36].

To be precise, the shared basic assumptions do not first arrive. Initially, they are developed as shared values and beliefs when organizational members are presented with a sustainability problem [37]. As organizational members continue to tackle the sustainability problem successfully, the shared values and beliefs are recurrently instantiated till a value turns into an unconscious assumption as it acts directly upon the sustainability problem [37]. Overtime, the sustainability assumptions become taken-for-granted truths in the organization. They are conveyed by the organizational members from one generation to the next. In the long run, when members of the culture are exhibited as effective in dealing with the sustainability problem, the sustainability assumptions are reinforced [37], signifying a loop of learning.

In the present theory development, I adopt Ketprapakorn and Kantabutra [101]'s three sustainability assumptions as the world is encountering the sustainability problems. They are as follow:

- A corporation is an entity operating within the society. They depend on each other.
- An imbalanced development among the economic, social and environmental domains exists.
- A balanced development among the three domains leads to corporate sustainability.

Russell et al. [106] also agree with these sustainability assumptions. They assert that organizing for sustainability includes a holistic approach to attain a balance of ecological, social, and economic well-being. The sustainability assumptions are well rooted in the Stakeholder theory [9] and the Corporate Accountability theory [81,82]. According to the emerging system theory, these sustainability assumptions drive cultural values and beliefs, and artifacts.

5.3.2. Sustainability Vision

The sustainability visions are composed of two components: Content and attributes [107]. Although the sustainability vision theory [107] has been internationally endorsed by various studies [108–113], it can still be refined as follow.

In terms of content, I theorize that vision content contains reference to increasing stakeholder wellbeing, although the sustainability vision theory [107] asserts that it contains simply stakeholder satisfaction imagery. I argue that simply stakeholder satisfaction is not sufficient to ensure corporate sustainability because it is not the only stakeholder factor contributing to improving the prospect of corporate sustainability. By replacing stakeholder satisfaction imagery with stakeholder wellbeing imagery, I integrate other stakeholder aspects and make the vision more inclusive. These other aspects range from stakeholder trust, stakeholder satisfaction, stakeholder commitment to stakeholder identification, all to be discussed in the following Sustainability Performance Management subsystem. Specifically, developing stakeholder trust denotes a new corporate sustainability paradigm because it is a main driver for sustainable business excellence, and challenges corporate leaders to direct their attention toward a higher level of stakeholder-corporation relationship quality, as opposed to simply stakeholder satisfaction [60]. I postulate that when an organizational vision contains a high level of sustainable wellbeing imagery, a chance that its organization becomes sustainable is increased.

In the system theory, sustainability visions are characterized by brevity, clarity, abstractness, challenge, future orientation, stability and desirability or ability to inspire (see [107].

All of these attributes must be presented in a sustainability vision as they interactively support the organizational vision sharing process. When a vision is brief and clear, it is easy to communicate massively. With vision desirability, abstractness and challenge, the vision can become shared easily among organizational members. When vision is future-oriented, it keeps organizational members informed about the future direction of the corporation. Finally, when a vision is stable, it will not change easily because it does not shift according to short-term changes as the corporation is going through fluctuations.

My system theory postulates that the vision content and attributes interact to develop and nurture emotional commitment among organizational members to the vision. While the vision is the overarching goal of the organization, the organizational assimilation of sustainability values is compulsory [114,115] to direct the behavioral actions and mindsets of organizational members to attain the vision. The sustainability values are introduced in the next section.

5.3.3. Sustainability Values

Sustainability vision and values are organizationally interrelated, because vision only suggests a sense of direction for organizational members in the long run. It cannot turn into reality without organizational efforts. Values are needed as the means to realize it [116]. Sustainability values are to be shared and proclaimed by organizational members to guide how they turn the sustainability vision into reality. On the other hand, the values cannot become living core values [116] without a vision. Therefore, the vision for sustainability allows the values for sustainability to be brought to life by organizational members.

In the present theory development, I assert that the values for sustainability give meaning to the vision for sustainability, forming the Sustainability Culture subsystem. Core values frequently discovered in sustainable enterprises are virtues (e.g., perseverance, generosity, moderation), the accountability for the environment and the society, and innovation. It is evident that simply espousing the virtuous values is not sufficient to ensure corporate sustainability. Moral values are needed since many corporations voluntarily adopt corporate sustainability practices because of moral reasons [117]. According to Blok et al. [118], Ploum et al. [119], and Turiel [120], morality concerns a set of values, beliefs and norms that distinguishes between what is wrong and right when it comes to sustainability. Complementing the virtuous values, moral values, as shown in the accountability for the society and the environment, guide organizational members to make the right decisions concerning their decisions and actions. At the end, corporate commitment and actions toward the Triple Bottom Line goals depend on how sustainability is morally perceived [121].

To deal with the prevalent problems of sustainability, organizational members guided by the assumptions and values for sustainability, according to my system theory, environmentally and socially innovate their products and services [64,122]. I postulate further that the sustainably innovative products and services effectively deal with the sustainability problems. After all, sustainability innovation is required if corporations aspire to survive and thrive [123].

5.3.4. Sustainability Mindset

In the Sustainability Culture subsystem, I theorize that organizational members verbally and non-verbally communicate the sustainability culture through assumptions, vision and values for sustainability so that the culture is widely organizationally shared. Via a multi-filter information process [72], the Sustainability Culture subsystem over time instills a sustainability mindset among its members.

The process of developing a corporate sustainability mindset starts when human resources enter into the Sustainability Culture subsystem. They come in with own beliefs and values, which are very challenging to change as the beliefs and values are deeply ingrained in their individual mindsets used to guide their behaviors. In an organization, numerous individual and organizational values exist [124]. Only a few values are eventually

turned into living core values after a number of learning loops by organizational members. It is this set of living core values that distinguishes one organization from another.

In my system theory, organizational members with the communicated sustainability vision and values messages go through the multi-filter information process [72]. In this process, they evaluate the vision and values for sustainability, and integrate those that are in line with their own existing beliefs and values. In this filtering process, organizational members consider the difference between the sustainability vision and values and their own beliefs and values in terms of cost and benefits of adopting them, rejecting them or replacing their existing ones with the new ones. Shared assumptions, vision and values for sustainability begin to form in the filtering process, fundamental to the Sustainability Culture subsystem. It is this shared sustainability mindset, as a growth mindset [125], that infuses throughout the entire sustainable corporation. The shared sustainability mindset is encapsulated into corporate sustainability practices, the observable cultural artifacts.

Based upon the literature above, the following propositions are formed.

Proposition #1: Sustainability organizational culture enables organizational resilience, leading to improving sustainability performance

Proposition #2: Shared sustainability assumptions, vision and values lead to organizational sustainability mindset, via the Multi-filter information process.

Proposition #3: Organizational members with the sustainability mindset realize the sustainability vision by adopting the five corporate sustainability practices

In Section 5.4, the corporate sustainability practices are discussed. How the practices enable organizational resilience is also explained in the Fundamental components of Resilience subsystem Section below.

5.3.5. Organizational Alignment

Part of the Sustainability Culture subsystem is to align corporate and individual values or organizational alignment at any given time to ensure the corporate sustainability mindset. Sustainable corporations view themselves as a "special" place to work [64] where individual and corporate values are aligned. They espouse an approach to align such values, starting from recruitment, performance management to succession planning [65]. Sustainable enterprises are careful in recruiting new employees [64,126]. They develop a strict recruitment standard to ascertain that the new recruits' beliefs and values are aligned with the corporate sustainability vision and values. Moreover, they promote employees who behave consistently with their corporate vision and values in their performance evaluation [122,127]. To ensure the existing culture continues in the future, they have a succession plan to identify talented employees who share the corporate vision and values as successors at all levels [128]. With the organizational alignment practice, employees who shared the corporate vision and values are encouraged to stay on with the corporations, while those who do not share are discouraged to stay on and finally leave the corporations as they feel "unfit" with the "special" place [101].

5.4. Fundamental Components of Resilience Subsystem

The resilience subsystem is defined as a system with day-to-day corporate practices leading to improving the prospect of organizational buffering and adaptive capacities required to ensure organizational resilience. A review by Batista and Francisco [129] has indicated that the existing corporate sustainability practices are categorized according to the TBL domains of environment, society and economy. Such a practice as anti-corruption, prevention of child labor use, and zero waste focuses only on one aspect of sustainable development. Although such a practice as Sustainability Reporting [130] or Environmental, Social, and Governance (ESG) [131,132] appears to address more than one aspect, it only focuses on reporting outputs. More importantly, an increasing number of scholars such as Boiral and Gendron [133] and Cho et al. [134] has criticized the effectiveness and transparency of such reporting. Neither Sustainability Reporting nor ESG practice provides a day-to-day practical approach to run a sustainable corporation.

To ensure corporate sustainability, organizational ambidexterity is required to address the simultaneous, often-conflicting demands from a variety of stakeholders [32]. None of the existing practices offers an approach to deal with such a paradox. Therefore, a holistic set of corporate sustainability practices is needed to manage the simultaneous tension. To address this need, I propose a holistic set of corporate sustainability practices as observable cultural artifacts in this section. The literature review reveals a set of five holistic practices of corporate sustainability, which have continuously been refined over time [15,115,125,135,136]. These five corporate sustainability practices are also the input into the Resilience subsystem. It is postulated that they enable day-to-day management practices that nurture organizational resilience and increase our understanding about the organizational resilience phenomenon.

Contributing significantly to the field, I theoretically reinforce the five practices: Perseverance, Resilience Development, Moderation, Geosocial Development and Knowledge Sharing by grounding them upon additional theories of Stakeholder Resource-based View by Sodhi [137] and Freeman et al. [138], Resource-based View by Teece et al. [139], Grit by Duckworth et al. [140], Organizational Paradox by Smith and Lewis [141], Organizational Ambidexterity by Tushman and O'Reilly [66], Sustainability Organizational Culture by Ketprapakorn and Kantabutra [101], and Organizational Resilience by Kantabutra and Ketprapakorn [125].

Since little is known among scholars and practitioners on how to achieve organizational ambidexterity [32], pivotal to managing for sustainable development, I theorize that adopting these five corporate sustainability practices allows organizations to develop organizational ambidexterity to effectively manage paradoxes among the frequently conflicting requirements from a large variety of stakeholders, resulting in organizational resilience (Figure 2). I discuss these five corporate sustainability practices as well as how each leads to organizational resilience as indicated by organizational buffering and adaptive capacities one by one below.
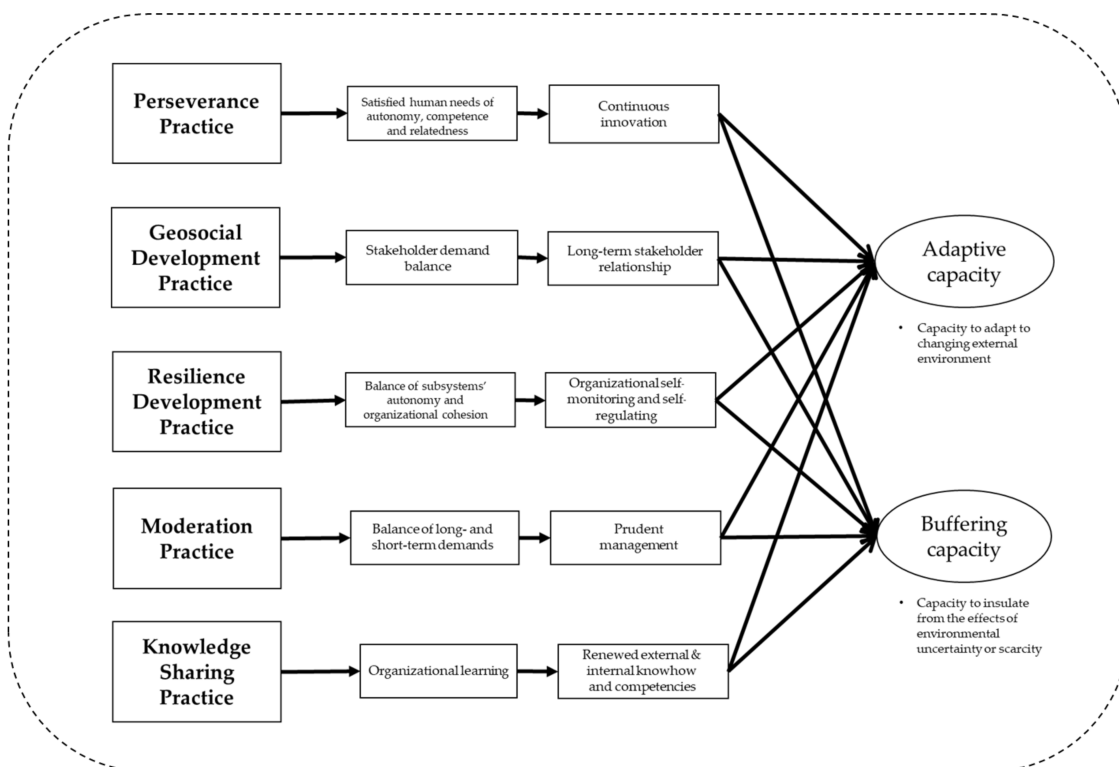

Figure 2. Resilience subsystem elements and their relationships.

5.4.1. Perseverance Practice

The widely shared sustainability organizational culture is manifested into the Perseverance practice. With such a culture, organizational members shared the values of perseverance and accountability for the society and the environment. Consequently, according to my system theory, they consistently put efforts in developing procedures, products and services for their stakeholders. Since the business environment is changing so quickly, the Perseverance practice results in better organizational adaptive capacity. The shared assumptions, vision and values for sustainability, as a growth mindset, enhances individual belief that perseverance leads to success [142]. It is postulated that perseverant behavior leads to both incremental and radical innovations throughout the entire organization. Given that shared assumptions, vision and values for sustainability, the resultant innovations are frequently social and environmental solutions that deal effectively with the prevailing social and environmental problems.

The Perseverance practice is also informed by the Grit theory [140]. According to the Grit theory, trait-level passion and perseverance for long-term aspirations are attributes of individuals with grit [140]. I postulate that it is this long-term aspirations that keep people moving toward turning the sustainability vision into reality, despite great difficulties. Grit is characterized by perseverance of effort and consistency of interest. Perseverance of efforts refers to the individuals' likelihood to persevere and sustain the momentum of their efforts while being confronted with great difficulties or setbacks in life. Consistency of interest refers to the likelihood of individuals to remain focused and passionate in maintaining a set of interests over an extended period of time. They choose to give up so many other things in life and do a particular thing. Grit and determination are pivotal in promoting resilience when encountering adversity [143].

Empirically, individuals with grit are also associated with certain kinds of orientations to happiness, including orientation toward pleasure, meaning, and engagement [144]. Evidence on the well-being benefits, as theoretically driven by our theorized vision content, of grittiness in a large variety of different contexts is also found [144]. In my system theory, perseverant organizational members choose to perform even beyond their roles and responsibilities to achieve their long-term aspirations, leading to continuous organizational innovation. Collectively as an organization, they develop a cushion for any unanticipated shock from the external environment. Toward this end, their happiness increases.

Along with the Grit theory [140], the Perseverance practice is endorsed by the theory of Self-determination by Deci and Ryan [145] as the perseverant members are unwaveringly, intrinsically encouraged to continue, in spite of daunting difficulties. I theorize that they choose to do so because they have grit. With the sustainability mindset, they are intrinsically motivated to carry on, willing to sacrifice their own interests for organizational interests. In such a context, the Perseverance practice enhances the prospect of business continuity, strengthening organizational buffering capacity.

5.4.2. Geosocial Development Practice

The widely shared sustainability organizational culture is also manifested into the Geosocial Development practice. Sharing the sustainability mindset, organizational members invest in developing a high level of corporate-stakeholder relationship quality and assimilating concerns for a variety of stakeholders in their business practices. As informed by the advanced concept of Cleaner Production, the Geosocial Development practice includes the accountabilities for the TBL domains of sustainability performance, including individual rights, business ethics, and community participation [146]. I theorize that corporations, focusing on keeping stakeholders satisfied by allowing them to reach their full potential [147], bring about higher levels of stakeholder-corporation relationship quality of trust, commitment and identification [148]. Satisfying stakeholders improves organizational adaptability as corporations always realize the changing stakeholder requirements and respond to them accordingly.

The genuinely recognizing of dualities of contemporaneous tensions is at the core of Organizational Paradox theory [149,150]. According to the theory, no singular choice or

compromise among them has to be made [149,150], often the case observed in managing conflicting stakeholder demands. The Geosocial Development practice, as managing these tensions effectively, depends on searching for innovative solutions to involve both extremes by exploiting the inherent pluralism within the duality [149]. In the present theory development, successfully managing organizational paradoxes leads to organizational ambidexterity.

According to the Organizational Ambidexterity theory, superior performance is achieved when corporations embrace contradictory, and yet interrelated demands [151,152]. Ambidexterity in organizations allows corporations to be aligned and efficient in organizational management of present requirements. Concurrently, it allows the corporations to be sufficiently adaptive to environmental changes that they will still be around tomorrow [153]. This is the reason organizational ambidexterity is well regarded as particularly relevant in the corporate sustainability context where conditions of high-velocity environment exist. Organizational ambidexterity indeed supports corporations in maintaining its agility in the long run, by constantly aligning themselves with the changing environment and being adaptative to unanticipated disruptions [154].

It is also postulated that stakeholders who have developed a high-quality relationship with the corporations become supporters for the corporations [155], including assisting their organizational members [156] and purchasing their merchandises and/or services [157]. Particularly in a crisis, these stakeholders come to offer support to the corporations in surviving the crisis [115]. In such a process, the Geosocial Development practice enhances their organizational buffering capacity via nurturing a long-term stakeholder relationship.

5.4.3. Resilience Development Practice

To deal with the gap in the literature discussed earlier, I employ the Organizational Theory of Resilience [125]. I postulate that sustainable organizations effectively respond to the high-velocity environment so that they rebounce and strengthen their present entity by vigorously reconstructing themselves for the future, given the high-velocity environment [125]. According to my system theory, the practical approach to do so is called Resilience Development practice.

Driven by the sustainability mindset, the Resilience Development practice suggests that corporations organizationally expect and organize themselves for change, resulting in organizational adaptive and buffering capacities. I theorize that resilience is enabled in an organization when its members, sharing the sustainability culture, are self-governing, and concurrently maintaining an overall organizational coherence. Filling in the gap in the literature discussed earlier, I reinforce the theoretical ground of the Resilience Development practice by including the Organizational Ambidexterity theory [66]. In the high-velocity environment, organizations are required to simultaneously explore and exploit [66] by establishing a supportive organizational structure and culture. Both the structure and culture, acting as hard and soft controls, permit individual organizational members to decide how they should distribute their time between exploitative and exploratory undertakings [152]. In other words, they are enabled and encouraged to decide on their own about how to divide their time between conflicting demands for adaptability and alignment, improving organizational adaptive capacity over time.

Beyond simply organizational change and risk management, the Resilience Development practice is concerned with the identification and prioritization of susceptibilities and various capabilities of the organization while formulating strategies to enhance the level of organizational consciousness of the surrounding environment. In doing so, the Resilience Development practice allows for organizational capacity to cope with challenges and threats, thereby strengthening organizational buffering capacity. Such a practice is also endorsed by the Complexity theory [158] since it assists in upgrading organizational competence in response to organizational demands and those demands instigated by the high-velocity environment [15].

Also underlined by the Cleaner Production concept is the Resilience Development practice, where reducing energy and material consumption are considered as pivotal in

enabling corporations to become less vulnerable from abrupt changes in the high-velocity environment [159]. In doing so, their organizational buffering capacity is enhanced through minimizing emissions and waste [160] and preserving environmental capital [161].

5.4.4. Moderation Practice

Taking into consideration a whole range of stakeholder demands, the Moderation practice advises corporations to prudently find a middle way between maximizing profits between the short and long run. In doing so, they need to consider their profitability policy and business risk as well as opportunities and potentials [15], core to the Organizational Paradox [141] and Organizational Ambidexterity [66] theories. Consistent to the Moderation practice, ambidextrous corporations concurrently are concerned with both short-term efficiency and long-term growth [66], such as managing between short-term profits and investments in the society. Failure to manage this paradox can bring about a triumph trap at the expense of exploration in a sense of too much exploitation. On the other end, it can also bring about a fiasco trap at the expense of exploitation in a sense of too much exploration [162]. Both ends are detrimental to long-term, sustainable growth. I postulate that managing this simultaneous tension successfully leads to so-called organizational ambidexterity, required for corporate sustainability.

According to Kantabutra and Ketprapakorn [15], sustainable corporations, being moderate, concurrently balance between long- and short-term results. Such a practice is consistent with the Organizational Ambidexterity theory [66]. While corporations recognize that short-termism can damage their sustainability prospect, they also recognize that they can be viewed as a poor performer by investors [163]. In essence, corporations are under pressure to maximize profitability in the short run, demonstrating the need for organizational ambidextrous capacity. Under such a paradox, I postulate that corporations need to develop a cushion of actual or possible resources that gives them some room to timely adapt to organizational and environmental pressures or organizational slack [164]. In doing so, an investment in resources and capabilities now is required although it may not immediately pay off [162]. Underlined by the Organizational Paradox theory by Smith and Lewis [141], "moderate" corporations manage the simultaneous tension between mortgaging the position in the long future and maximizing profits in the short run [165].

With such a prudent management, the organizational buffering capacity is enhanced. In particular, since the Organizational Paradox theory [141] suggests carefully managing tensions among simultaneously conflicting demands, the Moderation practice assists in creating and nurturing organizational buffering capacity to endure crises [15].

5.4.5. Knowledge Sharing Practice

Directed by the sustainability mindset, the Knowledge Sharing practice is supportive to organizational ambidexterity as it allows for the combination of incremental and radical innovation practices to ascertain both short-term success and long-term corporate survival [151]. The Knowledge Sharing practice allows organizations to continuously learn, proactively enable change, and seek innovation, reinvent themselves through the combination of radical and incremental innovations [66]. In such a context, the Knowledge Sharing practice enables organizational ambidexterity since both efficiency and novelty oriented innovations can be achieved.

The Knowledge Sharing practice suggests corporations to share knowledge organizationally and with external stakeholders. Such knowledge exchange, even with competitors, leads to corporate innovation. Supported by the Dynamic Capabilities theory by Barney [166], the Knowledge-based theory by Nonaka [167], the Knowledge Management theory by Tzortzaki and Mihiotis [168], and the Coopetition concept by Luo [169], the Knowledge Sharing practice assists in developing and maintaining organizational capacity to constantly adapt to the high-velocity environment.

According to Ketprapakorn and Kantabutra [101], the Knowledge Sharing practice is underlined by Resource-based View theorists such as Freeman et al. [138], Sodhi [137] and

Teece et al. [139], and Organizational Paradox theorists such as Smith and Lewis [141]. All competitor stakeholders are viewed equally through these theoretical perspectives. Concurrently over time, cooperation and competition are balanced [141], although the opposing yet intertwined demands still persist. I postulate that via coopetition [169], each participating corporation acquires unique capabilities to survive prominently in the industry [170]. All participating corporations can continuously renew their capabilities via knowledge sharing to prepare for the future [170], enhancing organizational buffering capacity.

In this section, I have demonstrated how the five corporate sustainability practices lead to improving organizational resilience through organizational buffering and adaptive capacities. In doing so, they have also developed organizational ambidexterity to deal with tensions from managing the simultaneous demands from a wide variety of stakeholders. It is this ambidextrous capacity in an organization that allows corporations to maintain the delivery of corporate sustainability performance, despite obstacles.

Based upon the literature discussed above, the following propositions are formed.

Proposition #4: By continuously innovating processes, products, and services for stakeholders, the Perseverance practice improves TBL outputs

Proposition #5: By investing in stakeholders and integrating social and environmental accountability with business operation, the Geosocial Development practice improves TBL outputs.

Proposition #6: By expecting and organizing for change, the Resilience Development practice improves TBL outputs.

Proposition #7: By adopting the process of prudent and reasonable decision making that taking into consideration short-term and long-term impacts on stakeholders, the Moderation practice improves TBL outputs.

Proposition #8: By sharing knowledge internally within the organization and externally with stakeholders, the Knowledge Sharing practice improves TBL outputs.

Given the theory building approach, the outcome knowledge or the output from the process of corporate sustainability is required [33,34]. Thus, I introduce the Corporate Sustainability Performance subsystem as the outcome knowledge in the next section.

5.5. Fundamental Components of Corporate Sustainability Performance Subsystem

The Corporate Sustainability Performance subsystem is defined as a system of processes, outputs, and outcomes that helps corporate leaders to track and analyze the sustainability performance of their corporations. According to the emerging system theory, the five corporate sustainability practices day-to-day ensure a continuous delivery of the corporate sustainability outputs or Triple Bottom Line (TBL) outputs into the Corporate Sustainability Performance subsystem, enabled by the organizational adaptive and buffering capacities. As a major contribution of the present theory development, the Corporate Sustainability Performance subsystem comprises corporate sustainability outcomes of sustainable well-being, or stakeholder wellbeing, and brand equity. I explain the theoretical process by which the corporate sustainability outputs lead to improving the sustainability performance outcomes of sustainable wellbeing and brand equity, as shown in Figure 3, in this section.

Informed by the TBL approach, sustainable success is dependent upon successfully fulfilling stakeholder requirements by balancing social and environmental preservation and development, and economic prosperity [171,172]. In practice, economic development occurs on the earth and along with human beings. Indeed, the sustainability of the society, environment and economy is required by a sustainable development, making TBL the central proxy to measure sustainability performance [173,174]. To show social accountability, corporations are advised to report their TBL outputs. The TBL outputs are considered as measures for corporate sustainability performance here as the three outputs are directly brought about by adopting the practices of corporate sustainability.
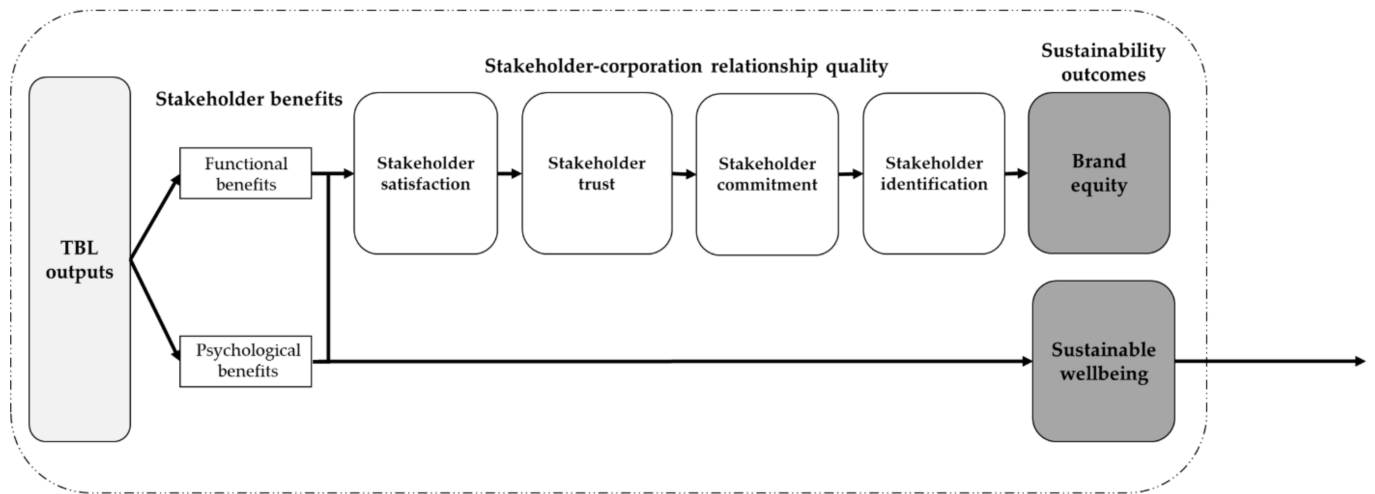
Figure 3. Corporate Sustainability Performance subsystem elements and their relationships.

On one hand, the TBL outputs in the emerging system theory lead to improving the prospect of sustainable wellbeing for stakeholders via delivering both functional and psychological benefits to them. Functional, frequently referred to as utilitarian benefits are tangible benefits associated directly with services and products, ranging from monetary benefits, welfare to facilities. Psychological benefits are intangible, frequently considered as happiness [175]. Such happiness can only be achieved when stakeholders receive psychological benefits relevant to their individual values [148,176]. Sustainable wellbeing is an ability for individuals or organizations to rely on themselves, to withstand shocks from the external environment, and to endure difficult times [58]. With the sustainable wellbeing as the prime goal, the functional and psychological benefits are to fulfil different needs of human beings [177], ranging from physiological needs, safety needs, social needs, self-esteem needs to self-actualization needs. I postulate that corporations are required to create opportunities for stakeholders to fulfill these needs, including creating jobs, training them on skills and knowledge they need, and support them financially so that they can stand on their own.

On another hand, the emerging system theory suggests that TBL outputs lead to improving brand equity via forging a strong stakeholder-corporation relationship and improving the quality of such a relationship. According to Bhattacharya et al. [148], the relationship quality starts from satisfaction, trust, commitment to identification. At the lowest level, stakeholder satisfaction refers to an overall evaluation of the corporation from the stakeholder experience. Stakeholders compare between overall experience with the corporation and resources that they have to offer to develop a relationship with the corporation.

Advancing the existing interim theory of Corporate Sustainability [15], I include stakeholder trust in the present theory development as it suggests a higher level of relationship quality with perceived confidence in reliability and integrity from stakeholders who have interacted directly or indirectly with the corporation. It is a form of stakeholder expectation toward the corporation when it is committed to achieve what it promises. In addition to stakeholder trust, I also include another higher level of relationship quality called stakeholder commitment, a willingness of stakeholders to keep a valued relationship with the corporation. They do so because they are psychologically attached to and trust the corporation. At the top level of relationship quality, stakeholder identification is oneness between an individual self-concept and a group concept [148], a group that an organizational member considers himself as a member. Stakeholders with a high level of identification with the corporation will become supporters of the corporation in purchasing products/services and other various ways they can [155,157]. According to the emerging system theory, it is stakeholder identification that finally leads to improving brand equity.

To be precise, when stakeholders are ensured of their own sustainable wellbeing by the sustainable corporations, their trust in the corporate brands increase [175]. According to the Stakeholder model by Winit and Kantabutra [175], a corporation is required to deliver both functional and emotional benefits in order to improve stakeholder trust as a precursor to improving brand equity. According to the emerging system theory, sustainable corporations choose to offer functional benefits that improve psychological benefits, enhancing stakeholder trust and brand equity respectively. Empirically, such an offer has been discovered as an effective way to build and nurture stakeholder trust and brand equity [175].

Based upon the literature above, the following propositions are formed.

Proposition #9: The TBL outputs improve the outcome of sustainable wellbeing through delivering both functional and psychological benefits to stakeholders.

Proposition #10: The TBL outputs improve the outcome of brand equity through ensuring a high-quality of stakeholder-corporation relationship, ranging from stakeholder satisfaction, trust, commitment and identification.

When the sustainability performance outputs and outcomes are delivered, organizational members reflect on how they feel about their own sustainability assumptions and their associated beliefs and values as they deal with the sustainability problems. The organizational members continue with questioning and testing the assumptions, beliefs and values systematically [73]. When the sustainability performance outputs and outcomes successfully solve the prevailing sustainability problems, they genuinely recognize the assumptions, vision and values for sustainability. Simultaneously, they also unlearn other individual assumptions, beliefs and values they earlier had. This feedback loop of learning allows a reverse process to continuously test, reconfirm and even unlearn an assumption, belief or value, a contribution of the present theory development.

The feedback loop of learning process can be explained in greater details here. As shown in Figure 4, the feedback loop starts with the delivery of the TBL results in the Corporate Sustainability Performance subsystem, as residues of success, which delivers an answer to the prevailing sustainability problems. Such a solution further strengthens the commitment of organizational members to the sustainability assumptions and the rest of the Sustainability Culture subsystem [178,179], in turn reinforcing the Resilience subsystem even further.
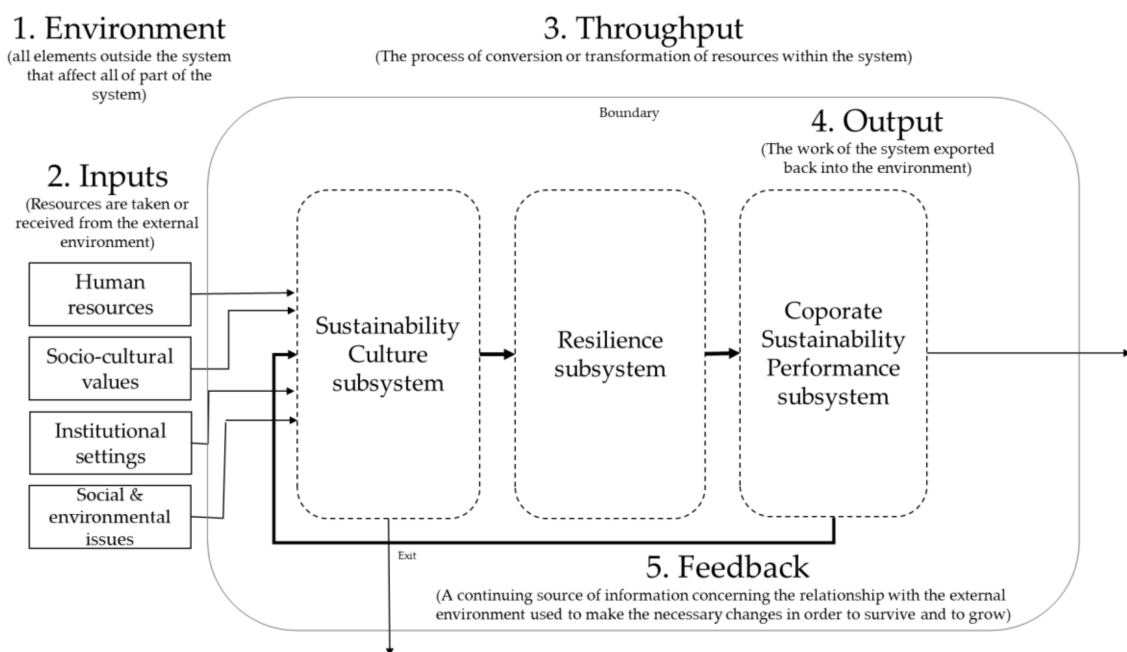

Figure 4. Feedback loop.

More specifically, the sustainability assumptions are strengthened as shared basic assumptions, the beliefs that organizational members naturally use to make day-to-day decisions within their organization [37], encapsulated into the five practices of corporate sustainability. These five practices of corporate sustainability continue to strengthen organizational buffering and adaptive capacities to deliver TBL outputs. In one way, the TBL outputs then turn into functional and psychological benefits for stakeholders who continue to strengthen the relationship quality with the corporations, from satisfaction, trust, commitment to identification. This high-quality relationship leads to improving brand equity. In another way, the functional and psychological benefits lead to improving stakeholder wellbeing as envisioned earlier in the sustainability vision. This entire process represents a feedback loop of learning. Eventually, after some loops of learning over a period of time, the Sustainability Culture subsystem, as a precondition to corporate sustainability, becomes core to the Corporate Sustainability system, as I theorize.

The necessity of the feedback loop is demonstrated when the surrounding environment changes [59]. When the external change affects the delivery of sustainability performance outputs and outcomes (i.e., as shown through a lack of organizational capacity to innovate), the sustainability culture subsystem is triggered. According to the emerging system theory, sustainable corporations consequently adapt the existing vision and values to accommodate the change, in turn adapting the corporate sustainability practices, the Resilience subsystem and the Corporate Sustainability Performance subsystem respectively. This spiral adaptation allows the entire Corporate Sustainability system to arrive at a new equilibrium. In essence, via the feedback loop, the sustainable corporations improve both organizational buffering and adaptive capacities in response to the high-velocity environment to rebounce and strengthen their present entity by vigorously constructing themselves for the future as the dynamic environment changes rapidly.

Based upon the literature above, the following propositions are formed.

Proposition #11: The delivery of sustainability performance outputs and outcomes in turn strengthens the Corporate Sustainability system initially by allowing organizational members to validate the Cultural, Resilience and Corporate Sustainability Performance subsystems respectively as the right way to encounter the sustainability problems.

Proposition #12: After several feedback loops of learning by organizational members, the validated Sustainability Culture subsystem becomes deeply embedded, taken-for-granted, unconscious behaviors core to the sustainability organizational culture that continuously drives the Corporate Sustainability system.

6. Integrated Corporate Sustainability Model

Consequently, the system theory of Corporate Sustainability is composed of the Sustainability Culture, Resilience and Corporate Sustainability Performance subsystems. The Sustainability Culture and Resilience subsystems continuously interact to bring about sustainability performance via the subsystem of Corporate Sustainability Performance. The system theory's elements and their relationships are identified and integrated into a coherent theory [33] as shown in Figure 5.

Overall, I postulate that these organizational elements interact dynamically to daily ascertain resilience in the organization via enhanced organizational buffering and adaptive capacities. With organizational resilience, corporations can continue their sustainability performance delivery.

The system theory of corporate sustainability, as illustrated by the integrated Corporate Sustainability model above, reflects the reality of the organization as an open system, because it allows constant interaction between the environment and the Corporate Sustainability system, filling in the gap in the literature. Also filling in the gap in the corporate sustainability literature, the model includes the cultural element of shared basic sustainability assumptions.
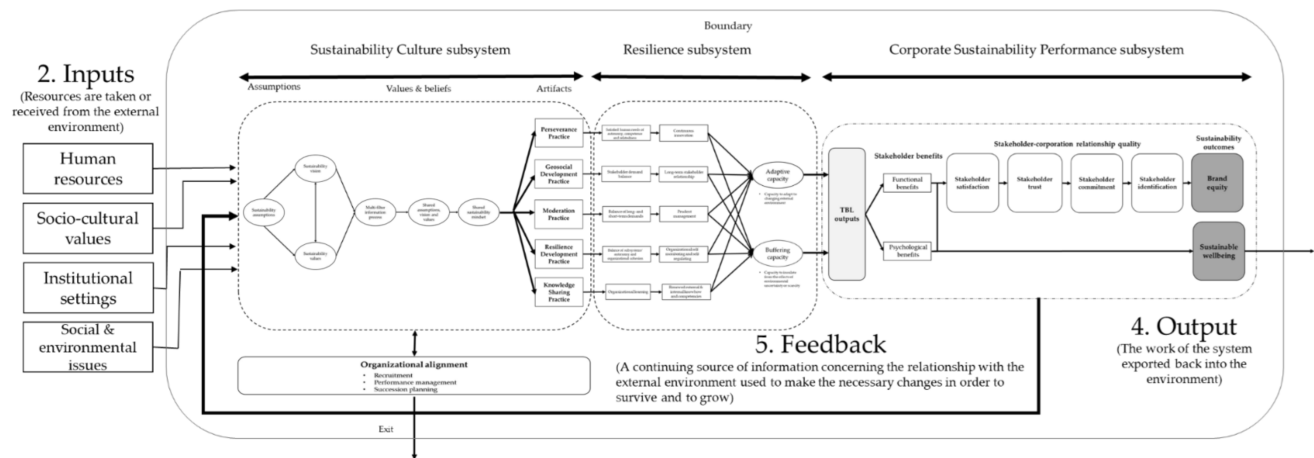
Figure 5. Integrated Corporate Sustainability Model.

In terms of sustainability performance, the model includes a sustainability performance management system since sustainability performance is required to be systematically managed and measured within a system [46]. The system addresses the critique that the TBL concept alone is not adequate in addressing the highly complex sustainability issues, characterized by constant uncertainties [42]. Well beyond the widely used TBL concept, stakeholder trust is included in the model as it denotes a novel corporate sustainability paradigm that directs the attention of corporate leaders and managers toward a higher level of stakeholder-corporation relationship quality, as opposed to simply stakeholder satisfaction [60].

Since scholars and practitioners have little knowledge about how organizational resilience can systematically be achieved via day-to-day management [61–63], and (c) an organizational theory that describes the resilience phenomenon in an organization via everyday practices is still lacking [32], the model explains the day-to-day practices and process to ensure organizational resilience. Finally, the model also offers the corporate sustainability practices that allow corporations to manage simultaneous, often paradoxical, demands from a wide range of stakeholders to ensure corporate sustainability [64,65].

7. Implications for Practitioners

As Lewin [180] stated that "there's nothing so practical as good theory", the "good" system theory of corporate sustainability renders some pragmatic implications for corporate practitioners (see Figure 6). Representing the system theory, the model provides a mechanism for corporate practitioners to adapt their organizational systems to improve the prospect of corporate sustainability. The guidelines for the adaptation are discussed below.

First, corporate leaders should craft a sustainability assumptions statement containing the three sustainability assumptions as the basis for communicating and explaining the vision and values for sustainability. Next, as they craft a vision statement or revise an existing vision statement, they should make sure that the vision statement is characterized by the seven characteristics of effective vision. Moreover, the content of the vision should contain stakeholder wellbeing imagery.

They then should ensure that their corporate values incorporate virtues, the social and environmental accountability and innovation. Corporate leaders at all levels should verbally and non-verbally communicate both vision and values as frequently and massively as possible throughout their entire corporation so that they become organizationally shared. The cultural communication process also signals to those who do not share the culture that they do not fit this 'special' place.
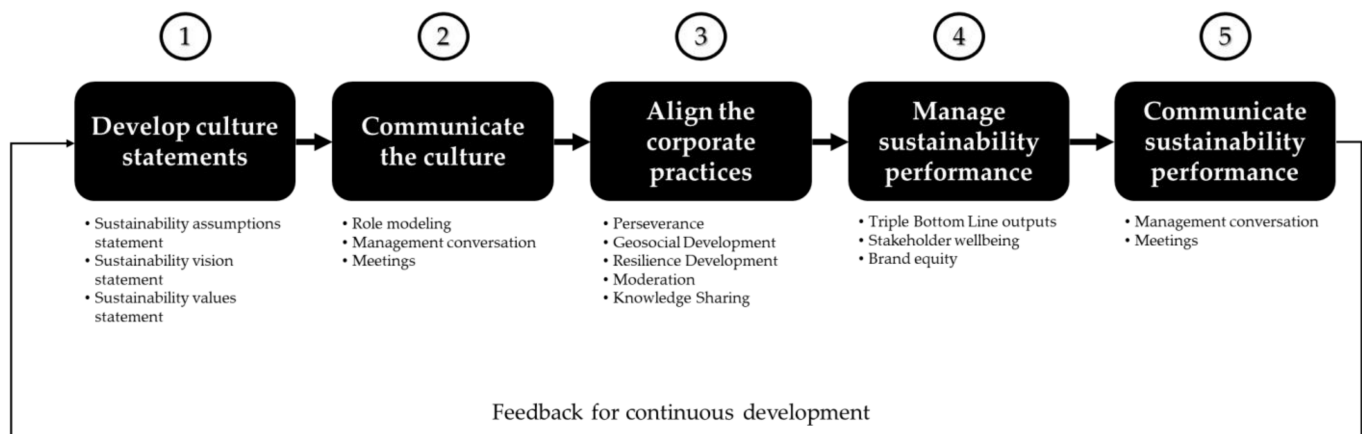
Figure 6. Guidelines to manage and monitor for corporate sustainability.

Corporate practitioners should compare and contrast their current practices with the five practices of Perseverance, Geosocial Development, Moderation, Resilience Development and Knowledge Sharing, and adjust them accordingly. Here, corporate leaders may consult the comparison of the existing sustainability practices and the five practices of corporate sustainability in Table 1 below. Relevant business functions are also shown in the Table, specifically emphasizing the contributing role of sustainable enterprises in a society.

Table 1. A comparison between the five corporate sustainability practices, and relevant existing sustainability practices and business functions.

Corporate Sustainability Practices	Relevant Existing Practices	Relevant Business Functions
Perseverance	New produce development, eco-innovation, and cleaner production.	R&D, human resources, production
Geosocial Development	Sustainable supply chain management, sustainability reporting, and cleaner production.	Logistics and procurement, sustainable development, human resources, production
Resilience Development	Risk management, change management, and cleaner production.	Risk management, production
Moderation	Risk management and cleaner production.	Finance, investment, strategic planning, maketing
Knowledge Sharing	Knowledge management and cleaner production.	Knowledge management, human resources, production, sustainable development.

In terms of sustainability performance management, corporate leaders should evaluate their current performance management system if it includes the sustainability performance outputs. To be precise, relevant TBL outputs should be identified and monitored. In addition, stakeholder satisfaction, trust, commitment and identification should be measured and monitored as they lead to improving brand equity. In order to reach the level of stakeholder identification, the top level of stakeholder-corporation relationship quality, corporate leaders should deliver functional benefits that bring about improving psychological benefits to stakeholders. Through this way, they can ensure stakeholder wellbeing, the overarching goal of sustainable development. Stakeholder identification and brand equity surveys should be regularly performed so that corporate leaders have some sustainability indicators to monitor and manage.

Given the feedback loop of our refined theory of corporate sustainability, corporate leaders should continue to communicate the TBL outputs and sustainability outcomes of stakeholder wellbeing and brand equity survey results to organizational members so that they can validate their basic sustainability assumptions which will in turn reinforce the entire Corporate Sustainability system overtime. The sustainability performance outputs and outcomes will offer directions for organizational members to continuously adapt the entire organization to prepare for environmental changes in the future.

8. Directions for Future Theoretical Refinement

Since the proposed theory of Corporate Sustainability is simply another interim struggle, serving as a platform for future scholarly enlightenment, scholars should continue to test and develop it further. To enhance its theoretical robustness, researchers can explore or examine the theory in an actual setting in an organization to spot probable anomalies and warrant the theory's practicality. In doing so, they can adopt/adapt the Integrated Theory Building Methodology [15].

To be precise, future studies may consider developing hypotheses from the Corporate Sustainability model and test them in different organizational settings and different industries so that the external validity of the theory can possibly be enhanced. One primary hypothesis here is that the more similar the culture of the samples to the Sustainability Culture, the better the Triple Bottom Line outputs, stakeholder wellbeing and brand equity. Of the three cultural elements, future research should focus on the sustainability assumptions because they are not sufficiently studied.

In addition, a cross-case analysis can be adopted by future research to explore the propositions in sustainable corporations since sustainability organizational culture is a precondition for the development of a sustainable business according to Baumgartner [36] and Kantabutra and Ketprapakorn [15]. In doing so, I advise that they adopt a sustainable corporation definition as one with organizational capacities to deliver strong performance, endure difficult economic and social crises and maintain a leadership position in a relevant industry [65].

Additionally, since a sustainability organizational culture is often regarded as being associated with organizational resilience [58,125], future studies may qualitatively explore or quantitatively examine the Corporate Sustainability model in corporations that have survived and thrived through a difficult period (e.g., COVID-19 pandemic) to determine if their practices are consistent to the five corporate sustainability practices and whether these practices actually lead to improving organizational buffering and adaptive capacities.

A detected anomaly, a previously overlooked relationship or categorization [181], will support corporate sustainability theorists to advance the relevant body of knowledge. With a future detected anomaly, the theory of Corporate Sustainability can be refined to enhance its theoretical robustness.

9. Conclusions

To deal with limitations of the existing theoretical literature, I have constructed a novel approach to build a theory by integrating the General Systems Theory and the Mindsponge approaches to demonstrate the dynamic nature of business organizations. I then review the conceptual, theoretical and empirical literature, and integrate the relevant bodies of knowledge into a theory of Corporate Sustainability. The present theory development contributes to the theoretical corporate sustainability literature by integrating additional theories of Grit by Duckworth et al. [140], Organizational Paradox by Smith and Lewis [141], Organizational Resilience by Kantabutra and Ketprapakorn [125], Organizational Ambidexterity by Tushman and O'Reilly [66], Sustainability Organizational Culture by Ketprapakorn and Kantabutra [101], Stakeholder Resource-based View by Sodhi [137] and Freeman et al. [138] and Resource-based View by Teece et al. [139], and to strengthen the theoretical foundation and enhance the power to explain a sustainability phenomenon and the external validity of the resulting theory.

The resultant Corporate Sustainability theory postulates that the Corporate Sustainability system comprises the Sustainability Culture, Resilience and Corporate Sustainability Performance subsystems. Within the Sustainability Culture subsystem, the sustainability cultural components of assumptions, vision and values, and corporate sustainability practices co-exist to bring about organizational resilience via the Resilience subsystem within which organizational buffering and adaptive capacities are enabled. I theorize that organizations can continue to deliver TBL outputs, despite disruptions, via the Resilience subsystem.

Within the Sustainability Performance system, these TBL outputs in turn deliver both functional and psychological benefits to stakeholders to improve their sustainable wellbeing as a sustainability outcome. The TBL outputs also improve the stakeholder-corporation relationship quality via the delivery of functional and psychological benefits. The stakeholder satisfaction, trust, commitment and identification increase, leading to improving brand equity, another sustainability outcome, overtime. I postulate further that the fact that organizational members learn about the sustainability performance outputs and outcomes in turn strengthens the entire Corporate Sustainability system initially via validating the sustainability assumptions that become core to the sustainability-productive culture overtime after a series of feedback loops of learning.

To assist scholars and practitioners, a model representing the theory is also provided. In particular, it offers a mechanism for practitioners on how to adapt their existing organizational system to ensure corporate sustainability. Future directions for theorists to refine the theory have also been introduced.

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Article

How Has the COVID-19 Crisis Transformed Entrepreneurs into Sustainable Leaders?

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Abstract: EntREsilience, a five-country longitudinal qualitative study, was launched in 2020 in China, Malaysia, the Philippines, Thailand and the UK to understand how entrepreneurs manifested resilience in response to the COVID-19 pandemic crisis events from March 2020 to February 2022. EntREsilience proposed a resilience-manifestation process model describing how entrepreneurs responded to the COVID-19 disruption, aided by external and internal enablers, adjusting their businesses to stabilise and even hunting for opportunities to grow their businesses. The present research adds to the findings of EntREsilience by analysing the strategies applied by entrepreneurs in their response to the crisis. This exploratory study focused on the entrepreneurs' community interactions and studied the effects of these interactions on the response measures adopted by the entrepreneurs. The results describe how the awareness of their stakeholder challenges shaped the entrepreneurial response. Realising the importance of stakeholder well-being to the sustainability of their enterprise motivated the entrepreneurs to develop sustainability competencies towards their stakeholder challenges, innovating solutions for their mutual well-being. By extending the resilience-manifestation process model, this paper proposes a transformation model depicting the process of entrepreneurs transforming into sustainable leaders triggered by stakeholder challenge awareness and moderated by contextual factors.

Keywords: COVID-19 pandemic; entrepreneurial resilience; stakeholder theory; sustainable leadership

1. Introduction

The COVID-19 pandemic's distinctive nature transformed the business and work environment in ways never witnessed before. The pandemic's duration and ability to simultaneously affect society's micro, meso and macro levels, and spread across geographical and political boundaries distinguish it from all previous global crises [1]. Entrepreneurs are innovative opportunists; therefore, their responses to the pandemic crisis in protecting their enterprises ranged from ceasing operations to 'pass the storm' to opportunity hunting for growth, manifesting their resilience. To explore how entrepreneurs manifested their resilience during the COVID-19 pandemic crisis, EntREsilience [2], a five-country longitudinal case study project [3,4] in China, Malaysia, the Philippines, Thailand and the UK, was launched in 2020 to explore entrepreneurial responses to the crisis.

The literature review for EntREsilience [5] highlighted the gaps in the literature; (1) resilience is a static process, (2) resilience research concentrates on the agents more than the context and (3) resilience is considered the entrepreneur's ability to bounce back 'after' business failure. Therefore, EntREsilience's aim was "to identify effective entrepreneurial firm- and community-level responses and business model practices to support resilient adjustment to the economic adversity triggered by the global COVID-19 crisis" by considering entrepreneurial resilience as "a proactive and dynamic, opportunity-seeking process that seeks to convert the crisis into a source of opportunity". Few studies

have investigated the resilience manifestation by entrepreneurs during the crisis [6,7]. Filling this literature gap, EntREsilience focused on the enabling mechanisms that allow entrepreneurs to adjust to the crisis while it is happening and eventually convert the crisis into a growth opportunity.

Each country team was assigned a different thematic focus to their cases investigating the entrepreneurial responses to the pandemic crisis. The analytical focus of the Thai cases was how community interactions affected entrepreneurial responses to the crisis and moderated their resilience during the crisis. While analysing Thai cases, an added sustainability approach by the entrepreneurs in their response to the pandemic crisis emerged. Thai entrepreneurs applied sustainable leadership strategies [8] for their enterprise's sustainability [9] and as a social mission toward their stakeholders [10]. As sustainable leaders "have a strong propensity towards stakeholder-oriented approaches" [11], this emergent effect led to a reanalysis of the data from the sustainability perspective to investigate if the pandemic crisis response resulted in entrepreneurs adopting any sustainable leadership measures. Data analysis showed that the COVID-19 shock made entrepreneurs recognise the challenges faced by their stakeholders and how enterprise sustainability is dependent upon stakeholder sustainability. The greater awareness engendered sustainability competencies within the entrepreneurs to innovate solutions to their stakeholder challenges, transforming them into sustainable leaders and creating a sustainable business situation for the enterprise.

Through narrating the entrepreneur's journey from March 2020 to February 2022, this article will describe Thai entrepreneur resilience strategies during different phases of the crisis. By extending EntREsilience findings and responding to the identified research gaps [5], the present article will show how entrepreneurial resilience manifestation includes stakeholder crisis-challenge awareness and theorise why Thai entrepreneurs considered stakeholder well-being as one of their strategies to achieve stability and growth. Guided by stakeholder theory [12–14] and applying grounded theory, the article explains how this awareness resulted in sustainable competencies within the entrepreneurs to innovate solutions to those challenges, thus transforming them into sustainable leaders. Replying to the research gaps [5], the present research proposes a transformation model, illustrating 'stakeholder challenges' to the 'sustainability competencies' relationship and how the internal and external contextual factors moderate this relationship. This paper answers the call of Roome, N., and Louche, C. [15] and Liao, Y. [16] that we need more understanding of the processes in a longitudinal study [17] that lead businesses towards sustainability in order to teach future business leaders sustainable business practices.

The following section will overview EntREsilience, its background, research design, findings and limitations; detail the study's theoretical background and present the article's contribution and the research questions. The third section will discuss the research design, cases, and data collection and analysis methods, followed by the findings section which will narrate the entrepreneur's COVID-19 pandemic crisis journey, experiences and responses. Building on the informative story of findings [8], the discussion section will connect the findings to theory to generate an entrepreneurship-to-sustainability conceptual model. The conclusion section will discuss research limitations and implications, and suggest possible future research opportunities and recommendations.

2. Research Background, Theoretical Foundation and Research Questions

2.1. EntREsilience

The Entrepreneurial Resilience During and After the COVID-19 Crisis Project [2], an inductive longitudinal multiple case study [3,4], was launched in 2020 to understand how entrepreneurs in China, Malaysia, the Philippines, Thailand and the UK manifested resilience in the face of the COVID-19 pandemic crisis. The COVID-19 pandemic crisis provided an opportunity for longitudinal exploration of entrepreneurs' dynamic and proactive measures to protect their enterprises against the pandemic crisis within their respective contexts and use the crisis as an opportunity to grow. EntREsilience focused on

the enabling factors to understand their effect on entrepreneurial resilience. EntREsilience explored the subtle entrepreneurial resilience enabling elements across different institutions and countries, allowing more generalisability [2].

Using the COVID-19 pandemic crisis as the background, EntREsilience was designed to answer two significant research gaps identified by Yuan and Autio [5] in their systematic review of entrepreneurial resilience within the resilience and crisis literature. The resilience literature considers entrepreneurial resilience a static ability displayed after enterprise failure. Secondly, most of the studies are based in a single country, investigating a single case, thus limiting the scope of the results [5]. The review also proposed an integrative framework that emphasises dynamic resilience and opportunity orientation for entrepreneurial resilience in the context of crises, such as the COVID-19 pandemic, and distinguishes between five dimensions of entrepreneurial resilience: agent, context, temporal orientation, enabler and outcome.

In addition to presenting the integrative framework, the review also highlighted seven key findings in the literature on entrepreneurial resilience in times of crisis: (1) the importance of proactive and flexible behaviour for building resilience, (2) the significance of social capital, networks, and relationships for resilience, (3) the role of leadership and strategic decision-making in enhancing resilience, (4) the relevance of organisational culture, values and identity for resilience, (5) the value of learning and knowledge-sharing for resilience, (6) the importance of financial and resource management for resilience and finally (7) the potential benefits of collaboration and cooperation for resilience. The integrative framework and seven key findings from the systematic review formed the basis for analysing the data collected in the EntREsilience project.

EntREsilience defined entrepreneurial resilience as the "ability of the entrepreneur and their business to proactively adapt to, withstand and recover from external adversity; to identify new opportunities during the crisis; and to adapt the business model of the entrepreneurial business such that its ability to pursue new opportunities is strengthened and its robustness against external adversity enhanced". EntREsilience investigated the pandemic crisis effects through its sequence of events, thereby examining it as a process [18]. EntREsilience was designed as an inductive, longitudinal qualitative study analysing entrepreneurs' crisis experiences within their corresponding context before, during and after the crisis. As the entrepreneurs constantly adjusted their responses to the crisis events, an inductive, interpretive approach was the most suitable methodology [19].

EntREsilience data were collected between March 2020 and February 2022 through semi-structured interviews of 45–90 min with "knowledgeable agents" [8] (p. 17), i.e., entrepreneurs. For the choice of these entrepreneurs, see the main report. The case selection was made through theoretical sampling to focus on the focal relationships of interest. Through pilot interviews on company backgrounds, firms with potential resilience enablers of entrepreneurial resilience were selected. China (Wuhan and Shanghai) was used as the exploratory research site. Subsequently, the research was extended to Thailand (Bangkok), the Philippines (Manila), Malaysia (Kuala Lumpur) and the UK. Data collection was performed through three semi-structured qualitative interviews in 2020, 2021 and February 2022. By positioning resilience as a dynamic, proactive and looking-for-opportunities process, EntREsilience examined the "sequence of a crisis" and generated an entrepreneurial resilience process model (Figure 1) using the integrative framework proposed by Yuan and Autio [5].

The first-round interviews were aimed at understanding the businesses as they were before the crisis and the experiences of the entrepreneurs. In the first interview, entrepreneurs talked about how the crisis unfolded, what pressures and challenges it generated, the emotions and feelings of internal and external stakeholders, and how the firm adjusted on the fly and interacted with its community to mitigate the impact of the crisis. The entrepreneurs faced market (demand shock), resource (supply shock) and operational (how to conduct their day-to-day activities) disruptions. Entrepreneurs reacted to these disruptions with ad-hoc and strategic adjustments.
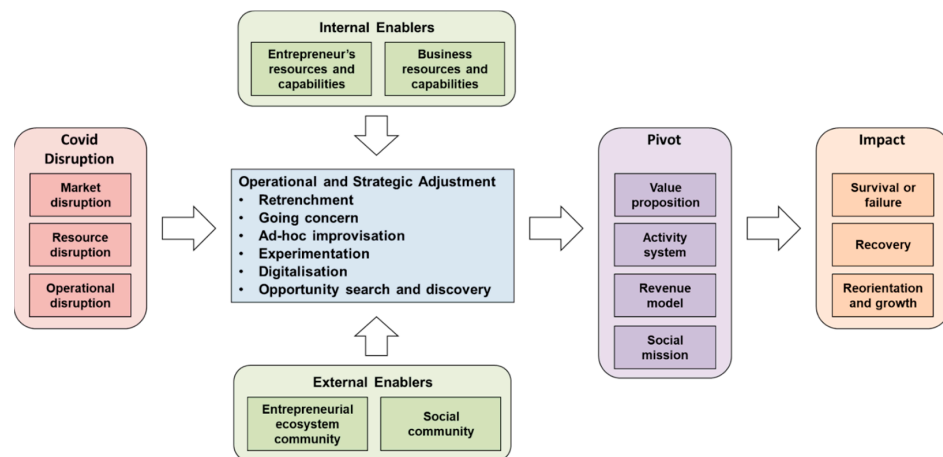
Figure 1. The process model of entrepreneurial resilience.

For a few entrepreneurs, adjustment meant altering their business models, refining product/service offerings, value creation and delivery operations. A few entrepreneurs started exploring new markets and customer bases, and some entrepreneurs adjusted their revenue model. For some enterprises, these adjustments were temporary, as they returned to pre-crisis operations after recovering from the disruptions. On the other hand, encouraged by the positively generated results, other entrepreneurs made the adjustments a permanent component of the enterprise. All these adjustments were contextual to the internal and external enablers of the enterprise. Internal enablers included the entrepreneur's human and social capital, capabilities and resources; firm-level capabilities and resources (finance, IT resources); and adaptability. In contrast, the external enablers included the social and ecosystem communities providing the support cushion and learning opportunities (for a detailed description of the model, see EntREsilience [2]).

'Pivots' are the permanent adjustments entrepreneurs adopted to innovate their business models in the face of the COVID-19 pandemic. Dynamic-natured entrepreneurs would choose or discard any adjustment if that adjustment could lead to the stability of the enterprise or its growth. After experimenting with various adjustments, entrepreneurs discovered modifications that worked best for them and made those part of their business model. By the third-round interviews, the focus shifted to post-crisis outcomes to assess the pandemic's impact on entrepreneurs, their businesses and their relationships with their stakeholders. Entrepreneurs discussed the adjustments that worked best for them and those that did not work, the most impactful factors on their 'Covid journey' and their plans for the future. Entrepreneurs also shared how the COVID-19 pandemic impacted their professional growth and maturity.

Data collected from the interviews, observations, field notes and any online information were triangulated [3,20] to compile a detailed narrative for each case. Data collected from the three interviews had a timeline: (1) firm operations before the pandemic crisis; (2) experiences when the crisis started and progressed; (3) lessons learnt and anticipations; and finally, (4) post-outbreak response strategies and reflections. Each research site analysed data across cases through open coding using Atlas.ai, and developed resilience concepts using Corley and Gioia's practice [21] and Gioia, Corley and Hamilton's [22] guidelines to compare and find similarities, differences and potential patterns across cases forming a 'data structure' to summarise the emerging concepts and themes. A grounded theoretical model was followed to illustrate the entrepreneurial crisis-response process and their adjustment strategies. The next step was to strengthen the validity and clarity of the emergent constructs by consulting the crisis and resilience research literature. The final constructs were then used for the process model (Figure 1) development to show entrepreneurial firms' learning and adjustment process throughout the pandemic crisis within their contextual factors.

After analysing the first-round interviews, five pairs of 'polar-outcome' or contrasting responses to the COVID-19 crisis were observed. (1) Businesses actively changing their business model (proactive) vs. passive businesses 'waiting' the crisis out (reactive). (2) Businesses that rapidly grew (grow) vs. enterprises that suffered (suffer). (3) Businesses that relied closely on their community support and advice (community-dependent) vs. businesses that shunned community interactions (not community-dependent). (4) Businesses that successfully leveraged digital technologies (digitally enhanced) vs. businesses that could not or would not increase digital technology usage (not digitally enhanced). (5) Businesses changing their business model (change business model) vs. businesses only changing their product and service offerings (change product/service). For the second and third interviews, each research site was assigned one 'polar pair' to focus on; the Thai team was to focus on how community interactions affected entrepreneurial responses to the crisis and moderated their resilience during the crisis.

The process model does not explain all these subtle details (Figure 1). Similarly to Duchek [23], the EntREsilience process model demonstrated how entrepreneurs manifested resilience in the face of crisis without explaining why entrepreneurs made certain contextual adjustments and how the enablers affected their adjustment response. The enablers include organisational stakeholders (workers, suppliers, customers and social connections). Santoro [24] emphasised comprehending the nature and calibre of social ties [23], how entrepreneurs connect with their stakeholders and how these different connections affect their resilience towards entrepreneurial success. The EntREsilience model does not elucidate how the pandemic crisis changed the quality and nature of entrepreneurial interactions with their stakeholder to maintain critical business functioning [25]. It does not differentiate between the social and ecosystem stakeholder (Figure 1) involvement in explicating their influence on the entrepreneur's response to the pandemic crisis [26]. As the process model shows linear phenomena, it does not clarify how the entrepreneurial adjustments affected the stakeholders, neither does it illustrate the contribution of the entrepreneurs in the lives of their stakeholders during the pandemic crisis.

Shared location, identity, fate, interest and practice form communities that, through inter-community interactions, can support entrepreneurial activities [27]. EntREsilience data showed entrepreneurs remained active members of their communities during the pandemic crisis, creating value from community interactions [28]. The EntREsilience Thai team investigated two community interactions. The social community interactions, i.e., interactions with family and friends, offered the entrepreneurs psychological and moral support, thus augmenting their resilience. Secondly, ecosystem community interactions, i.e., with workers and co-workers, suppliers and customers or members of the same craft or industry [27], provided entrepreneurs with the technical tools and knowledge that let them run their businesses smoothly. Analysis of the community interactions quickly revealed an emerging phenomenon. As the entrepreneurs were 'living the crisis' themselves, their community interactions provided direct feedback on how the crisis disrupted the lives of their suppliers, customers, workers and other enterprise stakeholders. This realisation engendered an altruistic spirit within them, whereby entrepreneurs initiated and adopted measures that, while supporting their enterprise, were aimed at the sustainability of their stakeholders. This new realisation and the limitations of the process model mentioned earlier demand an additional investigation to understand the nuanced effects of community interactions on entrepreneurial resilience.

2.2. Theoretical Background

EntREsilience described resilience as the capacity of the entrepreneur and their business to proactively adjust to adversities, recover and identify new prospects in the crisis. Organisational resilience is a wide range of capabilities, capacities, characteristics, outcomes, processes, behaviours, strategies and approaches [29]. The literature has constructed resilience at different levels, emphasising that organisational resilience is achieved at collective levels through employees and teams and their collective actions leading to a shared

vision. According to Duchek [23], the presence of a shared vision is integral to a resilient response, facilitating the implementation of effective solutions to address challenges presented by an adversary. Furthermore, Torres [30] suggests that stakeholder connections serve as a valuable long-term resilience asset by providing entrepreneurs with a network of support and assistance.

Stakeholder theory considers any business as a set of relationships among buyers, sellers, workers, investors, communities and executives who work together to create mutual value [13,21]. Stakeholders are "those groups and individuals who can affect or be affected" by business functions to create value [12] (p. 9). The relationships between a business and its stakeholder are the main focus of Stakeholder theory [12,31]. Stakeholder engagement refers to the active involvement of stakeholders in an organization's decision-making and management processes. This involvement leads to greater awareness among leaders of the concerns and problems faced by stakeholders, which in turn leads to greater challenge awareness, more interaction and feedback and adjustments for better decision-making and more effective actions [32]. Stakeholder engagement is viewed as a critical enabler of collaboration achieved through sharing, cooperation, networking and partnership [33]. In fact, Tolkamp et al. [34] suggest that stakeholder engagement is essential to a business's success, particularly in generating social solutions, fostering a collaborative perspective and facilitating elevated levels of economic, social and environmental innovation that lead to the creation of inclusive value.

Stakeholder problem awareness, a prerequisite for effective stakeholder engagement, requires understanding the nature of stakeholder interactions [21]. Stakeholder problem awareness is critical for business leaders who wish to promote the well-being of their stakeholders and adopt a sustainable leadership style [35] to develop sustainable businesses [28,36]. When the ideals of sustainable business models are incorporated into interactions with stakeholders, business practices move towards sustainability [37]. Sustainable businesses capture economic value for the business without endangering natural, communal and financial resources that extend beyond a business's borders [38] (p. 6). Sustainable business models prioritise stakeholder relationships and shift the focus from solely creating value for customers, suppliers or business partners to creating value collaboratively with stakeholders [14] by aligning the stakeholders' interests and demands [39]. Sustainable business models address social and environmental issues by leveraging high levels of economic, social and environmental innovation, creating inclusive value [34,37] while avoiding the depletion of natural, social and economic capital [38] (p. 6).

Avery and Bergsteiner proposed a "Honeybee" leadership model with twenty sustainable leadership sets of behaviours and practices and three drivers aimed at creating lasting value for all stakeholders, including society, the environment and future generations [8,40]. The three key performance drivers, innovation, staff engagement and quality, are critical to organizational performance. The Honeybee leadership model extends beyond the traditional triple bottom line to achieve outcomes that enhance brands, customer satisfaction, and long and short-term financial viability, while providing long-term value for all stakeholders [41]. Six schools of thought within sustainable leadership scholarship relate to how leadership contributes to organizational sustainability and long-term value for the stakeholders. The six schools of thought are sustainable leadership, leadership for corporate sustainability, managerial leadership, responsible leadership, ethical and transformational leadership and leadership for sustainable change [42]. Firms implementing sustainable leadership principles are more likely to achieve sustainable performance outcomes, long-term resilience and stakeholder satisfaction [41].

Sustainable businesses prioritise long-term outcomes over short-term gains for sustainability and resilience. Leaders who adopt a long-term orientation tend to emphasise future-oriented actions and outcomes rather than short-term goals [40]. A long-term orientation requires diverse sustainability leadership competencies, including strategic and systems thinking, and foresight competence, to ensure that organizations can antici-

pate and respond to the complex and dynamic challenges associated with sustainability and resilience.

2.3. Research Questions

The EntREsilience Thai team were intrigued when during the second and the third interview, some of the entrepreneurs, guided by awareness of their stakeholder problems, were actively initiating measures towards their stakeholder sustainability. Sustainable leaders have a strong tendency to take the interests of all stakeholders into account rather than solely focusing on financial gains [11]. The EntREsilience Thai team wanted to reanalyse the data within the theoretical framework of stakeholder well-being and sustainable leadership.

The literature recognises that sustainable leadership behaviour has a transformative character, necessitating the study of its antecedent variables, moderators and mediators [15,16]. Similarly, the business model for sustainability literature has called for a greater understanding of stakeholder networks for mutual value creation [14] and learning from the surviving businesses [43]. By seeking to answer these calls, the present research aims to extend the entrepreneur resilience-manifestation process model (Figure 1) to understand the underlying causes of what had happened and explore (1) if and how the disruption of the COVID-19 crisis resulted in an altruistic spirit within entrepreneurs, fostering greater stakeholder-wellbeing awareness; (2) how this awareness generated sustainability competencies within entrepreneurs and; (3) what contextual factors moderated the awareness to sustainability competencies development relationship?

3. Methodology

Following the EntREsilience methodology, an inductive, qualitative research approach to investigate little-known phenomena [44] was applied in the present study. No new data were collected. The EntREsilience data of selected Thai entrepreneurs were reanalysed through an interpretive paradigm [19]. The EntREsilience data were collected with different thematic foci across different research sites. Thai cases were investigated with a focus on community interactions. The data collected from a few Thai cases indicated a community-interaction effect on the stakeholder challenge awareness, which prompted the present study. Therefore, it was pragmatic to exclude non-Thai cases and Thai firms with low or no community interactions to keep the focus on the central relationships of our interest.

3.1. Respondents

Table 1 summarises the selected Thai entrepreneurs whose interview data were used for this article. This representativeness [45] of the purposive sample of entrepreneurs provided an appropriate variation on the sustainability dimensions facilitating generalisability building [20,46,47]. As this research reuses the EntREsilience data, no additional interviews were conducted. Familiarity with the data when analysing them for EntREsilience aided in case selection.

Table 1. Summary of the four cases.

Company	Industry	Respondent	Business Model
EJ	Jewellery manufacturing	Founder and Director	Providing one window manufacturing service for jewellery retailers.
EG	Garments and fabric	Co-Founder and CEO	Creating value through the circular economy by marketing the leftover fabric of garment manufacturers.
ER	Retail	Family Entrepreneur and Director	Transforming traditional Thai retail into a hybrid industry via digital marketing. Developing Silver Entrepreneurs and encouraging local producers through supply chain services.
ET	Tourism	Co-Founder and Director	Customised tour packages for tourists looking for a different experience.

3.2. Data Analysis

As an exploratory follow-up study to EntREsilience, this study repeated the EntREsilience methodology to code and analyse data. Open coding of the transcripts was performed using Atlas.ai. Gioia, Corley, and Hamilton's [22] systematic coding methodology of theory development was followed for sense-making [21], how the COVID-19 pandemic made entrepreneurs aware of stakeholder challenges and adopted sustainable leadership traits. Open coding the rich qualitative data allowed us to reduce the large volume of materials and generate an initial set of first-order codes, which were informant-centric and contextually embedded.

Data analysis started with the re-coding of the interviews. In their interviews, entrepreneurs described the events that happened from March 2020 to the third interview in February 2022 and what measures they took to survive the pandemic crisis, recover from it and create a sustainable growth path. Therefore, the interviews narrate the interviewee's journey through the pandemic crisis. The analysis of this journey generated 55 codes that were grouped into ten first-order themes. Then, the first-order codes were categorised into second-order themes through axial coding. The three-part second-order themes extracted from the first-order codes are groups of the events and measure code categorised on a higher level of abstraction, allowing a structured presentation of data and rigorous inductive analysis [8,15].

The second-order themes are the entrepreneur's 'Covid Journey', developing or 'Building Sustainability Competencies', and the 'Moderators' (Figure 2). The structured data representation also enabled iterations between the findings and the extant literature, comparing the two to articulate the constructs from the findings to answer the research question. This article's 'Findings' section will elucidate the second order and aggregate the theme with interview quotes. The second-order themes merged to form the third-order aggregate 'Sustainability Mission' (Figure 2). This aggregate 'Sustainability Mission' explains how the pandemic crisis created a situation that refined the entrepreneur's interaction with other stakeholders towards sustainability. The Thai team analysed interview data by examining community dynamics as a moderator to the entrepreneur's resilience manifestation. The multiple-case-study approach helped in "identifying and refining constructs and their relationships" [10] (p. 373). Community factor analysis revealed the nuanced way entrepreneurial resilience is shaped when the entrepreneurs are more conscious of their enterprise's internal and external stakeholders, considering stakeholder sustainability as integral to their success.
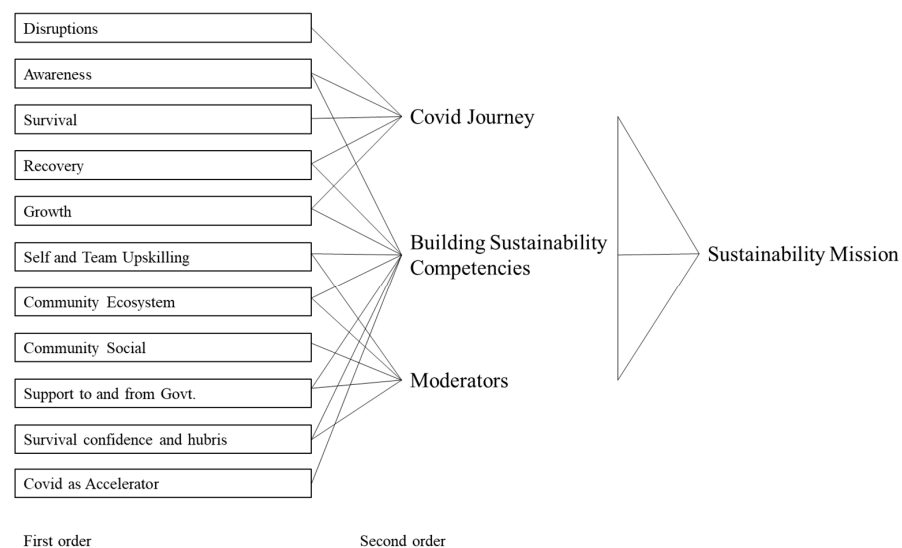
Figure 2. Data structure showing the coding tree and aggregate dimensions.

The findings section will explain the coding tree by narrating the entrepreneur's COVID-19 crisis journey with related quotes from the interviews to show how they developed sustainability competencies to solve their stakeholder's challenges.

4. Findings

This section will describe the findings from the inductive exploration of interview data and the resultant data structure. As the interviews were entrepreneurial experience narratives, the findings are presented temporally. This section is organised to answer how the crisis conditions fostered sustainability competencies in the entrepreneurs towards their stakeholders, making them sustainable leaders, and the possible role of moderators.

The Thai government, in response to the first outbreak of COVID-19, announced emergency measures on the 26 March 2020, followed by containment measures like lockdown and banning incoming international flights leading to economic disruption, difficulty in business operations and loss of work [48].

> **EJ**: "in April 2020 [...] it was very difficult because I had to run my business as well. I have to pay salaries, but the work was not there."

> **ER**: "The vendor cannot come and sell, the people were locked down".

> **ET**: "My business stopped. They were closing the country to foreign tourists indefinitely. We [do] not have customers".

Distressed and confused entrepreneurs started feeling that they were losing control as no one had ever experienced this kind of global-level extended disaster before.

> **EG**: "In May 2020 [...] anxiety, anticipating everything, no peace of mind. I don't know what to do. I'm out of control of everything".

The uncertainty added to pandemic crisis distress and confusion. In the first few weeks, no one had a clear answer about the nature of the crisis and how it will be resolved or end.

> **EJ**: "It would just eat up your whole full year. People are thinking that its 3 or 4 months or 7".

> **ET**: "I thought it will be a matter of just a few months and then everything will resume the way it was."

Nevertheless, soon, entrepreneurs realised and accepted that the pandemic was there for an extended period and would have a profound impact on their businesses and that they had to start strategising accordingly.

> **ER:** "COVID would be with us. Not just only this year, but perhaps the next or two years or until 2024".

> **ET**: "I began to feel worried for the sustainability of my business."

This also meant that the entrepreneurs had to start implementing measures to protect their businesses. Therefore, they began applying survival measures, starting with themselves. Entrepreneurs are inherently flexible and hands-on. The first step for the resilient entrepreneurs of smaller enterprises with no external financial resources was to ensure they have vital funds for survival by exploring options outside their enterprise.

> **EG**: "I also took on another part time job to make sure that I have some cash".

> **ET**: "Main challenge is surviving by doing multiple unstable jobs."

The business operation refinements further demonstrated the entrepreneurial flexibility for the enterprise's survival.

> **EG**: "First few months were like, OK, let's close the operation. Eat from savings and let's see what happens".

> **ET**: "Survive by furloughing our five employees and by closing down our physical shop."

From the beginning, the entrepreneurs adopted survival measures, revealing an awareness of the challenges faced by the enterprise's stakeholders [49]. Stakeholders affect and are affected by the value creation activities of a firm [12,13]. The relationships between the stakeholders and their joint effort are crucial for establishing and solidifying an enterprise's value creation network [14,50]. Both internal stakeholders (owners and employees) and external stakeholders (customers, suppliers, governments, ecosystems, local communities and environment) are essential for the enterprise's success, but it is primarily the internal stakeholders that enable a firm to fulfil stakeholder demands [51,52]. Entrepreneurs were attentive to the predicaments faced by the stakeholders, and they knew that the path to enterprise sustainability had to go through solving stakeholder challenges.

> **ER**: "So all people cannot work [. . .] old and young people [. . .] no hiring's from the entrepreneur. [. . .] Both generations go back [to the village]".

> **EJ**: "After learning that all this company is shutting down, few workers, they come and ask me for that [. . .] How should we do? Because If the company cuts the salary they don't have enough money to pay [. . .] everybody has bills".

However, the initial survival strategy involved laying off the staff. The entrepreneurs were fully aware of how vital stakeholder relationships are; therefore, even for such a complicated step, they showed prudence in being mindful of inter-stakeholder relationships.

> **ET**: "When the hard moments of cutting salaries or sending our staff back home came everybody understood and everybody agreed to keep relations the best we could".

> **EJ**: "In April we were down from 28 to 10 workers. The permanent staff was only retained [. . .] It would be much better to keep the most required 10 people and increase [. . .] surviving from three to maybe 6 or 7 months."

Awareness of the stakeholder difficulties and adopting measures that ensured stakeholder welfare disclosed the entrepreneur's realisation that the COVID-19 pandemic is a protracted crisis [49]. Therefore, they required a strategy that could sustainably counter the disruption by strengthening the enterprise's relations with its stakeholders [53,54]. The strategy necessitated the entrepreneurs to develop sustainability competencies and adopt practices to evolve into sustainable leaders for enhanced business resilience and performance [8,41]. After surviving the initial stage of the pandemic crisis, the entrepreneurs felt enough confidence to look for opportunities and refine the survival plan in a sustainable recovery-to-growth business strategy.

> **EG**: "I feel more confident that I should now be offensive on this business. Looking very thoroughly on what we have and how can we make money out of whatever? Forever. Seriously."

Entrepreneurs, as opportunistic innovators, knew that their recovery-to-growth strategy could only be effective against the pandemic crisis if it were sustainable with a long-term perspective [55]. Business sustainability requires trusting and innovating teams with a shared vision [56] and a strategy that meets "the needs of a firm's direct and indirect stakeholders" [57] (p. 13), stimulating business resilience. As per their recovery-to-growth strategy, the entrepreneurs refined their business operations displaying their sustainability competencies toward social sustainability [58]. The modified business operations focused on offering new services based on stakeholder relationships, revising organisational structure to develop people and processes for team-centred efficiency and bolstering external stakeholder relationships through joint-venture.

> **ET**: "Launched free tours around Bangkok [...] only at the end of the tour customers can leave tips for the guide [...] a cost-effective solution able to continue to spread our company tours and which could help with a little income our guides."

> **ER**: "We tend to have [. . .] Faster decisions, [so] if a department come to their SWAT team and shoots out specific project details, and we do this together for like a month and we finish."

> **EG**: "We work very well with some of our collaborations, sometimes we ask them to become the designer of our big deals. We give them a share."

The entrepreneurs knew that "value should be created both with and for different stakeholders" [14] (p. 5) for a sustainable recovery-to-growth; therefore, all the implemented plans were centred around stakeholder development, reaffirming the entrepreneur's commitment toward stakeholder relationship development. Each business modification, aimed at mitigating stakeholder challenges, covered one or more sustainable leadership practices [8], refining the internal stakeholder relationships by providing a positive feedback loop for the entrepreneurs. In the second interview, a couple of entrepreneurs were already talking about trusting, cohesive teams and better streamlined, efficient work, which they credited to the mentioned positive feedback that added to their confidence and ensured the enterprise's trajectory towards sustainability and resultant growth [9].

> **EJ**: "So, I assured my workers and I told them that I will not slash their money, I will try as much as possible [...] made me gain their trust as well for the future because even as a small company, but still the boss is keeping the interest of the workers more than interest of himself."

> **EJ**: "My people, they support me. I try to support them."

The recovery and recovery-to-growth strategies and resultant modified business operations demanded that entrepreneurs advance self and team skill development towards a more sustainable business offering better service and aiming for customer-based expansion. By reading, listening to experts and taking online courses, entrepreneurs improved their knowledge and skills. For team skill development and enhanced team cohesion, entrepreneurs pushed themselves to be better leaders, guiding and coaching their teams through discussion and training to be more efficient and productive.

> **ET**: "my husband [co-founder] is determined to take a proper course to deepen his knowledge in digital marketing".

> **EG**: "I started to [go] back to exercise and start reading selective books and listen to the podcast quite often."

> **ER**: "Be a good coach to my team".

> **EJ**: "To have more skilled people [so we make] minimum mistakes. So we can give to customers who do not opt for some other place".

Stakeholder development, stakeholder relationship development and team skill development lead to social sustainability [58] and better social capital [59]. Social capital is the network that facilitates resource offerings for the enterprise from formal and informal sources. The trust and reciprocity of the sources develop social capital [60]. As part of the sustainability mission taken by the entrepreneurs directed toward social capital growth for enterprise sustainability, entrepreneurs started fostering and advancing links with the business community and public institutions to help and share ideas with them [30].

> **ER**: "Helping the communities and helping the silver population. [We] have a course to teach about digital literacy, financial literacy, how to take care of themselves, how to have health awareness."

> **EG**: "I share the circular mindset [. . .] to scale the mindset and convince people [within incubators] that with this mindset, you can make some money [from the circular economy]. I'm one of the five startups representing Thailand for the Innovation Promotion, for the Foreign Ministry and National Innovation Agency NIA."

These intentional interactions resulted partly from the altruistic values and expected synergies with other entrepreneurs or public institutions. The entrepreneurs got a positive response to their efforts with better external stakeholder relationships. External stakeholders replied with deeper trust, firmer support, positive EWOM and even assistance from international development agencies and Thai public organisations. The external stakeholder's positive feedback added to the business's competitive advantage [10], furthering its sustainability.

> **EG**: "We have satisfied our international customers, our international customer came back and trusted us in delivering their products".

> **EG**: "The incubators [. . .] give me some visibility [. . .] put me on the list of potential companies to invest in to be on the UNDP website".

> **ER**: "Government asks [us] to participate in [. . .] exhibitions for 15 cities in Thailand to show the application of our platform that can help [the rural population] to turn their home to be their retail store. This is really good publicity from the government because it's showing that my business model is working."

All Thai entrepreneurs defined their social community, mentors and family members as helpful and motivational sources that energised entrepreneur resilience through their support.

> **EJ**: "I got support from my family [. . .] And that support sometimes gives you the strength to carry on for a little bit longer."

> **EG**: "One thing significant. Last year, [. . .] I start to have a mentor [. . .] works out amazing, amazingly well. Because mentor to me is like a Coach."

The last interviews were conducted in February 2022. Although Thailand was reporting a high number of cases [3] at that time, after multiple vaccination cycles, it became apparent that the pandemic crisis had become manageable [Bangkok Post, 27 January 2022]. Each entrepreneur was asked retrospectively about their two-year experience and how they would summarise the effect the crisis had on them. Not surprisingly, all of them agreed that the COVID-19 pandemic was an accelerator [61] to their professional development, contributing to their resilience and improving their business leadership qualities.

> **EJ**: "I have actually got maturity of this two years much more than maybe I would have been in five-six years".

> **EG**: "I think COVID has helped me as a business founder to be more rounded and, more grounded".

> **ER**: "[pandemic crisis] is a good thing for the leadership, for a leader to have a change. Incubator program, I have this kind of concept for the last 4 years. We can do this incubator in just two months [because of the pandemic crisis]."

> **ET**: "I believe this whole situation has taught me quite a lot."

5. Discussion

The COVID-19 pandemic was a once-in-a-century crisis. It changed how the world operates and how we perceive it. When the pandemic crisis hit the entrepreneurs, they had to innovate tactics to survive and convert the crisis into a growth prospect, exhibiting their resilience. The EntREsilience [2] resilience process model (Figure 1) explains how entrepreneurs manifest their resilience, and its principal mechanisms and enablers. This research builds on the findings of the EntREsilience project, answering [14,16,62] to exhibit how one of the enablers, the entrepreneur's community interactions, contributed to the resilient entrepreneurial pandemic response [9,63]. The pandemic crisis engineered a response centred around the stakeholder relationship and well-being [64], propelling the entrepreneurs to develop and demonstrate sustainability competencies [41] and become sustainable leaders [42] as they resiliently converted the pandemic crisis into a growth opportunity for their enterprise sustainability [9].

The lockdown announced by the Thai government in April 2020 to counter the COVID-19 pandemic outbreak disrupted all normal life processes, including how businesses operate. In the first few uncertain months of the pandemic crisis, the Thai entrepreneurs felt confused and anxious, unable to manage the exogenous disruptive events. Lack of information and the absence of any indication of how long the crisis will be and how it will end amplified feelings of losing control. The entrepreneurs needed to survive the disruption and keep their enterprise functional, even if it meant minimum functionality. When the Thai entrepreneurs realised that the pandemic crisis would be a prolonged disruption affecting everyone, they knew they had to develop strategies and shape their response step by step, starting with surviving the initial wave of disruption. Survival meant financial stabilisation and keeping the enterprise in working condition. How they shaped their survival revealed how the entrepreneurs started developing sustainable competencies [41,55], transforming them into sustainable leaders [56].

To be financially stable with minimum cash flow, some entrepreneurs even took part-time jobs, affirming their flexibility and hands-on resilience. A minimum-functioning enterprise necessitated cutting expenses by modifying operations, including laying off workers. The COVID-19 pandemic crisis is an extended global crisis affecting everyone; no one has escaped the disruptions caused by the crisis. This crisis characteristic has enabled entrepreneurs to be mindful of their stakeholders' hardships. When they had to furlough workers, by valuing their relationship with their workers [65], the entrepreneurs displayed concern and awareness of the challenges their enterprise stakeholders faced and would face in the coming days. The way they laid off their workers in an amicable manner set the course for all of their future crisis-response steps in the coming months, stakeholder-centric with a long-term vision [8,41].

Surviving the initial wave of disruption and stabilising their enterprise at a minimum operating level boosted the entrepreneur's confidence and resilience. They started strategising a recovery plan that could lead to a sustainable enterprise with financial stability and resilience [9]. Entrepreneurs were clear that a sustainable enterprise requires furthering stakeholder relationships with increased social capital [60], maximising value for a wide range of stakeholders, specifically through knowledge sharing, so that its societal effects are felt beyond its organisational boundaries, all with a long-term perspective [38,62,63,66]. The internal stakeholders (in this case, the employees) enable a firm to fulfil all stakeholder demands [52]; therefore, to create value "with and for" [14] (p. 5) their employees and strengthen their relationship with them, entrepreneurs took several initiatives. By acquiring additional skills through various resources and becoming better coaches to their team members, the entrepreneurs fashioned an innovative, cohesive and trusting team with a shared vision and better skills, transforming the stakeholder relationship nature [67] to deliver stakeholder satisfaction for sustainable recovery [41,68].

A prosperous stakeholder is central to an enterprise's value-creation activities in a connected world. As the value creation network of an enterprise is highly dependent on inter-stakeholder relationships, entrepreneurs were alert to the predicaments faced by all of their stakeholders. Whether it was an issue of customers having difficulty in buyer interaction or their vendor's inability to operate their business, the entrepreneurs were attentive to all these developments [64]. Enabled by a trusting, cohesive team, they started working on extending their social capital network [59] and growing external stakeholder interactions, securing improved social and economic value [69] and transforming their relationship nature [67]. These interactions were with social and business community members, offline and online, on private, governmental or international forums. The results were expanded links within the social and business community, firmer ties with public institutions to understand their challenges and better idea sharing [30]. The social community interaction with friends and family boosted the entrepreneur's morale. Mentor interactions acted as a 'perspective catalyst'; mentors enhanced the entrepreneurs' ability to empathise and connect with their stakeholders by discussing novel ideas.

Even though the pandemic crisis has disrupted businesses, it created many new opportunities that innovative and repositioned business processes could benefit from. The entrepreneurs extended their recovery plan to a growth plan to gain from as many new opportunities as possible. Driven by monetary motivation and societal sustainability concerns, the above interactions enabled knowledge sharing on how to survive the crisis and change it into a growth opportunity. Along with better external stakeholder relationships, the external stakeholder interactions resulted in positive feedback, increasing the business's competitive advantage [10]. Interaction with public institutions and organisations led to better financing options for one entrepreneur, whereas another's business model was validated by governmental endorsement, promoting their brand.

The COVID-19 pandemic journey started as a crisis which disrupted the entrepreneur's business operations, creating confusion, anxiety and loss of control. Entrepreneurs, guided by their values and beliefs, recognised that their entrepreneurial sustainability is connected to the sustainability of their stakeholders. By increasing their interactions and deepening their connections, the entrepreneurs developed a greater awareness of their stakeholder's challenges. The greater awareness engendered sustainability competencies within the entrepreneurs, enabling them to innovate sustainable solutions to their stakeholder challenges. The sustainability missions toward internal and external stakeholders generated feedback to the entrepreneur's sustainability mission, positively regulating it (Figure 3).
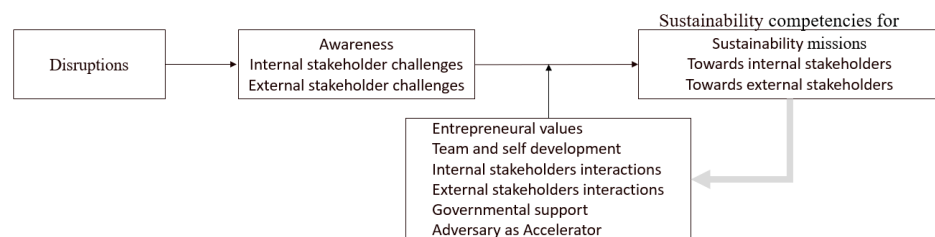
Figure 3. Transformation of entrepreneurs into sustainable leaders: how the COVID-19 crisis transforms entrepreneurs into sustainable leaders.

Figure 3 shows how the entrepreneurs, propelled by the stakeholder challenges, transformed into sustainable leaders for their enterprise, teams, and external stakeholders. The model agrees with Duchek [23] that social resources positively influence resilience and aligns with the model proposed by Sontoro [24], as the stakeholder interaction moderates the entrepreneurial crisis response in both models. The transformation model adds to the process model (Figure 1) to explain the role of stakeholder challenge awareness in entrepreneurial resilience. The transformation model depicts how stakeholder challenge awareness resulted in the entrepreneurs adopting sustainability missions directed toward the stakeholder's well-being. This awareness prompted sustainability competency development in the entrepreneurs, encouraging sustainable measure adoption for creating a sustainable business situation for the enterprise. This transformation model adds to the process model (Figure 1) by showing how stakeholder challenge awareness facilitated business operational and strategic modifications with the addition of sustainability measures. The transformation model lists moderators affecting sustainability competency development as modifiers and enablers.

Quite a few of the sustainability measures adopted by entrepreneurs are similar to those in the sustainable leadership pyramid [8]. Sustainable leadership pyramid research [8,65], based on the 2008 credit crunch crisis, explored how corporations adopted a stakeholder approach for business sustainability. Similarly to the COVID-19 pandemic crisis, the businesses and their stakeholders were 'living the crisis'. Corporations such as BMW [65] realised stakeholder challenges and refined their usual business practices, adopting sustainability competencies and practices to evolve into sustainable enterprises. Entrepreneurs in the present study displayed a similar course of action as their pandemic crisis response, however, with few nuanced differences.

Sustainability demands a balance between environmental care, social well-being and economic growth, and one of the foundational sustainable leadership practices is environmental responsibility [8,62,70–72]. In the past three centuries, our economic system has developed by exploiting 'commons' where business revenue, profitability and shareholder dividends are never calculated by accounting for the natural resource depletion cost [73]. A big corporation such as BMW has environmental responsibility as a core to their operations [65] as they can afford to do so; however, due to financial performance requirements, SMEs seldom consider the natural environment as their primary stakeholder and thus, its care is not considered much in the decisions made [74–76]. The present research found similar tension between sustainability and economic missions [10], as even when the entrepreneurs exhibited an attitude of social responsibility, they never mentioned or discussed environmental responsibility in their interviews. In their quest to survive, recover and grow from the COVID-19 pandemic crisis, the entrepreneurs had environmental sustainability as their lowest priority [77].

Entrepreneurial sustainability competencies development and practising sustainable leadership traits for social sustainability initiatives were initiated for the economic sustainability of the enterprise. The results of the present research disagree partially with Suriyankietkaew [55], as the entrepreneurs' initiatives to ensure internal and external stakeholder well-being were not the goals of the entrepreneurs. The entrepreneurs considered better stakeholder relationships and stakeholder well-being as one of their strategies to achieve financial stability and economic growth. None of the entrepreneurs talked about nature as their business stakeholder [74,78], as SMEs do not consider environmental consciousness to translate into financial rewards [79,80]. Therefore, can the entrepreneurs be called sustainable leaders when they only consider social sustainability a strategy for economic sustainability and do not have ecological sustainability as part of their business practices? The answer to this question lies in our economic system and growth fundamentals [73], which demand further theoretical and empirical research. Once we answer such questions, we can motivate entrepreneurs to consider nature as their stakeholder and give ecological and social sustainability similar priority to their enterprise's economic sustainability.

6. Conclusions

EntREsilience, a five-country longitudinal study, was launched in 2020 to understand how entrepreneurs manifested resilience in response to the COVID-19 pandemic crisis by proposing a resilience process model (Figure 1). Present research added to the process model by analysing the strategies applied by the entrepreneurs in their response to the pandemic crisis. This study is consists of exploratory case study research. The research data were collected by interviewing four Thai entrepreneurs in December 2020, May 2021 and February 2022. In the interviews, the entrepreneurs described events from March 2020 to February 2022 and how they responded to the different phases of the crisis. The research focused on exploring the sustainability measures adopted by the entrepreneurs as their response to the crisis. The inductive results of this longitudinal study showed how the awareness of their stakeholder challenges shaped the entrepreneurial response. Realising the importance of stakeholder well-being to the sustainability of their enterprise motivated the entrepreneurs to develop sustainability competencies towards their stakeholder's challenges, applying sustainable leadership traits. Moderators affecting entrepreneurial responses were also examined.

This research has contextual limits. The COVID-19 pandemic was an extended crisis affecting everyone, irrespective of socioeconomic status. Empathising with and understanding the hardship of stakeholders was easier as everyone was 'living the crisis'. Will the entrepreneurs respond with similar sustainability measures to a crisis if it only affects a part of the society? If the crisis is local to the enterprise only (for example, market loss), what sustainable measure will constitute the resilience manifestation of the entrepreneurs? Another limitation is the lack of contrast cases in this study. All the Thai entrepreneurs interviewed

for EntREsilience were able to survive the pandemic crisis. A contrast case, where the entrepreneurs had to close their business and stop being an entrepreneur (e.g., by taking employment), would have revealed subtler details to the entrepreneurial resilience literature. The purposive sampling only analysed entrepreneurs involved with their communities, whereas random sampling would have provided different entrepreneurs' response details. Thailand is a collective society where community interaction is part of daily life, but the same cannot be said about individualistic societies. Therefore, can the same phenomena be observed in individualistic societies where community interaction generates sustainability competencies within business leaders?

This research extends the EntREsilience process model in the context of sustainability and stakeholder relationships. Awareness of their stakeholder challenges refined entrepreneurial pandemic crisis response as they adopted sustainability traits, making them sustainable leaders. The research also showed that working with external stakeholders enhanced enterprise sustainability by providing entrepreneurs with new growth opportunities. The research reaffirmed the centrality of economic sustainability to entrepreneurs, where social and ecological sustainability were considered only by their contribution to economic sustainability.

6.1. Theoretical Implications and Future Research

The research inductively explored an area of knowledge where entrepreneurial crisis resilience, stakeholder theory and sustainability measures merge. This study explored how being aware of stakeholder challenges can endanger sustainability competencies within entrepreneurs directed toward the stakeholder's well-being, producing social sustainability and enabling enterprise economic sustainability. Future research can deductively investigate these factors to explicate each construct's relative effect in generating sustainability measures.

Specific conditions (for example, crisis duration) affected the entrepreneurial resilience with subtle sustainability traits, as reported by EntREsilience and the present research. By exploring resilience manifestation, facing adversaries in various crises might highlight the specific conditions when entrepreneurial crisis response will satisfy all three sustainability conditions to make them sustainable leaders. One interesting observation in the EntREsilience project was the birth of 'Covid-babies', a business born out of the COVID-19 crisis. Exploring their sustainability measure will add to understanding the nuanced entrepreneurial attitude toward social and ecological sustainability. This research underlined the role of social community and mentorship in moderating an entrepreneur's resilience. The function of social community and especially the role of mentors in shaping entrepreneurs to be sustainable leaders may be a good area for future research.

6.2. Managerial Implications and Recommendations

This research showed the importance of social sustainability for entrepreneurs in achieving economic stabilisation and sustainability. Positioning stakeholder challenge awareness as an essential part of leadership training will ensure business sustainability. By making social sustainability an important part of organisational culture for achieving economic growth and sustainability, the managers and business leaders may use the inertia to generate societal sustainability. The spill-over effect of social sustainability can also be directed toward ecological sustainability for a sustainable future.

This research validated a community's role and influence [81,82] in entrepreneurial resilience. Social community interaction, specifically mentorship, boosted the entrepreneur's resolve and belief in themselves and motivated them to face the pandemic crisis. Promoting mentorship within entrepreneurial communities can be an efficient source for entrepreneurs to discuss their personal and business problems, exchange innovative ideas and learn from the mentor experience. Public institutions should coordinate platforms where entrepreneurs can meet potential mentors. In the collective Asian societies, 'angel

mentorship' can be effective and may lead to a two-way exchange of knowledge sharing, as illustrated by the ER case.

Business communities for social exchange promotion can be an effective synergy platform. The digital meeting apps saw a massive rise in subscriptions when the pandemic-induced restrictions were imposed, proving their effectiveness. Exploiting their potential in creating international forums sponsored by public institutions, where entrepreneurial social and professional exchanges are encouraged, can be an effective way for cross-border collaboration between entrepreneurs of different nationalities. As the EG case proved, connecting innovative local entrepreneurs with international institutions can be very effective and fruitful, specifically in knowledge sharing and idea exchange. Great problems such as sustainability need synergies that use ideas from multiple cultures and backgrounds to be practical and effective. International forums, guided by the entrepreneurial spirit, where academia and industry of multiple geographical locations converge and collaborate, can be practical tools for solving global issues. The EntREsilience project is an excellent example of cross-country academic collaboration with international agencies. Such forums can also be a good source of crowdfunding for entrepreneurs helping them scale their operations. Asking entrepreneurs to solve social problems through professional competitions on local, regional and international levels can result in novel solutions and generate more significant and effectual public–private joint ventures.

As stated in the discussion section, sustainability efforts are hampered by the economic foundations that took shape over the past three centuries. Attaching our well-being and quality of life to economic growth has resulted in an unsustainable world posing an existential threat. Considering ecological care as part of business sustainability by accepting nature as a business stakeholder can only change the fundamentals of our economic paradigm. Communities can be a very efficient tool in altering the established economic fundamentals by promoting non-economic-based ideas for a better quality of life through philosophies like the sufficiency economy [9].

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Article

Enhancing Organizational Resilience through Mindful Organizing

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Abstract: Organizational resilience and mindfulness are inextricably connected and have specific characteristics related to responding to challenging events. This mixed-method research study aimed to explore the relationship between mindful organizing and organizational resilience. A qualitative critical incident analysis was conducted with executives to explore insights into mindfulness and resilience at the organizational level. Using the analysis of a moment structures (AMOS) program, the structural equation modeling method was employed to assess the relationships between mindfulness, mindful organizing, and organizational resilience. A total of 639 usable cross-sectional questionnaires from diverse organizations in Thailand were used for data analysis. The findings of the current study reveal that mindful organizing has a positive influence on organizational resilience. This paper discusses the implications and limitations of these findings, along with suggestions for future research.

1. Introduction

Organizations inevitably confront unexpected events under greater pressure than they have experienced in the past. Rapidly evolving external and internal environmental factors impact organizations' survival and continuality: for example, the COVID-19 pandemic has directly and significantly impacted a large number of organizations. During the pandemic, many businesses closed temporarily or permanently, with the resulting job losses significantly impacting the economy. Inadequate preparation and a flawed recovery plan are reasons many organizations face crises and go out of business [1].

Organizations must, therefore, respond quickly and develop the capacity to be resilient, which enables them to be prepared for unexpected events and recuperate from crises. Organizational resilience refers to organizations' ability to respond, recover, and develop beyond their competitors [2]. For business sustainability, resilient organizations can respond, recover, and grow in the case of disruptions. Kantabutra suggests that developing a perseverance culture and practicing resilience within an organization enhances corporate sustainability [3]. Moreover, business sustainability contributes to organizational resilience [4]. Organizational resilience and corporate sustainability are critical capabilities for business continuity management [5]. However, organizational resilience remains a 'black box', where both the input and output are observable, but the process between them is unknown [6]. It is vital to identify the attributes and activities which support an organization in enhancing its resilience in a world where change happens rapidly.

Mindfulness, an attribute of consciousness, has attracted the attention of many businesses and has become an essential factor in environmental change and associated sustainability research [7]. Hyland et al. suggest that mindfulness may help employees to cope with organizational change as it relates to workplace achievement and success. Mindfulness positively impacts workplace outcomes, including resilience; creativity; productivity; work

engagement; and reduced conflict, absenteeism, and turnover [8]. Many business scholars have demonstrated the importance of mindfulness in recovery, and both resilience and mindfulness have similar characteristics in responding to challenging occurrences. Mindful organizing is the collective capacity of members in an organization to attend to and act on errors and unexpected circumstances [9].

However, fewer studies have emphasized the association between mindfulness and organizational resilience [10]. The integration of mindful organizing and organizational resilience posits a better understanding of how organizations recover and develop following unanticipated events. Therefore, this study aims to explore the correlation between mindfulness and organizational resilience and whether the impact of mindfulness at the individual and/or organizational level can enhance organizational resilience. It contributes to the theories of organizational resilience and high-reliability organizations (HROs), which relate to mindful organizing. The results indicate how organizations develop their ability to maintain function and structure in the face of adversity through the core elements of mindfulness and the critical factors of organizational resilience.

In the next section, we define mindfulness, mindful organizing, and organizational resilience. We further review the literature on how individual mindfulness promotes mindful organizing and explore the possibility that greater mindful organizing is beneficial to organizational resilience. Based on this review, we note the potential for enhancing organizational resilience through mindfulness. Following this, we explain the theoretical framework, conceptual model, and methodology hypothesis and discuss the results and the need for additional research on these topics.

2. Literature Review

2.1. Mindfulness

Recently, mindfulness research has received considerable attention and growth in many fields from both a theoretical and practical perspective. Sutcliffe et al. identify two focuses of mindfulness: individual and organizational [11]. The term 'mindfulness' typically refers to individual mindfulness. In the Eastern concept, mindfulness originates from the Pali word sati, which indicates the presence of the mind and refers to awareness, attention, and remembering in the form of consciousness [12]. Mindfulness is considered to be conscious awareness through nonjudgmentally paying attention in the present moment [8,13,14].

There is another Western perspective of mindfulness. Langer argues that mindfulness is different from mindless behavior; mindfulness is a state of being present and wakeful, which leads to greater sensitivity to the environment, more openness to new information, the creation of new categories for perception, and enhanced awareness of perspective in problem-solving [15,16]. Based on Langer's Western concept of mindfulness, the idea of high-reliability organizing is developed, which leads to the concept of mindful organizing as infrastructure in the theory of HROs in this study [17].

2.2. Theory of High-Reliability Organizations

The concept of HROs originated from a team of researchers at the University of California, Berkeley, in 1984, who argued that error-free performance is created by an active search for reliability [18]. They noted that three organizations (i.e., the US Air Traffic Control system; Diablo Canyon, an electric company that operates a nuclear power station and an electricity distribution system; and the US Navy nuclear aircraft carrier operations) operate effectively in complex technical environments where their errors could have destructive effects. HROs are organizations that operate in complex, highly risky areas and potentially must cope with catastrophic consequences when failures occur. Weick and Roberts suggest that HROs have accomplished collective mental processes, including information processes, heedful action, and mindful attention. They propose the concept of a collective mind and argue that increased attentiveness and mindful comprehension decrease the likelihood of errors in an organization [19]. Weick et al. created a mindfulness infrastructure at the level

of collective or organizational mindfulness. The theory of HROs points to mindfulness as the infrastructure of HROs. High-reliability organizations attempt to be error-free under complex and high-risk systems. They argue that the success of HROs lies in handling unexpected events by acting mindfully; that is, organizations are better able to notice unpredictable events, develop, focus on containing and resilience, and quickly recover from system functioning [9,20,21]. Figure 1 presents the five key characteristics of HROs.
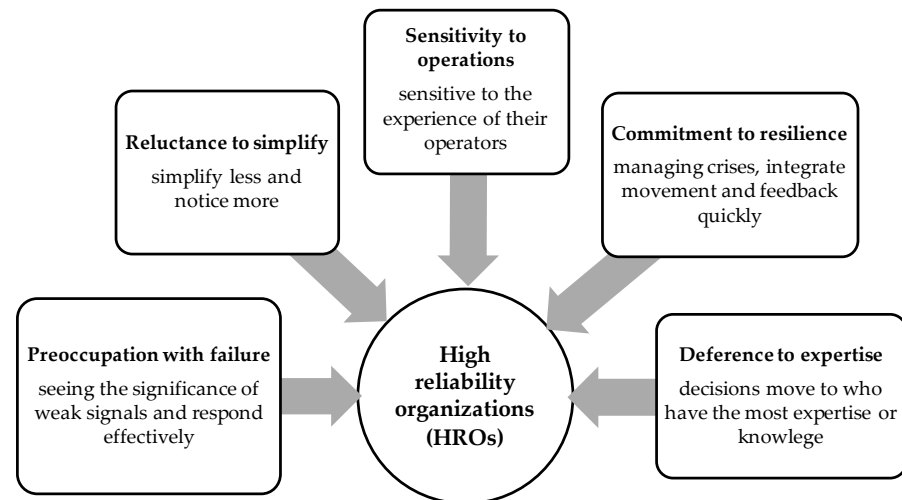
Figure 1. Five characteristics of high-reliability organizations, adapted from Weick and Sutcliffe, 2001 [21].

The theory of HROs is connected to mindfulness and resilience. This study collects empirical evidence on mindfulness, as it is a key element of organizational resilience in both high-reliability and general organizations, which has yet to be examined.

2.3. Mindful Organizing

Mindful organizing is the collective capacity of members to pay attention to context and act on errors and unexpected circumstances. Attention to context and acting on errors is generated through the five key characteristics of HROs (i.e., preoccupation with failure, reluctance to simplify, sensitivity to operations, commitment to resilience, and deference to expertise) [9]. In the theory of HROs, mindful organizing is the infrastructure that supports HROs' exceptional performance [22]. Mindful organizing is not an internal process in the minds of individuals but rather a set of social and organizational processes that focus on organization members' dependence on continuous real-time communications and interactions, leading to corrective action [23]. The five characteristics of HROs are conceptualized as predictors of mindful organizing. Additionally, mindful organizing is significantly related to environmental and resource sustainability [24].

2.4. Organizational Resilience

Resilience is typically acknowledged as the ability to recover and thrive in the face of adversity. At the organizational level, organizational studies have discussed and increasingly focused on resilience as a concept of survival, which requires organizations to be adaptable and flexible to respond to uncertain environments [25]. Resilience refers to the characteristics of organizations that handle challenging situations by responding and recovering rapidly or developing more than others [2]. Organizational resilience is an organization's ability to recover from the impact of change. It is viewed as an organization's qualities that enable it to cope with, adapt to, and recover from an unexpected event [9,26,27].

Factors and elements that enhance organizational resilience have been presented in previous studies in many ways, and the factors that foster organizational resilience are not apparent. Most studies have employed a case study or grounded theory rather than

an empirical study. McManus conducted a qualitative study and semi-structured interviews to explore organizational resilience and suggested three factors of organizational resilience: situational awareness, the management of keystone vulnerabilities, and adaptive capacity [28,29]. This study applies the factors in the work of McManus as fundamental to organizational resilience. McManus's concept merges the cognitive processes with mindfulness and the organizational capacity to adapt, which is consistent with the theoretical framework of this study.

3. Theoretical Framework, Research Model, and Hypotheses

3.1. Theoretical Framework

This study employs Langer's concept to define mindfulness (i.e., novelty seeking, novelty producing, flexibility, and engagement). The theoretical foundation for this study is HROs and mindful organizing (i.e., preoccupation with failure, reluctance to simplify, sensitivity to operations, commitment to resilience, and deference to expertise), which comprise the core infrastructure of HROs [9]. Mindful activity is a dynamic process that dictates behavior in group settings. As applied to this study, mindful organizing is expected to predict organization-level resilience. The relative overall resilience (ROR) model employed by this study comprises three factors: (1) situational awareness, (2) the management of keystone vulnerabilities, and (3) adaptive capacity [28]. Figure 2 presents the theoretical framework that demonstrates the theories relevant to this study.
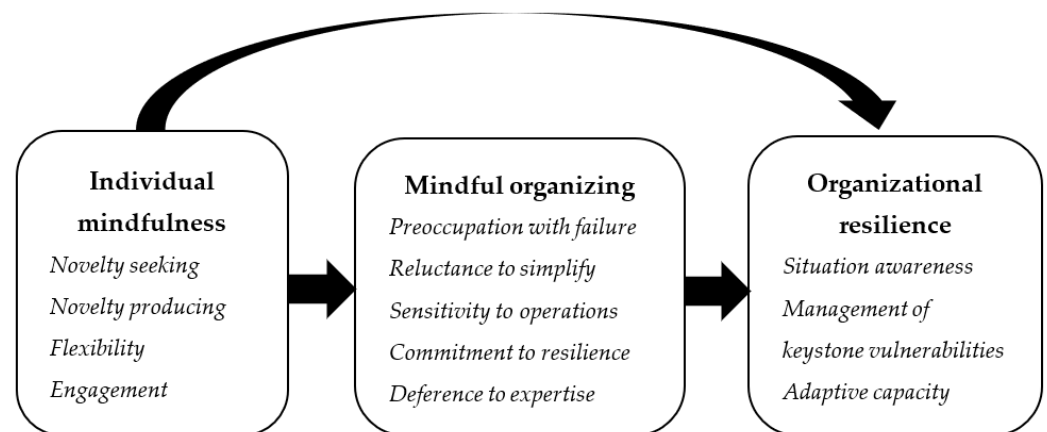
Figure 2. Theoretical framework.

3.2. Research Model and Hypotheses

This study investigated the organizational resilience capability, which relates to mindfulness at the individual and organizational levels. We posited that the individual mindfulness of members leads to the collective capability of members (i.e., mindful organizing), which enhances organizational resilience. The relevant theories and the theoretical framework (see Figure 2) led to the research hypotheses in this study.

Mindful organizing was developed in individual mindfulness as a foundation. It is a social process that becomes a collective capability through interactions among individuals [15,22]. Individual and mindful organizing share an emphasis on increased attention to the present moment situation and acting on what they notice [9,23,30]. This study attempts to confirm the link between individual mindfulness and mindful organizing theoretically. The first hypothesis is as follows:

Hypothesis 1 (H1). *Individual mindfulness has a positive effect on mindful organizing.*

Mindful organizing is the quality of attention at the level of the collective organization, which relates to what people decide to do with what they notice when facing unexpected events [9]. At the organizational level, five characteristics of HROs were identified as the

necessary elements of organizational resilience [31,32]. Oliver et al. define organizational mindfulness as a quality of an organization that reliably and effectively operates in the face of challenging conditions, and they find a significant positive correlation between mindfulness, resilience, and performance [33]. This study explored the relationship between mindful organizing and organizational resilience to contribute to the theory of HROs. The next hypothesis is as follows:

Hypothesis 2 (H2). *Mindful organizing has a positive effect on organizational resilience.*

There is no empirical evidence of the relationship between individual mindfulness and organizational resilience. However, certain arguments exist regarding the positive impact of mindfulness on organizational change, sustainability, outcomes, performance, leaders' decision-making, and success [7,22–24]. The third hypothesis is as follows:

Hypothesis 3 (H3). *Individual mindfulness has a positive effect on organizational resilience.*

Most studies on mindfulness at the collective organizational level have been qualitative [11]. Hence, no evidence indicates mindful organizing as a mediator of constructs. There is a need for more research on mindful organizing at work, especially using quantitative methods. This study is the first attempt to explore the relationship between individual mindfulness and organizational resilience by using mindful organizing as a mediator. The fourth hypothesis is as follows:

Hypothesis 4 (H4). *Mindful organizing significantly mediates the relationship between individual mindfulness and organizational resilience.*

Figure 3 shows a path diagram for the causal relationships between the three constructs in enhancing organizational resilience: individual mindfulness ($\xi 1$), mindful organizing ($\eta 1$), and organizational resilience ($\eta 2$). Mindful organizing and organizational resilience are endogenous latent variables, while individual mindfulness is an exogenous latent variable. The SEM for this mediation model is given by:

$$\eta 1 = \beta_{\xi 1 \eta 1} \xi 1 + \zeta_{\eta 1}$$

$$\eta 2 = \beta_{\eta 1 \eta 2} \eta 1 + \beta_{\xi 1 \eta 2} \xi 1 + \zeta_{\eta 2}$$
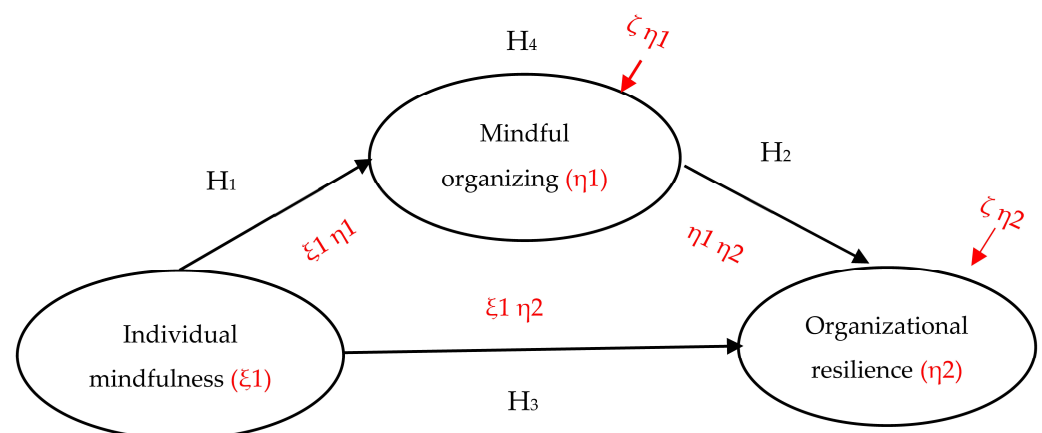
Figure 3. Research model and hypotheses.

4. Research Methodology

This study used an exploratory mixed method which involved two data collection and analysis phases. First, qualitative data collection and analysis were employed using the critical incident technique (CIT) to explore the correlations between constructs, individual

mindfulness, mindful organizing, and organizational resilience. Second, the quantitative data collection and analysis explored the measurement and analysis of causal relationships between these constructs.

4.1. Qualitative Study

In the first phase, the CIT was selected to confirm the theoretical framework of this study. The CIT is a widely used qualitative method and an effective exploratory and investigative tool. It is a set of procedures for gathering and analyzing reports of incidents and important facts concerning behavior in a defined situation, as well as a well-established qualitative research methodology for exploring significant experiences to understand problem-solving behavior better [34].

4.1.1. Participants and Procedures

The participants were purposively selected via the criterion-based selection method and interviewed using the CIT. The 10 participants included high-level executives who worked for organizations based in Thailand, including hospitals, the investigation division of the Royal Thai Police, and the liquid petroleum gas terminal, while general organizations included manufacturing, wholesale, retailing, service, media, and educational institutions. Data were collected via in-depth and semi-structured interviews, which were approximately two hours in length. Each participant was given a definition of the critical organizational incident. The participants were asked to recall the most critical incident of the organization that they could clearly remember and to share the cause, procedure, and summary of the event. If the essential factors of individual mindfulness and mindful organizing, which enhance organizational resilience, were not mentioned in the interviews, additional questions sought to access the constructs in this study, such as 'How do you adapt to novel changes during an unexpected event?'; 'Did you or your staff notice unusual signals before the event? How?'.

4.1.2. Data Analysis

All interviews and discussions using the CIT were recorded and transcribed to be interpreted for meaning. Transcriptions were completed word-for-word using audio or video recordings and included non-verbal expressions. Data were analyzed using thematic analysis, a flexible method for identifying, analyzing, and reporting themes, providing a rich and detailed description of these data [35]. This study employed a deductive approach to thematic analysis based on the theory of mindfulness, mindful organizing, and organizational resilience. The deductive approach allowed for a focus on specific aspects of these data to achieve the study objectives. After coding, we found associations between constructs in the interviews as follows:

> 'We faced a severe crisis. If we could not sell to this big customer, our company would have closed. I tried to find the solution, negotiate and compromise with the customer.' (This represents individual mindfulness—novelty seeking.) 'If we don't solve a problem, ignoring it and waiting hopefully will cause significant damage.' (This represents mindful organizing—preoccupation with failure.) The managing director of the manufacturing company described what he did when faced with a significant crisis: 'We learn the strong and weak points of staff and train them as appropriate.' (This represents organizational resilience—situational awareness.) He also presented the company's situational awareness of roles and responsibilities. He stated that he had knowledge of the roles and responsibilities of the staff in his organization.
>
> 'When we work, police must use judgment, knowledge, and capability, and they should notice things that are not normal.' (This represents individual mindfulness—engagement.) The deputy commissioner, an executive of the Royal Thai Police, described their engagement as noticing more details about specific elements of the environment: 'When we were assigned an important task, we

set up the war room that included the staff who were proficient in that work. Their comments would be considered as valuable information for planning and decisions.' (This represents mindful organizing—deference to expertise.) He discussed emphasizing the expert in the organization: 'We must evaluate the situation in the worst case . . . Police are always ready for incidents; we are trained and always practice for unexpected situations.' (This represents organizational resilience—the management of keystone vulnerabilities.) He also spoke of participation in the police team's emergency management exercises.

'Our company was downsizing with employee layoffs and a bankruptcy process. We were forced to reduce costs. However, we used the remaining resources for creating a website, which we were the first in the printing media business, although, in that period, the internet was not ready and was difficult to use. Other media businesses did not create websites because they feared that revenue from selling magazines would be decreased.' (This represents individual mindfulness—novelty producing.) The executive editor of a media company described their solution when the organization went bankrupt from the impact of the economic crisis in 1997: 'Our company went bankrupt more than 10 years ago, and half of the staff were laid off. At the time, our income changed from paper to online. We do not think that it will recover. Now, staff returns to work with the same amount as lay off.' (This represents mindful organizing—a commitment to resilience.) He discussed mindful organizing and organizational resilience when faced with a crisis.

In Phase I, we found correlations between individual mindfulness, mindful organizing, and organizational resilience. To achieve all the research objectives, this study also employed quantitative methods in Phase II, including methodological triangulation or using more than one method to gather data, which increased the validity of the research results.

4.2. Quantitative Study

In this phase, we employed Structural Equation Modeling (SEM) to analyze a measurement model and structural model. It is a combination of confirmatory factor analysis and multiple regression. There are two parts of SEM in this study, including a measurement model and a structural model. The measurement model or confirmatory factor analysis (CFA) was used to test the reliability of the observed variables for those latent constructs in the hypothesized model. The structural model was based on estimating the relationship between the hypothesized latent constructs [36].

4.2.1. Sample and Procedures

The sample consisted of 685 individuals, including executives, managers, and employees from 10 organizations in Thailand. The respondents who experienced an organizational crisis were administered the survey developed for this study. The data collection period in this study was from June to December 2021. The researcher collected 670 questionnaires. After the data collection process, data cleaning was conducted to ensure that the data were correct, consistent, and usable. Thirty-one samples were removed, as questionnaires were incomplete, incorrect, or outlier cases. A total of 639 usable questionnaires were prepared for analysis in this study. The SPSS program was employed to check data according to the main assumptions of multiple regression analysis: linearity, normality, and homoscedasticity. A correlation matrix was checked to confirm that the Pearson correlations for all the variables made sense. The study participants were from three investigation divisions of the Royal Thai police (309), manufacturing (151), service (52), universities (41), hospitals (30), retailers (21), private schools (20), and gas terminal stations (15).

4.2.2. Measures

The questionnaire consisted of three parts; each is described below.

Individual mindfulness was measured by the Langer Mindfulness Scale (LMS14). The original scale consisted of 21 items and four subscales: novelty producing, novelty seeking, flexibility, and engagement [37]. However, the researchers argued that certain scale items were not reliable and that the original four-factor model was indicative of a poor fit. Pirson and his colleagues developed a new model (i.e., LMS14), which consisted of 14 items and three subscales (i.e., by removing the flexibility subscale) [38,39]. The widely used scale is a reliable and valid measure of mindfulness that has been translated into many languages. All translated versions showed high internal consistency (i.e., Cronbach's alpha of 0.76 for the Persian version, 0.82 for the German, 0.83 for the Italian, and 0.78 for the Malaysian). The items were measured on a seven-point Likert scale ranging from 1 = disagree to 7 = strongly disagree, and certain reverse-coded items with higher scores indicated higher mindfulness.

Mindful organizing was measured using the Mindfulness Organizing Scale (MOS). Weick and Sutcliffe analyzed the mindful characteristics of HROs using the five principles to develop a 48-item questionnaire, which is a shorter form of the nine-item MOS questionnaire. They were found to have high internal reliability and to reflect theoretically derived and empirically observed content domains. Cronbach's alpha, which supported the reliability of the scale, was 0.88. Convergent validity was tested using a confirmatory factor analysis (CFA) and demonstrated an excellent fit across all fit indices (CFI = 0.964, incremental fit index = 0.964), and the discriminant validity of theoretically related constructs was approved. All nine survey items were measured using a five-point Likert scale from 1 = not at all to 5 = extremely in order to indicate the character of an organization.

Organizational resilience was measured by the BRT-13b, which is a short form of the benchmark resilience tool (BRT53). The BRT53 is a 53-item questionnaire developed by McManus (2008). A factor analysis was applied to the instruments, and CA for this scale was 0.95. However, using the BRT-53 for the survey revealed the scale's practical limitations, as the combined questionnaire was too long. Whitman et al. developed a short version of the BRT-53 to decrease survey time and improve response rates without significant losses in validity or reliability [40]. The BRT-13b was highly correlated to the BRT-53 overall resilience score, with all r-values exceeding 0.9 and showing significance. The reliability of the BRT-13b was assessed using CA at 0.85, which approved this scale. This measure consists of 13 items and two subscales (i.e., five for planning and eight for adaptive capacity), using a five-point Likert scale, from 1 = strongly disagree to 5 = strongly agree.

5. Results

5.1. Factor Analysis

All the constructs were subjected to purification using exploratory and confirmatory factor analysis. First, SPSS was used to check whether the measures were above the minimum standard for conducting a factor analysis by the Kaiser–Meyer–Olkin (KMO) test and Bartlett's test of sphericity. Second, an exploratory factor analysis (EFA) of all scale items was considered, and high factor loadings of each instrument were selected. Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) were then examined. Subsequently, confirmatory factor analysis (CFA) was employed to assess the validity of the measures before entering the data to explore the correlation of constructs in the structural equation model.

Individual mindfulness. The factor analysis of the LMS14 extracted two components (i.e., novelty producing and seeking and engagement). The assessment of convergent validity was examined based on factor loadings, CR, and AVE. Four novelty-producing and seeking items (i.e., NP2, NP3, NS2, and NS3) and two engagement items (i.e., E1 and E3) were selected for high factor-loading indicators and consistency. The factor analysis of the six items showed that they explained 71.57%. According to Cronbach's alpha, the total reliability was 0.768. Using CFA showed a good fit, where X^2 (8, n = 639) = 38.824.

X^2/df = 4.853, TLI = 0.956, CFI = 0.977, RMSEA = 0.078, and SRMR = 0.039. The AVE was used to assess the convergent validity, which at 0.586 was > 0.5. The CR was 0.892, which exceeded the recommended value of 0.7.

Mindful organizing. Four items (MO3, MO4, MO5, and MO9) from the MOS were selected, and they showed 66.82%. Cronbach's alpha was 0.833, which confirmed the total reliability. Using CFA showed a good fit, where X^2 (2, n = 639) = 3.933. X^2/df = 1.966, TLI = 0.994, CFI = 0.998, RMSEA = 0.039, and SRMR = 0.007. The AVE was 0.561, and the CR was 0.835.

Organizational resilience. The factor analysis of the BRT-13b extracted two components (i.e., planning and adaptive capacity). Three planning items (i.e., OR1, OR3, and OR5) and two adaptive capacity items (i.e., OR10 and OR13) were selected for high factor-loading indicators and consistency. The factor analysis of the five items conveyed that they explained 75.40%. The total reliability, according to Cronbach's alpha, was 0.808. Using CFA showed a good fit, where X^2 (4, n = 639) = 10.788. X^2/df = 2.697, TLI = 0.985, CFI = 0.994, RMSEA = 0.052, and SRMR = 0.008. The AVE was 0.597, and the CR was 0.880.

5.2. Structural Model and Hypotheses Testing Results

Structural equation modeling was employed to test the hypotheses for this study using AMOS 26 software with maximum-likelihood estimation. Overall, the combination of the independent variables explained 69.7% of the variance in organizational resilience. This study shows that the X^2 (83, n = 639) = 240.913. The ratio of relative chi-square (2.903) was valid. As Marsh and Hocevar suggested, this ratio should be 2.00–5.00 [41]. The RMSEA of the model in this study was 0.055; researchers have suggested that an RMSEA value less than 0.05 indicates a good fit and that values between 0.05–0.08 indicate a fair fit [42,43]. The SRMR was 0.036, and a value less than 0.08 presented a well-fitting model, whereas the NNFI (TLI) was 0.949, which is above 0.90 [43,44]. The CFI of this study was 0.959; Hu and Bentler suggested that a value of CFI $\geq$ 0.95 is indicative of a good fit [45]. In conclusion, all the measurements indicated that the model had a good fit (see Table 1).

Table 1. Model fit summary.

Fit Indices	Model Value	Cut-Off Value	References
X^2/df	2.903	2.00–5.00	Marsh & Hocevar (1985) [41]
RMSEA	0.055	<0.05 good fit 0.05–0.08 fair fit 0.08–0.10 mediocre fit >0.10 poor fit	MacCullum et al. (1996) [42]; Hu & Bentler (1999) [43]
SRMR	0.036	<0.08	Hu & Bentler (1999) [43]
NNFI (TLI)	0.949	>0.90	Byrne (1994) [44]; Hu & Bentler (1999) [43]
CFI	0.959	$\geq$0.95 good fit	Hu & Bentler (1999) [43]

Hypotheses 1 and 2 were supported (see Table 2). The statistics indicate that individual mindfulness has a positive effect on mindful organizing and that mindful organizing has a positive effect on organizational resilience. However, H3 was not supported, as individual mindfulness had no significant direct effect on organizational resilience. Figure 4 presents the structural model results.

From the significant direct effects found in H1 and H2, we further examined the mediating role of mindful organizing on the relationship between individual mindfulness and organizational resilience (H4). The mediating effect refers to a situation where a third variable intervenes between two associated constructs [45]. Before the SEM process, the conditions to claim the occurrence of mediation were tested [46]. In SEM, Hair et al. suggested the following steps for testing mediation [47]. We tested the first model by estimating the direct effect between individual mindfulness and organizational resilience. The result was positive and significant (β = 0.44, *p* < 0.01). We then tested a second model

by adding mindful organizing to the first model. After adding mindful organizing to a model, the standard coefficient beta of the relationship between individual mindfulness and organizational resilience was not statistically significant and was close to zero (β = 0.08, p = 0.284). Therefore, potentially, mindful organizing fully mediates the path between individual mindfulness and organizational resilience, meaning H4 is supported.

Table 2. Hypotheses testing results.

Hypotheses	β [a]	SE [b]	CR. [c]	p [d]	Result
H1 Individual mindfulness $\rightarrow$ Mindful organizing	0.485	0.157	4.433	0.000	Support
H2 Mindful organizing $\rightarrow$ Organizational resilience	0.793	0.044	9.923	0.000	Support
H3 Individual mindfulness $\rightarrow$ Organizational resilience	0.080	0.065	1.071	0.284	No

[a] Standardized parameter, [b] standard error, [c] critical ratio, [d] significance level.
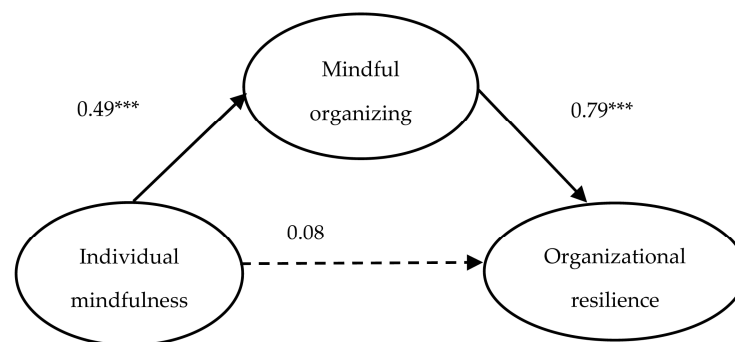
*** Significant level at *p* ≤ 0.001

Figure 4. Structural model result.

6. Discussion of the Findings

This study concentrated on the correlation between individual mindfulness, mindful organizing, and organizational resilience. Acting mindfully results in successfully managing unexpected events [20]. An exploratory mixed-method design was employed to investigate and measure the constructs in the model.

In Phase I, the qualitative study via the CIT confirmed the theoretical framework. The findings revealed that mindfulness—both leader mindfulness at the level of the individual (i.e., novelty producing, novelty seeking, and engagement) and mindful organizing at the level of the organization (i.e., preoccupation with failure, reluctance to simplify, sensitivity to operations, commitment to resilience, and deference to expertise)—acts as a key success factor of organizational resilience in times of crisis.

The findings in the quantitative study of Phase II confirmed that individual mindfulness has a positive impact on mindful organizing (H1). Previous studies have suggested a relationship between individual mindfulness and mindful organizing that focuses on five characteristics of HROs [23,30]. The concept of mindful organizing emerged from Langer's research on individual mindfulness; Langer suggested that mindfulness at the individual and organizational levels can be characterized correspondingly [15,16]. Weick and Robert suggested that when there are heedful relationships between individuals and when mindful comprehension is increased, organizational errors decrease [19]. The findings in this study presented that in a mindful state, individuals tend to be focused, maintain attention to a particular object, and remain more open to viewing the problem from a new perspective. When organizations face unexpected events, mindful individuals are better able to notice small failures, not simplify habitually, be sensitive to operations, focus on resilience, and shift locations of expertise.

Previous studies have presented the relationship between mindful organizing and organizational resilience. Shela et al. presented the vital role of collective mindfulness

or mindful organizing as capable of enhancing organizational resilience [48]. Wang et al. suggested that mindful organizing impacts organizational resilience processes in two megaprojects [31]. However, most studies emphasize qualitative methods, but there is limited empirical evidence to prove this relationship. Mindful organizing is capable of detecting and correcting failures and unexpected circumstances [9]. Commitment to resilience is one of the characteristics of mindful organizing in HROs, which develops the ability to recover from inevitable errors and maintain the functioning of the system. This study found that mindful organizing has a positive impact on organizational resilience (H2).

Although individual mindfulness has no significant direct effect on organizational resilience (H3), the current paper tested the mediating effect of mindful organizing on the relationship between individual mindfulness and organizational resilience. The findings suggested that mindful organizing partially mediates the effect of individual mindfulness on organizational resilience (H4).

It is concluded that individual mindfulness has no direct effect on organizational resilience, but individual mindfulness leads to increased mindful organizing, which in turn, leads to organizational resilience. Therefore, organizational resilience can be enhanced through mindful organizing.

7. Contributions of the Study

This study provides insight into how executives handle and recover from unexpected circumstances. Mindfulness as a predictive factor of organizational resilience will be useful for developing new knowledge of organizational resilience in the future. The theoretical, empirical, and practical contributions of the present study are as follows:

7.1. Theoretical Contributions

This study contributes to the theory of organizational resilience. The results indicate how organizations and individuals develop their capabilities to maintain function and structure in the face of adversity. This study is the first attempt to explore the role of mindfulness in enhancing organizational resilience through the core elements of individual mindfulness and mindful organizing. We found a direct effect of mindful organizing on organizational resilience. Moreover, the role of mindful organizing as a mediator has not previously been addressed. According to the findings of this study, mindful organizing mediates the relationship between individual mindfulness and organizational resilience.

7.2. Practical Contributions

The study has practical implications for research on managerial relevance. It contributes information regarding how individual mindfulness influences mindful organizing and enhances organizational resilience. The results of this study could enable entrepreneurs and management teams to understand the process of organizational resilience, improve organizational resilience through mindfulness, and, thus, enhance the sustainability of a business.

To be successful in enhancing mindfulness in an organization, the management team should (1) set mindfulness infrastructure as a core value and policy of the organization and communicate this value to all levels of employees as organizational culture; (2) design a mindfulness development system which links to work efficiency; (3) arrange an organizational environment, physical space, and work design which supports mindfulness development at the individual, team, and organizational levels; and (4) develop a mindfulness process in an organization which links individual mindfulness, team mindfulness, and mindful organizing. Such intervention may improve organizational resilience via mindfulness and other factors, which leads to the ability to prepare for, cope with, and recover from adverse situations and to continue to develop when handling adversity or crises. The management team who understands and applies this process in the organization can improve organizational resilience for the sustainability of the business.

8. Limitations and Future Research Directions

This research has limitations that must be noted. Firstly, this study examined mindfulness and organizational resilience in organizations exclusively in Thailand. The results may be limited if generalized to other countries. People of diverse cultures view the world through different cultural lenses. Thailand is an Eastern Buddhist country whose mindfulness perspective is different from that in modern Western contexts. Second, mindfulness may not be stable but rather changeable over time (i.e., changing through experience when faced with a crisis). This study employed a cross-sectional survey that examined the relationship between mindfulness and resilience in different population groups at a single point in time. However, it does not consider changes in mindfulness and resilience levels over a period of time.

In the present work, mindfulness and resilience research exhibits a growing body of qualitative and quantitative studies, but more work must be performed to expand its reach to organizational behavior. To learn more about organizational environments that enhance mindfulness and resilience, future research should consider organizational culture and structural or leader characteristics associated with higher levels of mindfulness and organizational resilience. Moreover, future research could explore appropriate training and activities to develop suitable mindfulness and resilience courses for diverse organizations in order to understand the impact of mindfulness on resilience better and to address how collective mindfulness shapes organizational resilience over time. Longitudinal studies extend beyond a single moment in time and maybe a fruitful area for further research. They are worth exploring to understand mindfulness and resilience to maximize their benefits for organizations in the future.

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Review

Integrative Review of Absorptive Capacity's Role in Fostering Organizational Resilience and Research Agenda

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Abstract: Organizational resilience (OR) has been studied as an important construct for maintaining an organization's sustainability in today's dynamic business world. However, the exact way to systematically achieve OR in real organizational settings is still unknown. In this paper, the scholars elucidate how OR can be fostered by developing knowledge absorptive capacity based on the knowledge-based view and dynamic capability theory. The paper highlights the significance of knowledge resources for a firm's survival nowadays and provides conceptual clarity of how a firm's ACAP could reinforce fostering OR. Thereby, this review fills the knowledge gaps of previous studies. Based on the review corpus, scholars also address other prominent antecedents for nurturing OR, such as leadership styles, dynamic capabilities, organizational learning, unlearning, networks, and social capital. Lastly, a conceptual model was developed for future organizational studies. In addition to the aforementioned contributions, the study's novelty also lies in the review method, which is systematically conducted in an integrated manner by combining a bibliometric analysis and a scoping review. Furthermore, the study analyzes a more expansive database that includes 823 documents and covers documents published more recently, from 1992 to 2021.

Keywords: organizational resilience; resilience; absorptive capacity; corporate sustainability

1. Introduction

In today's ever-changing business world, challenges and threats derived from uncertainties come without any prior notice. In addition, the world's economy has shifted to a knowledge economy saturated with knowledge-intensive businesses and occasional technological disruptions [1]. In this regard, proper knowledge management and knowledge resources are deemed to be crucial for an organization's sustainability nowadays. Unlike in the past, the intensity and range of threats materializing today are more severe and extensive [2]. Thus, it becomes more competitive and challenging to keep organizations sustainable. For instance, threats that have arisen in recent years include cyber security violations [3], terrorist attacks [4], natural disasters due to climate change [5], global economic crises [6], and unexpected catastrophes [7]. Consequently, organizations are continuously seeking effective ways of surviving and thriving in this dynamic, turbulent environment [8]. One solution that addresses this challenge is to enhance the organization's resilience [9]. But how can an organization achieve organizational resilience?

Although many scholars have studied OR, the exact way to systematically achieve OR in real organizational settings is still unknown [10]. In fact, numerous studies have highlighted the roles that knowledge management and dynamic capabilities could play in building resilient organizations [11,12]. This literature has identified the absorptive capacity concept, a knowledge-based dynamic capability, as a relevant factor to consider for nurturing organizational resilience. However, several scholars have proposed that the concepts of absorptive capacity (ACAP) and organizational resilience (OR) are similar, and their

relationship needs to be addressed more explicitly in the literature [13,14]. Nevertheless, no study we have reviewed so far provides an explication of these two constructs jointly. Therefore, using an integrative review method, this review contributes to the literature by providing a conceptual clarity of how a firm's ACAP could reinforce fostering OR along with other prominent antecedents, such as leadership styles, dynamic capabilities, organizational learning, unlearning, networks, and social capital.

Zahra and George [15] explained that ACAP refers to a firm's ability to acquire, assimilate, transform, and exploit new external knowledge to achieve competitive advantages and superior performances. Lengnick-Hall, Beck, and Lengnick-Hall [16] defined OR as the ability "to effectively absorb, develop situation-specific responses to and ultimately engage in transformative activities to capitalize on disruptive surprises" (p. 244). Based on these two definitions, Hillmann and Guenther [13] conclude that ACAP seems to be a protective factor that mitigates adversity and is evidently linked to OR. In addition, ACAP has been widely considered a prominent concept for firms' long-term survival and competitiveness under the knowledge-based view [17] and dynamic capability theory [18]. Empirical studies further conclude that ACAP also encourages innovation within firms [19–21], which is evidently essential for making organizations resilient in dynamic environments [22–24]. Thus, understanding the significance of the ACAP and OR relationship would benefit both organizations and academic literature.

Over the past decade, several research reviews have sought to conceptualize and analyze the literature on OR. For example, Hillmann and Guenther [13] analyzed 176 documents from Business Source Complete (EBSCO) and ISI Web of Knowledge's Social Sciences Citation Index (SSCI). The scholars reviewed previous OR conceptualizations and provided a more parsimonious definition with a conceptual model. They defined OR as "the ability of an organization to maintain functions and recover fast from adversity by mobilizing and accessing the resources" [13] (p. 31). They also highlighted a firm's resilient behavior, resources, and capabilities as the main factors determining OR in the conceptual model.

Williams et al. [2] developed a framework for OR by integrating crisis management and resilience literature in their review. The review was conducted by analyzing 384 articles from mainstream management and crisis management journals and manually exploring high-impact articles that may have fallen outside the initial search. The scholars suggested a more expansive configuration for OR pertaining to resource endowments, organizing practices, and postcrisis responses. Additionally, they suggested a resilience feedback loop in their review.

In the review by Linnenluecke [25], influential publications and five schools of thought in resilience research, (1) organizational responses to external threats, (2) design principles that reduce supply chain disruptions as well as vulnerabilities, (3) the adaptability of business models, (4) organizational reliability, and (5) employee strengths, were identified. The scholars analyzed 339 papers published from 1977 to 2014 in business and management journals by using Histcite-analysis. The review focused on the resilience concept evolution in business and management literature over time.

Unlike the previous reviews, this review focuses on identifying OR antecedents, mainly focusing on the role played by the ACAP, as found in dynamic capability and knowledge management literature. This review analyzes a more expansive database that includes 823 documents and covers documents published more recently, from 1992 to 2021. In addition, an OR conceptual model is developed for future research studies. The novelty of the current review also lies in the review method, which is systematically conducted in an integrated manner by combining a bibliometric analysis [26] and a scoping review [27]. Considering previously addressed knowledge gaps, the author has framed three research questions.

(1)   What is the intellectual structure of OR research in business and management literature?
(2)   What are the key theoretical as well as empirical findings in OR research, and what do empirical studies suggest about how ACAP contributes to OR?
(3)   What is the conceptual relationship between ACAP and OR?

The scholar utilizes 823 documents from the Scopus database to conduct a bibliometric analysis and identifies five schools of thought, (1) organizational resilience under resource-based view and strategic management perspectives, (2) organizational resilience in disaster management, (3) resilience under organizational behavior perspectives, (4) resilience management in social-ecological systems, and (5) resilience engineering and system safety. Following the bibliometric analysis, a scoping review with 62 relevant documents from the review database is conducted to understand the landscape of OR in relation to ACAP. By clarifying the conceptual relationship of these two constructs, this review will contribute to both theory development as well as research and practice. Theory development and research will be advanced by identifying a more refined conceptual model which can be used for future OR studies. The review also has the potential for contributing to practice by highlighting knowledge-based capability that can enhance OR through building ACAP.

The remainder of this paper is organized into three main parts. The review method is discussed in the next section. After delineating the review methods employed in this paper, the results and findings of the study are reported in the following section. Lastly, inferences from findings and conceptual model development are conferred in the discussion section.

2. Method of Review

The author employed the integrative review method in the current study since this review method allows for the inclusion of diverse research methodologies, such as experimental and non-experimental research, to provide a more clear understanding of a specific phenomenon [28]. The current integrative review consists of two methods. First, bibliometric analysis was conducted to identify the intellectual structure of OR research in business and management literature. Second, a scoping review of OR was carried out by focusing on the selected school of thought which could explain the relationship between ACAP and OR. This section will outline the research methods employed in the present review.

2.1. Bibliometric Analysis

The scholar employed bibliometric analysis using VOSviewer software (version 1.6.17) to answer the first research question, which is to identify the main research streams in OR research. Bibliometric analysis is a quantitative approach that utilizes publication data (such as sources, authors, citations, and keywords) to provide the trends and highlights in the knowledge base of a specific field. Zupic and Čater [26] explain that bibliometric review provides a non-biased, empirically-grounded approach that analyzes a body of knowledge in a systematic, transparent, and reproducible manner. Similarly, bibliometric analysis benefits researchers in constructing their theoretical backgrounds, such as the systematization of particular information (i.e., articles, journals, researchers, institutions, and countries), understanding of a specific field as well as the networks formed in the subject, therefore, it is deemed to be a reliable method for various research areas [29–31].

Despite the different types of bibliometric analysis methods, this review used author co-citation analysis to identify the intellectual structure of OR research in management literature. In the author co-citation analysis method, the contents of two authors are assumed to be similar or related if they are frequently cited together [26]. Thus, this analysis has been used to evaluate the relationship among authors contributing to a field of study to identify the intellectual structure in that field [32]. VOSviewer software tracks the frequency with which two authors appeared in the same reference lists of the review articles [32] for analyzing author co-citation data. The software could also provide an author co-citation map for visualizing the relatedness of authors in clusters and revealing the main research streams of OR publications in management literature.

Identification of Sources for Bibliometric Review

The Scopus online data repository was chosen for collecting the documents since it has broad coverage across different fields of study, such as management and education [33]. This review follows the Preferred Reporting Items for Systematic Reviews

and Meta-Analyses (PRISMA) flowchart [34]. The searched string, "organi*ational resilience" or "business resilience" or "management resilience" or "corporate resilience" or "enterprise resilience" or "industry resilience" or "resilient organi*ation", was used to conduct a keyword-based search for finding OR research publications in business and management literature.

The initial search yielded 1355 documents published from 1992 to 2021. After limiting the document types to English reviews and articles only, 486 documents were removed from the database. The author went through the abstracts of the remaining 869 papers to evaluate the document eligibility. Consequently, 46 documents were removed due to topical irrelevancy, and the final review corpus for bibliometric analysis included 823 documents published between 1992 and 2021.

After identifying the eligible sources from Scopus, the bibliographic data were exported to Microsoft Excel for storage and descriptive analysis. The exported data were cleaned by eliminating the alternative expressions of the same data terms using a 'thesaurus' file [35]. For example, an author's names 'barney, j.' and 'barney, j.b.' are assumed as the same author, thus, replacing 'barney, j.' with 'barney, j.b.' in the thesaurus file. The scholar further conducted author co-citation analysis with the cleaned data set in VOSveiwer software.

2.2. Scoping Review

Following the bibliometric review, a scoping review was conducted to provide a deeper understanding of OR in relation to ACAP. Grimshaw [36] defined scoping reviews as "exploratory projects that systematically map the literature available on a topic, identifying key concepts, theories, sources of evidence, and gaps in the research" (p. 34). In this study, the scoping review method was employed to map the literature and examine OR key concepts and empirical findings in relation to ACAP. The scholar scoped down the literature into 'organizational resilience under resource-based view and strategic management perspectives', which is one school of thought identified from the bibliometric analysis.

The scoping review of this paper follows the framework of Levac, Coquhoun, and O'Brien [27], which includes the research question identification, relevant data selection, data extraction, synthesizing and summarizing results, and presenting results. This review will answer two out of three research questions mentioned in the introduction.

(2) What are the key theoretical as well as empirical findings in OR research, and what do empirical studies suggest about how ACAP contributes to OR?
(3) What is the conceptual relationship between ACAP and OR?

Identification of Sources for Scoping Review

Since this review emphasizes the conceptual relationship of ACAP and OR, the scholar selected the sources for scoping review by focusing specifically on the knowledge-based view and dynamic capability theory in the chosen school of thought, 'organizational resilience under resource-based view and strategic management perspectives'. All documents identified in the bibliometric review that focused explicitly on the aforementioned scope were compiled and extracted from the review database. In addition, the relevant articles authored by scholars located in the selected school of thought were also retrieved from the reference lists of selected publications. Publications without full-paper access and irrelevant articles were eliminated. The final scoping review corpus includes 62 papers (Figure 1).
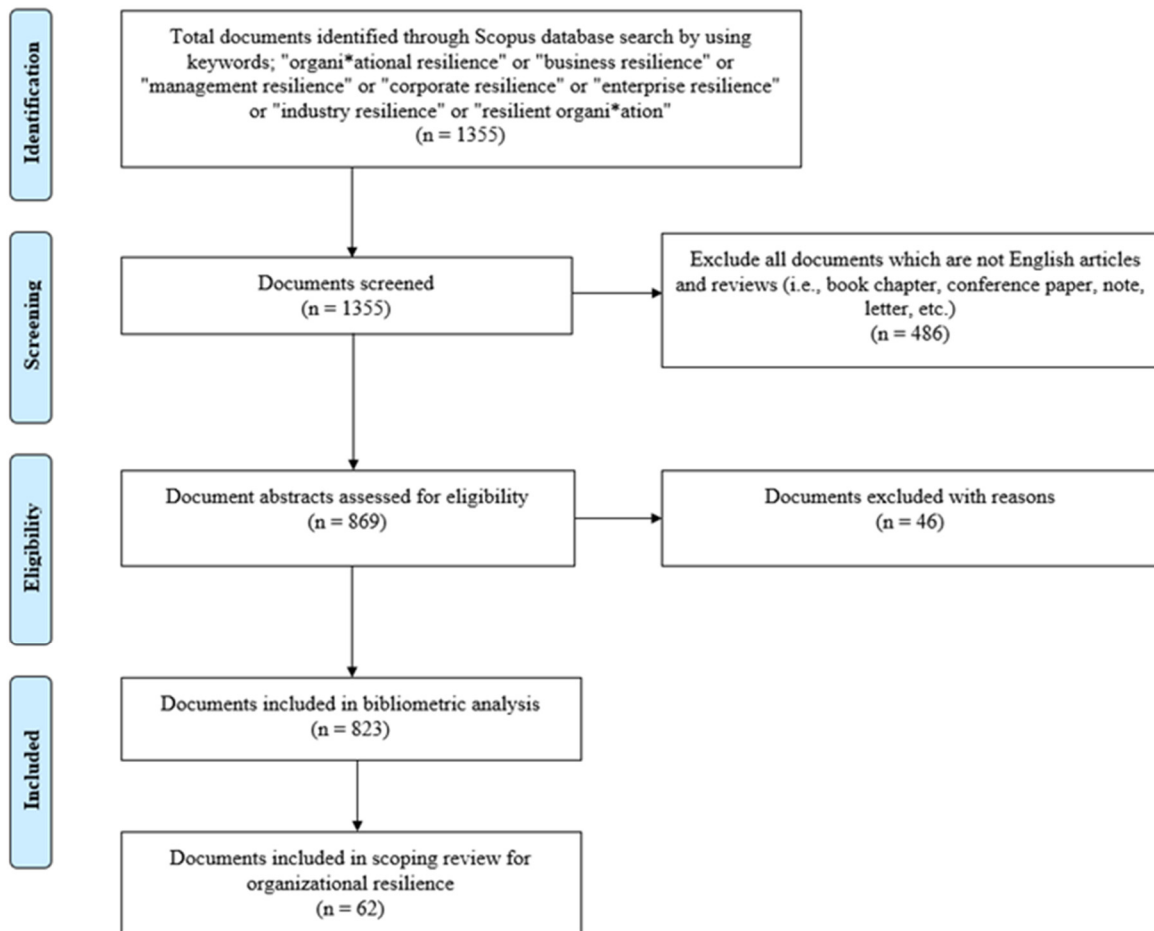
Figure 1. PRISMA flow chart for bibliometric analysis and scoping review of organizational resilience in management literature.

3. Results

This section reports the results from the current integrative review according to the research questions.

3.1. Intellectual Structure of Organizational Resilience Research

An author co-citation analysis was conducted to identify the intellectual structure of OR research in business and management literature. Through author co-citation analysis, five research streams emerged from the intellectual structure of OR research. Further, they are visualized as clusters on the author co-citation map exported from VOSviewer software. These research streams include (1) organizational resilience under resource-based view and strategic management perspectives, (2) organizational resilience in disaster management, (3) resilience under organizational behavior perspectives, (4) resilience management in social-ecological systems, and (5) resilience engineering and system safety. According to White and McCain [37], these schools of thought are the intellectual pillars of emerging literature in respective fields of study, which is the OR in business and management literature in this case (Figure 2).
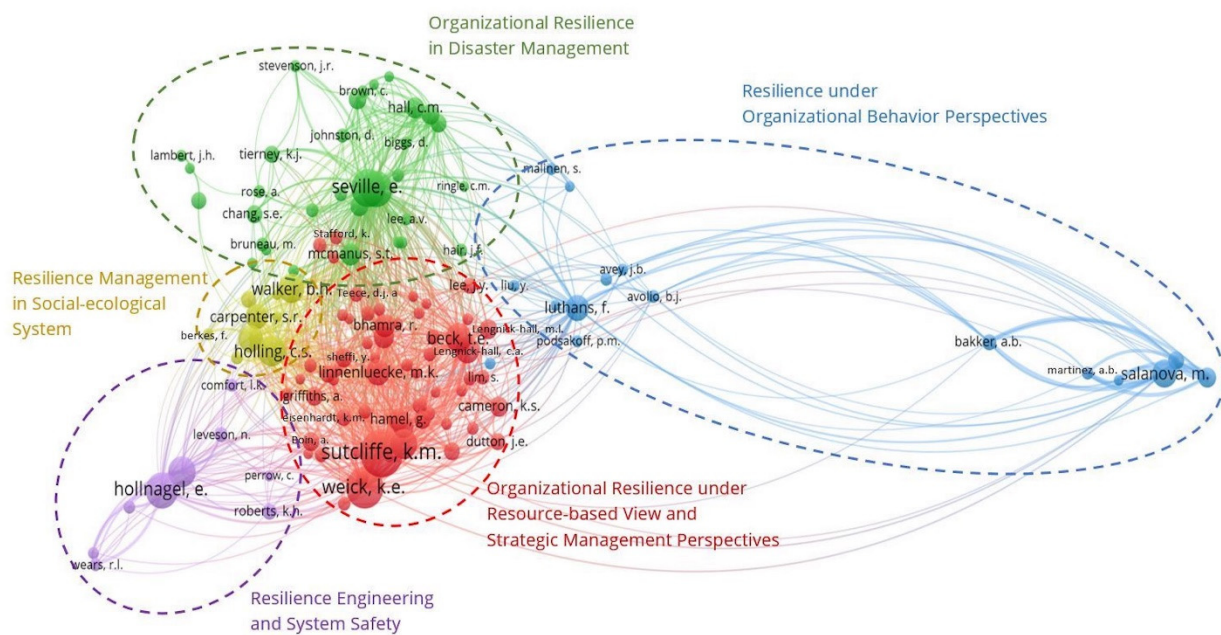
Figure 2. Author Co-Citation Map of organizational resilience in business and management literature published between 1992 and 2021 using the threshold of 43 citations per author and a display of 126 authors.

The red cluster is the largest school of thought, and it contains authors mapping the domain of Organizational Resilience under Resource-Based View and Strategic Management Perspectives in the literature. This research stream is led by Sutcliffe, K.M. (474 co-citations), Weick, K.E. (390 co-citations), Vogus, T.J. (216 co-citations), Beck, T.E. (212 co-citations), and Lengnick-Hall, C.A. (188 co-citations). The authors from this school of thought have conceptualized resilience pertaining to uncertainties, crises, and dynamic environments in organizational settings [9,38,39] and studied leadership [40,41], innovation, and entrepreneurship [42,43], as well as applications of different strategic resources, such as human resources [16,44] and intellectual or knowledge-based resources [45,46].

In this cluster, sensemaking and mindfulness [47,48] are also underlined as other organizations' abilities to overcome unexpected events successfully. The scholars also highlight the prominence of dynamic capabilities, which allows firms to integrate, construct, and reconfigure external and internal resources to survive in a rapidly changing business environment [49]. In this research stream, OR has been explained from different business management disciplines, i.e., supply chain management [50], human resource management [16], strategic management [13], and marketing [51].

The green cluster is the second largest research stream, and it includes authors mapping the terrain of Organizational Resilience in Disaster Management. This research stream is led by Seville, E. (331 co-citations), Vargo, J. (292 co-citations), Mcmanus, S.T. (135 co-citations), Hall, C.M. (121 co-citations), and Ritchie, B.W. (113 co-citations). The authors located in this school of thought have published on OR pertinent to disasters and natural hazards [52,53], disaster resilience [54,55], disaster recovery [56], crisis management for tourism [57], and sustainable tourism [58].

The blue cluster is the third largest school of thought, and it comprises authors from the domain of Resilience under Organizational Behavior Perspectives in business management literature. This research stream is led by Salanova, M. (202 co-citations), Luthans, F. (176 co-citations), Llorens, S. (115 co-citations), Schaufeli, W.B. (92 co-citations), and Bakker, A.B. (80 co-citations). The scholars in this cluster focus on work engagement and burnout [59,60], psychological capital [61], job demand and job resources [62,63], organizational stress [64,65], and employee resilience [66,67].

The yellow cluster is one of the smallest clusters. The authors in this cluster map the domain of Resilience Management in Social–Ecological Systems in business management literature. This research stream is led by Holling, C.S. (234 co-citations), Walker, B.H. (210 co-citations), Folke, C. (188 co-citations), Carpenter, S.R. (164 co-citations), and Adger, W.N. (84 co-citations). This cluster highlights the origin of the resilience concept. The resilience concept originated from ecology [68] and was later applied in different disciplines, i.e., psychology, material science, organizational management, etc. The scholars from this research stream conceptualized resilience from ecological system perspectives [68,69].

The second smallest school of thought is Resilience Engineering and System Safety in the purple cluster. This research stream is led by Hollnagel, E. (295 co-citations), Woods, D.D. (233 co-citations), Roberts, K.H. (78 co-citations), Leveson, N. (74 co-citations), and Comfort, L.K. (60 co-citations). The studies in this domain are concentrated on publications pertinent to system safety [70], resilience engineering [71,72], complex system [73], software safety [74,75], cognitive system engineering [76,77], and human error [78,79].

3.2. Organizational Resilience Concept

The resilience concept originated from ecology in the 1960s and early 1970s through studies of interacting populations, such as functional responses of predators and prey, regarding ecological stability theory [68,80,81]. It was later applied in different disciplines, such as psychology [82], material science [83], management [84], etc. The term resilience was first used in management literature by Meyer [85]. In his research, Meyer [85] examined the organizational adaptation to environmental jolt, and it became the conceptual origin of resilience in this field. This concept has recently gained increasing attention in organization and management literature [86]. Studies have been conducted about rare events [87,88], surprises [89], catastrophes [90], or crises [91]. In addition, research in OR literature is fragmented across different schools of thought [25]. The definitions of OR differ according to the context of studies, and it can be considered an umbrella construct as it is broad and encompasses diverse themes or phenomena [10]. In this paper, the conceptualizations and definitions of OR are reported as found in the current review corpus.

The concept of OR is fuzzy and has been defined in various ways, i.e., as an outcome, capacity, capability, characteristic, strategy, behavior, performance, or process [13]. However, this paper picks up the three most popular conceptualizations of OR from the literature. These conceptualizations are (1) OR as an outcome, (2) OR as a capacity or capability, and (3) OR as a process.

Most past studies conceptualized OR as an outcome. Those studies focus specifically on factors and antecedents that distinguish resilient organizations from less resilient ones [10]. In this perspective, the construct is often defined as a firm's ability to recover from adverse situations [2]. This group of studies underlines the possible firms' factors to facilitate resilience in organizations. Some significant factors are redundancies [92], adequate resources [93], positive relationships [93], and collective behaviors in organizations [94]. Although these studies provide fruitful insights into organizational factors or sources that seem important for organizations to respond effectively to adversity, they are retrospective and input-oriented rather than focusing on the elements of OR [10].

In contrast, some scholars explained OR as a capacity or capability [2,95]. Although several scholars argued that capacity and capability have disparities [14], the two terms seem to be applied interchangeably in the OR literature [13]. This group of studies is extremely heterogenous, as both static and dynamic views of OR can be found in these studies. Unlike outcome-based studies, this research stream explains OR elements and how OR can be acquired in organizations. A recent study by Duchek [10] conceptualized OR capabilities for different stages in the resilience process. The scholar combined capability and process approaches to develop a conceptual framework that could provide a holistic view of achieving OR in different resilience stages: anticipation before, coping during, and adaptation after unexpected events.

In most recent literature, OR was often conceptualized as a process that leads to resilient outcomes [2,86,96–98]. Sutcliffe and Vogus [98] are the pioneers of this conceptualization. They argued that superior outcomes alone are not substantial for defining OR. Scholars who follow this perspective distinguish different resilience stages based on the timeline of unexpected events [2,10,86,97,99]. Some studies in this process perspective underline the dynamic nature of OR as "an interaction between the organization and the environment" [2] (p. 20). In the subsequent section, the different definitions of OR are discussed.

3.3. Organizational Resilience Definitions

The earliest definitions of resilience found in organizational and managerial contexts mainly emphasize resisting and recovering from disruptions. However, the definitions vary across different disruptive events. For example, Home III and Orr [100] explained resilience as a firm's ability to respond productively to disruptions without lingering in long regressive behavior. Similarly, the construct was defined as a capacity to uphold or reinstate an acceptable functionality after perturbations by Robert et al. [101]. Linnenluecke, Griffiths, and Winn [97] defined OR as the capacity to absorb extreme weather impacts and recover from the situation. These definitions focus on the static nature of OR, which targets reacting and returning to the original state when adversities occur. Thus, the earliest descriptions of OR reflect the coping ability of firms. Coping with disruption is essential for organizations to survive when facing uncertainties, albeit organizations sometimes need to advance or adjust or change the existing structure (metamorphose) for a better fit in a new environment [16,102].

Hence, scholars considered another factor, transformation, or adaptation, in elucidating OR. Vogus and Sutcliffe [103] argued that an organization's positive adjustments resulted from challenges deemed to make the organization stronger and more resourceful, and maintaining these adjustments make the organization resilient [103]. Lengnick-Hall et al. [16] defined OR as an ability to effectively absorb the threatening disruptive surprises encountered by an organization, establish suitable responses, and undertake ultimate transformative activities to avail of the disruptions. This understanding of OR provides the dynamic property of the construct. For instance, Hamel and Välikangas [9] asserted that organizational strategies and business models need to be dynamically reconfigured according to changing situations. In the recent review of Kantabutra and Ketprapakorn [104], OR was defined as "an organizational capability that improves both organizational adaptability and organizational buffering capacity in response to abrupt environmental changes so that the organization bounces back and strengthens its current entity by dynamically reinventing itself for the future as the surrounding environmental changes" (p. 18).

Some scholars added anticipation of unexpected events as a capacity of OR in explicating the construct. Somers [105] stated that resilience is more than just surviving when encountering adversity; it involves potential risk identification and acting proactively to ensure that the organization thrives. Ortiz-de-Mandojana and Bansal [106] similarly described OR as an organization's incremental capacity to anticipate and adjust to the circumstance. Considering the active response and anticipation perspectives, Duchek [10] provides a more explicit definition of OR, the "ability to anticipate potential threats, to cope effectively with adverse events, and to adapt to changing conditions" (p. 220). In this review, the scholar follows the organizational resilience definition of Duchek [10] to explain the conceptual relationship between OR and ACAP.

3.4. Organizational Resilience Theoretical and Empirical Findings

OR is an overarching construct, and it has been studied in different contexts. Scholars noted that this construct is also context-specific [2,10,13]. Consequently, various types of antecedents or drivers were identified based on the context of studies in the literature. However, this paper highlights four important drivers and antecedents for fostering OR capability, as found in the current review corpus.

3.4.1. Leadership Styles

Due to the ubiquitous uncertainties, the rush to make a timely decision and execute appropriate responses by leaders is essential for every resilient organization [107] in the dynamic business environment. Additionally, de Oliveira Teixeira and Werther Jr [108] claimed that leadership is the combined force of an organization that establishes OR. Sheffi [109] also argued that a leadership's quality and the empowerment resulting from the leadership are important for adaptive organizational culture, which aids organizations in responding effectively during turmoil or adversity [110]. Thus, leadership is considered one of the most crucial drivers for building resilient organizations. Personal traits, actions, influence, patterns of interaction with others, responsibilities undertaken, and authority derived from a formal administrative position have traditionally been used to describe leadership [111]. In recent studies, leadership has been explained as a process that regulates a group of employees or followers to achieve a specific task or goal, and it impacts the actions and behaviors of others [112–114]. Several scholars have outlined the importance of leadership in crises and uncertain events [107], and it has been contended to be an important factor for organizations' success [115]. In the Tan Tock Seng Hospital in Singapore case study by Teo, Lee, and Lim [116], the scholars concluded that leadership and relational connections are critical to promoting OR during a crisis. The types of leadership behavior are also vital in shaping followers' attitudes and firms' performance in adverse situations [116].

Some scholars argued that during high uncertainty periods, charismatic leadership behavior, which communicates determination, and provides missions and visions while articulating high-performance expectations, is more predictive of organizational performance than transactional leadership behavior, which focuses on setting goals and tasks and ensuring compliance [117]. Baykal [110] proposed that an authentic leadership style, in which leaders emphasize constructing employees' self-efficacy by undertaking actions according to their convictions and confidences rather than resembling other idealized leaders, is an important driver for fostering OR in a rapidly changing environment. Transformational leadership, which motivates changes by providing inspiring visions and facilitates employees to overcome the discomfort of changes [118], has also been discussed as a driver of OR in several studies. According to Suryaningtyas, Sudiro, Eka, and Dodi [41], transformational leadership is assumed to make quick organizational system changes and adjustments to respond to alterations in the external environment. Odeh, Obeidat, Jaradat, and Alshurideh [40] also found the positive impact of transformational leadership on adaptive culture and a firm's resilience in their analysis of 309 Dubai service firms. Thus, different leadership styles and behaviors are evidently influenced in building OR.

Since different leadership styles evidently affect building OR, knowledge-oriented leadership is also expected to influence the organization's resiliency. Knowledge is considered one of the most valuable strategic resources that aids firms in achieving flexibility and adaptation to changes [15]. According to Donate and De Pablo [119], organizations need a blend of various leadership styles to effectively and efficiently manage knowledge. Thus, the scholars introduced a leadership style that integrates transformational and transactional leadership, along with motivational and communication factors, for better knowledge management in organizations. In other words, knowledge-oriented leadership employs two different leadership styles accordingly to situations. For example, transactional leadership is best used for institutionalizing, reinforcing, and refining existing knowledge, while transformational leadership is best used for challenging the current situation of the firm [120,121]. Many researchers later follow this leadership approach in their knowledge-based view studies [122,123]. In this review, the scholar refers to the understanding of Donate and De Pablo [119], who defined knowledge-oriented leadership as integration of transformational and transactional leadership, along with motivational and communication factors, for better knowledge management in organizations.

Knowledge-oriented leadership is often explained as how the management level shows an attitude, mindset, or action that encourages the activities of knowledge generation,

distribution, and exploitation in an organization [124,125]. Knowledge-oriented leaders encourage and appreciate employees' new ideas by teaching, demonstrating, rewarding them, and improving those ideas [125,126]. Furthermore, Naqshbandi and Jasimuddin [125] contended that knowledge-oriented leadership is meant for creating and promoting an organization's knowledge through various processes, such as improving learning experiences and enabling knowledge flow from external sources. According to Hamel and Prahalad [127], leaders who seek to cultivate OR establish explorations for external forces that may impact their organizations' future success. The aforementioned characteristics of knowledge-oriented leadership could facilitate the members of an organization to handle the knowledge acquired from external sources effectively. Thus, knowledge-oriented leadership is deemed to be a promising antecedent for building OR.

3.4.2. Dynamic Capabilities

According to Teece, Pisano, and Shuen [18], dynamic capability is an organization's ability to integrate, build, and restructure internal and external competencies to respond to the dynamic environment. Teece [128] proposed a dynamic capabilities framework by integrating innovation and strategy literature to highlight the critical management capabilities for maintaining superior firm performance in a rapidly changing business world. According to the scholar, the factors which encourage sensing problems, seizing opportunities, and transforming an organization's capabilities regarding the dynamic environment are the foundations of dynamic capabilities [128]. These factors include skills, methods, procedures, organizational structures, decision rules, and unique disciplines. Previous studies have noted that organizations could create, deploy, and protect intangible assets that provide superior long-term business performance by using dynamic capabilities [129]. In addition, Teece, Pereraf, and Leih [130] asserted that dynamic capabilities promote organizational agility. Strong dynamic capabilities are critical for firm growth and financial performance where the business environment is highly uncertain and turbulent [130].

Akpan, Johnny, and Sylva [131] recently studied the relationship between OR and dynamic capabilities by analyzing 11 Nigerian manufacturing firms. They examined the effects of two dynamic capability dimensions, i.e., sensing capability and reconfiguration capability, on OR capacity, which includes adaptability and agility. The positive effects of both dynamic capability dimensions on adaptability and agility were found. Additionally, Kurtz and Varvakis' [129] conceptual article outlines the role and prominence of dynamic capabilities for SMEs' adaptation and resilience to maintain competitive advantages in a rapidly changing environment. The scholars followed Pavlou and El Sawy's [132] dynamic capabilities model, which comprises four capabilities: sensing capability, learning capability, integrating capability, and coordinating capability. Further, they explained how each capability is associated with OR since the goal of both dynamic capabilities and OR is to maintain sustainable competitiveness in the long term [129]. Sensing capability refers to an ability to recognize crisis triggers; thus, it can help predict the crisis. Learning capability is considered an ability to promote knowledge creation and understanding; therefore, it enhances the ability to adapt to changes. Integrating capability means contributing individual knowledge to the group, enabling leaders to encourage employees to participate in strategic reconfigurations of organizations in a turbulent environment. Coordinating capability is an ability to aid the task assignment and resource allocation; hence, it encourages the effective allocations of available resources and the ability to track the obtained results. Thereby, each capability facilitates resilience in the organization. Based on this discussion, the author posits dynamic capabilities as important drivers for OR.

3.4.3. Organizational Learning and Unlearning

Organizational learning is another important driver for fostering OR. According to Odeh et al. [40], transforming into a learning organization is needed for uncovering hidden opportunities [133] to adapt and respond to firms' survival during sudden shocks [134]. Huber [135] explained that learning occurs when the range of an organization's potential

behavior is changed during information processing. Based on this understanding, Tsang and Zahra [136] claimed that information entered is transformed and potentially kept in organizational behaviors or routines. Learning is considered an important ability for an organization to reconfigure or adapt after a disruption [137]. Many studies have claimed that organizational learning is a capability that contributes to OR [98,138,139].

According to Sutcliffe and Vogus [98], learning is both an input and result of OR processes. As input, organizations employ previous crisis experience to handle current crises, and as an outcome, feedback from the crisis changes beliefs and practices for adapting to current and future crises [139]. The conceptual paper of Duchek [10] provides a more comprehensive explanation of the prominence of organizational learning in different resilience stages. The scholar argued that observing, identifying, and preparing for a crisis should be undertaken by the organization during the anticipation phase. Furthermore, organizations need to possess the ability to accept the problem and develop and implement solutions to cope with external challenges, Duchek [10]. Lastly, reflection upon the crisis experiences and learning from them to make advancements or organizational change for future crises are important in the adaptation phase after a disruption incidence. Thus, organizational learning seems to have an important role in every stage of the resilience process. Koronis and Ponis [140] proposed that the learning and knowledge absorptive ability of firms are assumed to increase firms' resilience performance. Additionally, Khan et al. [138] argued that learning is pertinent to experimentation in solution searching and association with the environment; therefore, the learning capability might positively influence nurturing and maintaining the resilience capability of organizations. Thereby, organizational learning is considered an antecedent of organizational resilience.

Unlearning in an organization is often seen as necessary for successful adaptation to external changes, encouraging organizational learning, and improving the firm's performance [136]. Tsang and Zahra [136] defined organizational unlearning as abolishing old routines in favor of new ones. According to Hedberg [141], as reality changes, knowledge expands and simultaneously becomes obsolete; thus, learning new knowledge and removing obsolete knowledge are essential for better understanding. Fiol and O'Connor [142] offered a more explicit unlearning definition which is the "intentional displacement of well-established patterns of action and understanding due to an exogenous disruption" [142] (p. 6). Scholars claim that unlearning helps to learn better, and vice versa. The aforementioned unlearning definitions describe the construct as a capability with ostensive aspects (i.e., understanding a routine cognitively and emotionally) and performative aspects (i.e., particular actions undertaken in the routine).

Starbuck [143] explained unlearning as a part of the process of coping with strong uncertainty and a precondition for learning by highlighting the possible unlearning process with no reconfiguration of new patterns. Orth and Schuldis [144] examined 244 employees from German and Austrian organizations to study the organization's learning and unlearning capability for resilience during COVID-19. Although the scholars found the positive effect of organizational learning on OR, they failed to prove the moderating effect of unlearning capability on the relationship between organizational learning and resilience. Unlearning was proposed as an antecedent of inevitable change and organizational learning in Wang's [139] model of OR and learning capabilities. According to Morais-Storz and Nguyen [145], unlearning capability along with learning is crucial for making an organization strategically resilient. Unlearning is assumed to have organizational-level effects [146], such as influencing organizational readiness for alterations [147] and affecting the organizational knowledge absorptive capacity [148]. In addition, following Koronis and Ponis' [140] idea, Evans, Cregan, and Wall [149] classified resilience into four domains, i.e., preparedness, responsiveness, adaptability, and learning, and they argued that all of these capabilities are positively affected by the unlearning ability of firms. Based on this discussion, the author highlights the unlearning capability as an antecedent of organizational resilience.

3.4.4. Networks and Social Capital

Another driver of OR is social capital which resides in relationships that are created through exchange and provide access to resources [150]. Relationships between an organization and different entities are crucial for the knowledge absorption process, which enables the organization to anticipate possible triggers before disruptions, cope with the situation during disruptions, and adapt the organization appropriately after disruptions. According to the social capital theory, relational networks are important for a business as they provide valuable resources through facilitating economic activities by sharing information, collaborating, and discovering novel ways to achieve competitive advantages [150–152]. Furthermore, Mzid, Khachlouf, and Soparnot [153] explained that trust between entities could remove blockades obstructing knowledge-sharing, open communication, continuous feedback, and long-term relationships. In addition, inter-organizational networks have been identified as one of the most important success factors in innovation implementation [154], which is essential for making an organization resilient [23,24]. For this review, the scholar follows the definition of Nahapiet and Ghoshal [150], who understand social capital as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (p. 243).

Previous studies have highlighted the positive influence of networks and social capital on OR [153,155,156]. Jia et al. [155] studied the role of social capital on OR by examining 88 firms that were affected by the Sichuan earthquake. They followed the social structure perspectives and analyzed the effects of three social factors, i.e., structural capital, relational capital, and cognitive capital, on reactive and proactive dimensions of OR. However, their study only found the positive impacts of structural capital on proactive OR and relational capital on reactive OR. Similarly, Mzid et al. [153] investigated the role of social capital on family firm resilience in their interviews with four Tunisian family firms. Subsequently, scholars proposed that social capital affects not only on family firm's resilience but also the human capital and financial capital of the firm. Thus, social capital and networks are posited as the drivers of firms' resilience capability.

3.5. Key Theories in ACAP Literature and Relationship of ACAP and OR

In the resource-based view literature, ACAP is considered a valuable strategic capability, which is a path-dependent, firm-specific, and socially ingrained ability to create competitiveness through exploiting new external knowledge. In the early 1990s, organizational ACAP was claimed to depend on individual ACAP, not simply the combination of employees' individual ACAP. Later, it was considered a multilevel construct, and the lowest analysis level is the individual level, where the relationship between learning and ACAP is most evident [157]. Since ACAP can reinforce, supplement, or refocus a firm's knowledge base, developing as well as sustaining ACAP in a firm is vital for the firm's performance and long-term survival [158]. Lastly, ACAP is often described as a capability that enables firms to exploit new external knowledge and predict possible future technological advancement more precisely [159]. Different definitions of ACAP, key theories, as well as the conceptual relationship between ACAP and OR are discussed in the subsequent sections.

3.5.1. Definition of Absorptive Capacity

ACAP is first introduced by Cohen and Levinthal [160] as a firm's ability to recognize the value of external knowledge, assimilate, and exploit it for commercial gain. They emphasized firms' research and development (R&D) as a driver of ACAP. They addressed the characteristics of individuals' and organizations' cognitive structures and asserted that without past knowledge, organizations are unable to evaluate new information and, as a result, fail to absorb it. Although the conceptualization of Cohen and Levinthal [160] is used in many studies [161–163], several scholars have reconceptualized and redefined the construct throughout the past three decades.

Lane and Lubatkin [162] analyzed organizations' capacity to absorb knowledge from other organizations. Their approach is slightly different from the original conceptualization

of Cohen and Levinthal [160]. Cohen and Levinthal [160] conceptualized ACAP from the perspective of absorbing knowledge from a sector as a byproduct of a firm's R&D. However, Lane and Lubatkin [162] conceptualized the construct as relative ACAP, which is an ability of a (student or receiver) organization to value, assimilate, and apply knowledge derived from another (teacher or sender) organization.

In 2002, Zahra and George [15] reviewed the concept of ACAP and redefined ACAP as a dynamic capability. The new definition of Zahra and George [15] is that ACAP is a set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to generate a dynamic organizational capability. The ability to detect and obtain relevant external information is known as the acquisition ability; this involves weak signals sensing and early discontinuous change detection in the environment. Assimilation is referred to as an ability to analyze, construe, and comprehend the acquired information, as well as extrapolate relevant consequences. The assimilated information is needed to combine with existing knowledge through the transformation process. Transformation ability also allows firms to integrate two apparently incongruous information sets. The last domain, exploitation, is the ability to operationalize acquired and transformed knowledge for strategic purposes, such as mitigating or exploitative strategies development to ensure organizational effectiveness and survival for the long-term.

The scholars believe that the four dimensions of ACAP are complementary and combinative in nature. Furthermore, they regroup the four capabilities into realized absorptive capacity (RACAP) and potential absorptive capacity (PACAP). RACAP is composed of transformation capability and exploitation capability, while PACAP consists of knowledge acquisition and assimilation capabilities of ACAP. Zahra and George [15] also stated that ACAP is a dynamic capability related to knowledge creation and deploying the created knowledge to improve a firm's ability to achieve and sustain competitiveness.

However, in Zahra and George's [15] conceptualization, they omitted the "ability to recognize the value" (p. 128) part of the original definition of Cohen and Levinthal [160]. However, Todorova and Durisin [164] highlighted that capability to recognize the value of new external knowledge is important to absorb valuable knowledge. Todorova and Durisin [164] reintroduced the capability to recognize the value of new knowledge as a step before knowledge acquisition. The scholars redefined ACAP as the capability of recognizing the value, acquiring, assimilating, or transforming and exploiting the new knowledge. The scholars proposed that assimilation and transformation are alternative processes since the new knowledge that fits the existing cognitive structures does not require to be totally transformed but altered slightly to improve fit. In other words, firms transform the newly acquired knowledge when it is impossible to assimilate it. Additionally, the scholars proposed that information pieces organizations seek to absorb may circulate between assimilation and transformation processes before they successfully dissolve into the knowledge structures and are ready for firms' exploitation. In this paper, the scholar considers ACAP as a four-dimensional construct and defines it as an ability to acquire, assimilate, transform, and exploit new external knowledge for strategic purposes [15].

3.5.2. Key Theories in ACAP

ACAP has been explained under various theories in management literature. However, the author emphasizes two key theories, namely, the knowledge-based view and dynamic capability perspective, to underline the relevancy of ACAP.

Knowledge-based view (KBV) is derived from the resource-based view (RBV) theory of Barney [165]. RBV explains that the radical sources and drivers of organizations' competitive advantages and superior performances are related to the attributes of organizations' resources and capabilities which are valuable, rare, imperfectly imitable, and non-substitutable [165]. Under KBV, knowledge is regarded as the most important strategic resource, which implies creating and sustaining competitive advantages and implementing the strategies in organizational structure and systems [17]. The extant research studies in KBV contend that firms' success, competitiveness, and long-term survival in challenging

business environments mainly rely on firms' knowledge-based resources [119,166,167]. Organizational knowledge, especially tacit knowledge, is relatively more difficult to imitate or substitute than other types of resources.

KBV points out that knowledge is preserved by individuals, not by organizations, and can be garnered as either tacit or explicit knowledge [168]. Kogut and Zander [169] proposed that an organization is a knowledge-bearing entity that administers its knowledge-based resources by employing different dynamic capabilities to generate, transfer, and transform knowledge into competitive advantages. KBV of a firm generates a substantial amount of research growth in the field of organizational learning [170]. Globally, the paradigms for attaining firms' productivity change with the age of emerging technologies. The transition from manufacturing to services in many developed economies relies on manipulating information and knowledge, not on the application of physical products [171]. Unlike other tangible resources, knowledge can be used concurrently in different applications, yet its values do not diminish [172]. Thus, KBV has become an imperative theory for most modern organizations. From this perspective, ACAP, as a knowledge-based dynamic capability, is considered an important ability of a firm to absorb external knowledge, transform and exploit it for superior performance and sustain competitive advantages [15].

Another theory to highlight the relevancy of ACAP is the dynamic capability theory. Teece et al. [18] developed dynamic capability theory to elucidate how firms can compete and survive in dynamic business environments in which changes are rapid. This concept was also derived from RBV [165]. RBV argued that businesses need to have intangible and tangible assets that are valuable, rare, and difficult to imitate or substitute in order to compete successfully. However, in a highly dynamic environment, firms' resources alone are deemed unsubstantial [18]. Thus, Teece et al. [18] argued that ambitious firms might require the ability to redeploy resources and respond to threats quickly. The scholars defined dynamic capability as an organization's ability to combine, construct, and reconfigure external and internal organizational competencies to respond to the turbulent environment. They also asserted that key dynamic capability determinants are fostered in organizational routines and processes. In contrast, Eisenhardt and Martin [173] explained dynamic capabilities as organizational processes, such as integration, reconfiguration, gaining, and releasing resources, to match the changes in the market by utilizing resources. The scholars noted that these processes could cope with turbulence and create market changes.

According to Rugami and Evans [174], dynamic capabilities are assumed to create the flexibility of an organization to exploit its resources effectively to achieve harmony with its peculiar business environment. Furthermore, the dynamic capabilities perspective displays a company's potential to gain new types of competitive advantage by revitalizing its competencies, structure, and resources to harmonize with the ever-changing business environment [174]. ACAP is claimed to be a specific type of dynamic capability pertinent to learning in organizations [175]. Zahra and George [15] conceptualized ACAP as a dynamic capability comprising four organizational capabilities, i.e., knowledge acquisition, assimilation, transformation, and exploitation. Thus, ACAP as a dynamic capability is considered a relevant factor for organizational growth and long-term survival in a rapidly changing environment as it influences a firm's ability to create and deploy the knowledge necessary for building other organizational capabilities [15].

3.6. Conceptual Relationship of ACAP and Organizational Resilience

As we have previously mentioned, the world's economy has shifted to a knowledge economy that is saturated with knowledge-intensive businesses and occasional technological disruptions [1]. In this type of economy, businesses rely greatly on "intellectual capabilities than on physical inputs or natural resources, combined with efforts to integrate improvements in every stage of the production process" [1] (p. 201). Hence, knowledge is deemed to be one of the most important resources for a firm's growth and survival these days. Furthermore, developing general knowledge, technical facilities, and generalized control of resources is considered beneficial for preparation against inevitable jolts [176]. In

addition, several studies have contended that knowledge is important for making an organization resilient [10,86,177]. For instance, knowledge acquisition, especially from external sources, is important for predicting potential surprises; knowledge gained during crises aids in strategy development for coping during crises and adapting after crises. In this sense, nurturing firms' ACAP would contribute to managing these knowledge resources efficiently and achieving resiliency in dynamic environments.

Studies from supply-chain management literature also underline the significance of ACAP as an antecedent of supply-chain resilience. Gölgeci and Kuivalainen [178] asserted that ACAP is a boundary-spanning capability that facilitates productive interactions and partnerships between different organizational boundaries. The scholars contend that ACAP routines and processes are needed for transferring knowledge from partners to provide superior value to customers during environmental turbulences. Nagati and Rebolledo [179] claimed that although the ACAP concept refers explicitly to acquiring and assimilating external knowledge from outside sources, especially from inter-organizational relationships, it also reinforces learning processes inside the organization gained from previous experience and current behaviors. Additionally, Van Doorn et al. [180] posited that ACAP helps to comprehend unforeseen changes in actual time, allows recognition of repercussions of environmental jolts and possible opportunities from them, as well as provides knowledge mechanisms to mitigate the turmoil when it occurs. In this regard, ACAP, as a firm's knowledge-based dynamic capability, is posited for reinforcing the firm's knowledge management processes and strengthening the organizational resilience for the firm's sustainability.

Moreover, conceptual similarities between ACAP and OR have been highlighted by several scholars [13,14,16]. Lengnick-Hall et al. [16] defined OR as "a firm's ability to effectively absorb, develop situation-specific responses to, and ultimately engage in transformative activities to capitalize on disruptive surprises that potentially threaten organizational survival" (p. 244). They considered OR a collective construct and argued that it is embedded in a set of individual-level factors, such as knowledge, abilities, and organizational routines, which enable them to overcome the consequences of disruptions. Similarly, several scholars claim that resilience in an organizational context concerns an organization's ability to anticipate, absorb external disruptions, learn from them, and adapt to future challenges while still pursuing its core objectives [181,182]. These concepts of OR seem to overlap with the ACAP concept, which explains a firm's ability to absorb external knowledge, transform it, and use it for strategic purposes [15]. In the systematic review of Hillmann and Guenther [13], the ACAP concept was highlighted as a possible protective factor of OR, which mitigates the effect of uncertainties and disruption. The scholars also suggested distinguishing ACAP from OR concept for future study. Thus, this integrative review seeks to fill the knowledge gaps by distinguishing ACAP as a knowledge-based dynamic capability that enables organizations to achieve resilience capabilities regarding different resilience stages by exploiting external knowledge.

To distinguish ACAP from OR, this review follows Duchek [10]'s understanding of OR as "an ability to anticipate potential threats, to cope effectively with adverse events, and to adapt to changing conditions" (p. 220). Duchek [10] explained OR as a three-dimensional construct comprising anticipation, coping, and adaptation capabilities. The scholar combined the capability approach and process approach to explain how OR could be achieved in different resilience stages: anticipation before, coping during, and adaptation after unexpected events. The associations of ACAP with each resilience capability will be delineated in subsequent sections.

3.6.1. ACAP and Anticipation Capability

According to Somers [105], anticipation capability means an ability to recognize critical developments inside an organization or in its environment and react proactively. To survive in turbulent environments and cultivate future success, organizations often need to be able to handle the manifestations of unexpected events [10]. Organizations need anticipation

capability to avoid uncertainty or reduce the potential impacts of uncertainties [183]. Previous scholars have explained anticipation capability comprises internal and external development observations, critical changes as well as potential threats identifications, and preparations for uncertainty [10,96,105]. As ACAP determines a firm's ability to use the knowledge of future environmental conditions to make decisions [8], it could promote the anticipation capability of the firm. Additionally, ACAP broadens the reach of organizational learning by improving both recollection and application of existing knowledge, as well as the assimilation and acquisition of new information [160]. As a result, the more the firm can absorb and exploit knowledge, the more it will be able to anticipate and prepare to face uncertainty.

3.6.2. ACAP and Coping Capability

Another resilience capability is coping capability. The OR definition of Home III and Orr [100], who explained the construct as responding productively to significant change, reflects the coping capability towards disruptions. In other words, coping capability means an ability to resist destruction by effectively handling uncertainties [86]. According to the previous literature, coping capability comprises two abilities: accepting the problem and developing as well as implementing solutions [10,184,185]. Coping with changes [186] and continuous new knowledge development abilities [96] are keys to success in turbulent environments [187]. As the author discussed before, ACAP enables firms to realize the value of new external knowledge through acquiring and assimilating processes and transforming it for the firms' benefit [15]. Therefore, with ACAP, the organizations might be able to undergo better sensemaking which is "the ongoing retrospective development of plausible images" [48] (p. 409) that rationalize the current situation. Subsequently, the organizations will be able to accept the problem and develop solutions for coping as they realize the plausibility through sensemaking. Therefore, ACAP is proposed as a driver which encourages coping capability.

3.6.3. ACAP and Adaptation Capability

The last OR capability is adaptation capability. Limnios, Mazzarol, Ghadouani, and Schilizzi [188] defined adaptation as an ability to undertake organizational adjustments that lead to organizations' advancement after crises. Adaptation is often assumed to be long-term learning [183]. Reflection as well as learning abilities, and organizational change capabilities are the two components of adaptation capability, as these abilities help organizations avoid or minimize the negative impacts of unexpected events [10,189]. Kurtz and Varvakis [129] proposed that ACAP, as a dynamic learning capacity, is associated not only with knowledge creation ability and anticipation but also adaptation ability and organizational enhancement following the disruption. Several scholars claimed that organizations depend on external knowledge and ACAP to improve their performance and to ensure their survival as well as adaptation in a dynamic market [190]. Hence, firms need to acquire critical knowledge from external sources to foster adaptation capabilities. Extracting critical knowledge from external sources [191] without internal knowledge creations [192] is often difficult. Albeit, with ACAP, the firms can absorb external knowledge and combine it with existing internal knowledge to transform it for different applications. Additionally, the dynamic capability perspective elucidates ACAP as a capability that enables organizations to make continuous reconfigurations through knowledge accumulation and to respond more effectively and quickly to market alterations [190]. Therefore, the more an organization can absorb and exploit knowledge, the more it will be able to reflect, learn, and advance following disruptive situations.

3.6.4. ACAP as an Antecedent of Organizational Resilience

The relationship between ACAP and resilience has been highlighted in several recent papers. For instance, Morais-Storz et al. [8] proposed that the organizational legacy, including ACAP and adaptive capacity, are antecedents of strategic resilience. Additionally,

many studies from supply chain management literature have highlighted the relationship between ACAP and an organization's supply chain or operational resilience. For example, Roh et al. [46] analyzed the data from 205 managers and practitioners from different firms to study the influence of ACAP on low/high-impact resilience in organizations' supply chains. The positive impacts of ACAP on proactive and reactive dimensions of supply-chain resilience are also analyzed and discovered in the study of Cheng and Lu [193] regarding 297 senior managers of Taiwanese manufacturing firms. Considering ACAP as a boundary-spanning capability, Gölgeci and Kuivalainen [178] found a direct positive effect of ACAP on supply chain resilience and the partial mediation effect of ACAP on the relationship between social capital and supply chain resilience by studying 265 Turkish firms. Thus, ACAP evidently influences the resilience of organizations.

4. Conceptual Model Development

In this section, the author will discuss the inferences drawn from the review's findings and the conceptual framework development for future OR studies (Figure 3).
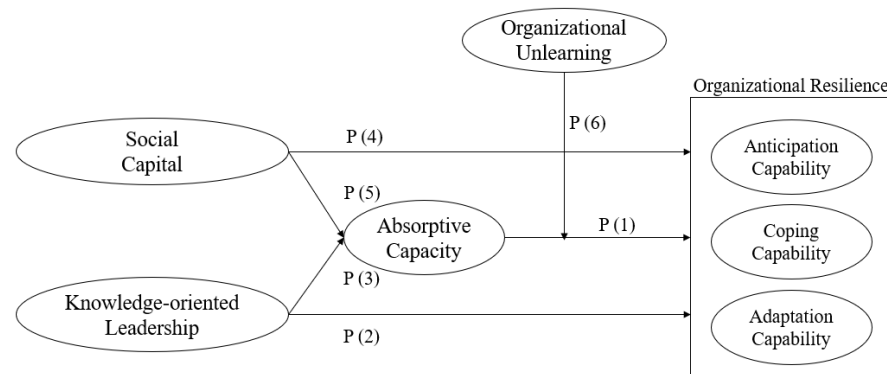
Figure 3. Conceptual model of organizational resilience.

4.1. ACAP to Organizational Resilience

In the previous section, the author discussed ACAP as a knowledge-based dynamic capability that enables organizations to achieve resilience capabilities regarding different stages through exploiting external knowledge. KBV of firms also highlights the importance of knowledge [169] and the crucial role of ACAP in establishing competitive advantages for short-term and long-term survival. Subsequently, many studies have underlined the importance of knowledge-based resources and capabilities to survive in a dynamic business environment [45,144,194]. Based on this literature, ACAP seems to be one of the main components for organizations' knowledge base development [195] and a relevant antecedent for OR. In addition, ACAP has been asserted as a pivotal factor for reducing uncertainties in organizations' supply chains as it closes the gap between available knowledge and required knowledge to handle supply chain risks in organizations [196] effectively. Additionally, many studies from supply chain management literature underline the positive relationship between ACAP and supply-chain or operational resilience of organizations [46,178,193]. This literature also brings the prominence of ACAP to light for fostering organizational resilience. The relevancy of ACAP in fostering OR could also be justified with the dynamic capability perspective. Since dynamic capabilities have been studied as important factors for fostering OR in several papers [43,129,131], ACAP, as a knowledge-based dynamic capability, is also expected to reinforce building OR capabilities. Thus, the following statement is proposed.

Proposition 1. *An organization's absorptive capacity (ACAP) positively influences fostering organizational resilience (OR) capabilities.*

4.2. Knowledge-Oriented Leadership, Absorptive Capacity, and Organizational Resilience

The importance of leadership during a crisis and uncertain events is previously delineated in this paper [107]. Teo et al. [116] also underlined the importance of leadership behavior types in determining organizational performance or followers' attitudes during a crisis. As different leadership styles and behaviors of organizations have evidently affected the cultivation of OR [40,117], knowledge-oriented leadership, as a combinative leadership style of transformational and transactional leadership, is also expected to influence organizations' resiliency. Furthermore, it is widely accepted that knowledge is considered one of the most valuable strategic resources that aids firms in achieving flexibility and adaptation to changes [15]. As knowledge-oriented leadership emphasizes how the management level shows an attitude, mindset, or action that encourages the activities of knowledge generation, allocation, and exploitation within an organization [124,125], it reinforces building organizations' resiliency. Hamel and Prahalad [127] contended that leaders who seek to cultivate OR establish explorations for external forces that may impact their organizations' future success. Through knowledge-oriented leadership, the leaders will create and promote an organization's knowledge through various processes, such as improving learning experiences and enabling knowledge flow from external sources [125]. Thus, organizations will be able to detect the possible triggers of threats and effectively handle the knowledge acquired from external sources. Additionally, OR capabilities require a lot of learning processes for different resilience stages. The knowledge-oriented leaders will facilitate those learning processes by motivating and communicating with the members of organizations. In this respect, knowledge-oriented leadership is posited to influence the firm's OR. Therefore, the author offers the following proposition.

Proposition 2. *Knowledge-oriented leadership positively influences fostering organizational resilience (OR) capabilities.*

Furthermore, several studies have shown that different leadership styles also impact an organization's ACAP [197,198]. For example, Flattern et al. [198] investigated 608 firms from Austria, Brazil, Germany, India, Singapore, and the USA to study the relationships between transformational leadership and transactional leadership on ACAP. The researchers considered ACAP as a two-dimensional (PACAP and RACAP) construct and proposed direct positive effects of transformational leadership on both dimensions as well as a direct effect of transactional leadership on RACAP. However, they posited that transactional leadership might have a negative impact on PACAP. Their study found a significant positive influence of transformational leadership on both dimensions of ACAP and the positive effect of transactional leadership on RACAP. Nevertheless, they did not find any significant negative impact of transactional leadership on PACAP. In addition, knowledge-oriented leadership is found to reinforce the knowledge management processes of an organization [122] which are important for determining the organization's ability to explore and exploit external knowledge [199]. Based on this discussion, the author posits that knowledge-oriented leadership influences a firm's OR by facilitating the firm's ability to acquire, assimilate, transform, and exploit the new external knowledge. Therefore, the author offers the following proposition.

Proposition 3. *An organization's absorptive capacity (ACAP) mediates the relationship between knowledge-oriented leadership and organizational resilience (OR) capabilities.*

4.3. Social Capital, Absorptive Capacity, and Organizational Resilience

Relationships between an organization and different entities are crucial for the knowledge absorption process, enabling the organization to anticipate possible triggers before disruptions, cope with situations during disruptions, and adapt the organization appropriately after disruptions [10]. Further, the social capital theory explains that relational networks are important since they provide valuable resources by facilitating economic

activities by sharing information, collaborating, and discovering novel ways to achieve competitive advantages [150–152]. Firms could access resources or social capital embedded in the structures, links, and cognitions of those relationships [200]. In addition, these social resources aid firms' OR by benefitting various contextual processes, such as sharing information, exchanging resources, and collaborating with intra- or inter-organizational teams [201]. Similarly, Burt [202] asserts that social capital acts as a channel for information sharing, accessing resources, enhancing efficiency in formation diffusion, and reducing redundancies, which leads to contributing OR. The antecedent role of social capital in fostering OR has been investigated in many studies [153,155,156] as well as previously explained in this paper. For instance, the evidence of positive social capital on OR could be found in Jia et al.'s [155] study of 88 firms affected by the Sichuan earthquake and Mzid et al.'s [153] study of Tunisian family firms. In addition, Duchek [10] proposed the positive influence of social resources on OR by enhancing OR's coping capability in her conceptual paper. Thus, social capital is posited as a driver of firms' resilience capability, and the following statement is proposed.

Proposition 4. *Social capital positively influences fostering organizational resilience (OR) capabilities.*

According to Cohen and Levinthal [160], social capital improves an entity's ability to acquire, assimilate, integrate, and administer newly acquired external knowledge by encouraging the development of communication [203] for forming interpersonal relationships. Similarly, Tsai and Ghoshal [204] contended that social capital provides accessibility to tangible and intangible resources, creates opportunities, and enables learning. Furthermore, several studies have highlighted the positive influence of social capital on firms' ACAP [205,206]. Kittikunchotiwut [205] analyzed the data of 119 leather product exporting firms to investigate the role of social capital on ACAP and innovation. Consequently, the researchers discovered the positive associations of two social capital dimensions, i.e., relational and cognitive dimensions, on ACAP. Valdaliso et al.'s [206] case study of an electronics and ICT cluster from Spain proposed that social capital fosters a firm's intra-cluster knowledge links and, thus, enhances the firm's ACAP. Additionally, Gölgeci and Kuivalainen [178] examined the roles of social capital and ACAP in the supply chain resilience of 265 Turkish firms. They tested and found the mediation effect of ACAP on social capital and supply-chain resilience. Based on this discussion, the author posits that social capital influences a firm's OR by facilitating the firm's ability to acquire, assimilate, transform, and exploit new external knowledge. Therefore, the author offers the following proposition.

Proposition 5. *An organization's absorptive capacity (ACAP) mediates the relationship between social capital and organizational resilience (OR) capabilities.*

4.4. Moderating Effect of Organizational Unlearning

The prominence of learning processes in cultivating OR capabilities for different resilience stages has previously been highlighted in this paper. Tsang and Zahra [136] explained that the unlearning ability of an organization is often seen as a necessary condition for successful adaptation to external changes, encouraging organizational learning, and improving the firm's performance. As reality changes, knowledge expands and simultaneously becomes obsolete; thus, learning new knowledge and removing obsolete knowledge is essential for better understanding [141]. This literature implies that unlearning is a precondition for better learning. Additionally, several studies have underlined the importance of a firm's unlearning ability for building a resilient organization [144,145]. Furthermore, the unlearning ability is assumed to cause organizational-level consequences [146], such as impacting the organizational readiness for change [147] and affecting the ACAP in an organization [148]. According to Becker [207], the unlearning ability is a key factor for successfully competing in dynamic and complex markets as it could provide the constant development of newness. Furthermore, Cepeda-Carrion et al. [208] stated that organiza-

tional learning processes contribute to firms' ACAP, albeit an unlearning ability is needed for the proper employment of newly acquired knowledge accordingly. Therefore, the effect of new external knowledge acquisition, assimilation, transformation, and exploitation abilities on fostering OR capabilities is expected to be higher in firms that possess better unlearning abilities. In other words, the positive effect of ACAP on OR capabilities will be stronger in the firms which can manage to remove obsolete knowledge better. According to this discussion, the author proposes the following statement.

Proposition 6. *Organizational unlearning moderates the relationship between absorptive capacity (ACAP) and organizational resilience (OR) capabilities.*

5. Conclusions

This review seeks to fill the research gap addressed by the previous review of Hillmann and Guenther [13], which outlines that conceptual clarity between ACAP and OR is needed. Thus, the current study provides the conceptual model of OR by extending the capability-based conceptualization of Duchek [10], who explained the construct as "an ability to anticipate potential threats, to cope effectively with adverse events, and to adapt to changing conditions" (p. 220). This understanding defines resilience as a three-stage process, and each stage induces a different resilience capability, i.e., anticipation capability, coping capability, and adaptation capability. This paper employs these three resilience capabilities to distinguish ACAP from the OR concept. Based on the review's findings, ACAP is concluded as a knowledge-based dynamic capability that enables organizations to achieve resilience capabilities regarding different resilience stages by exploiting external knowledge.

This paper also highlights the antecedent roles of knowledge-oriented leadership and social capital in achieving OR. The scholar also proposed the unlearning ability as a moderator on the relationship between ACAP and OR. Researchers have noted that empirical studies of OR are mostly retrospective, descriptive, and outcome-focused [16,97], and fewer retrospective studies are suggested for understanding complex, path-dependent, and socially ingrained OR capabilities [10]. Although this paper's conceptual framework is outcome-focused, it is not limited to retrospective analysis as the model describes the resilience capabilities based on three resilience process stages. However, more insight is required into the determinants of the OR process [86]. Researchers could also apply this conceptual model for future studies in a different context. This paper also provides a more comprehensive understanding of the ACAP and OR relationship. In addition, the current review analyzes a more expansive database which includes 823 documents and covers documents published more recently, from 1992 to 2021. The novelty of the present study also lies in the review method, which is systematically conducted in an integrated manner by combining a bibliometric analysis [26] and a scoping review [27].

In terms of practical implications, this paper highlights the important role of ACAP for building OR by using knowledge resources. Through this paper, managers and practitioners may gain insights into managing knowledge-based resources and capabilities for building resilience in their organizations. In addition to the role of ACAP, the review also highlights knowledge-oriented leadership, a novel leadership style, as a driver of fostering resilience capabilities. This proposition may provide an understanding for managers to practice a knowledge-oriented leadership style in their organizations to enable resilience capabilities. Managers should employ the knowledge-oriented leadership style and create environments that facilitate knowledge exploration and exploitation to ensure that their organizations do not miss any important information regarding possible uncertainties. With knowledge-oriented leaders, the firms' knowledge absorption ability from external sources will be enhanced, and firms will be able to anticipate ahead, handle the adversities better, and transform for a better fit with the changing environment. The mediation role of ACAP on the relationship between social capital and OR implies that firms' ACAP capitalizes the social capital for fostering OR. Firms might not notice or be able to exploit

the valuable resources embedded in social networks for pursuing OR unless they recognize the possible uncertainties or adversities and explore as well as exploit those resources for anticipating, coping, and adapting accordingly. Thus, improving ACAP may facilitate firms effectively utilizing social capital in nurturing OR. The author also underlines the moderating role of organizational unlearning ability, which has been paid less attention to in most organizations. Thereby, organizations may notice the existence and potential of unlearning ability in fostering OR for dynamic environments. The entrenchment of obsolete knowledge could create barriers to learning new knowledge [143], which is necessary for both cultivating ACAP and OR. Therefore, organizations should not hesitate to remove obsolete beliefs, norms, and understandings to allow new and more appropriate knowledge to come in.

Regardless of the novelty and contributions provided by this review, it still has several limitations. Firstly, the timeframe of bibliometric analysis is limited to 1992–2021, and the documents included in the review corpus are collected only from the Scopus database. Thus, some relevant or useful documents published outside this timeframe or excluded in the Scopus database have been left out. To be more substantial, scholars may retrieve and combine documents from different databases in future studies. Secondly, the review corpus includes only two document types: articles and reviews. In this sense, documents that could provide valuable insights into this particular topic may exist in the other document types and the grey literature. Therefore, future studies may consider including them. Thirdly, the conceptual model proposed in this paper needs to be empirically tested for further determination. Additionally, this study emphasizes elucidating the conceptual relationship of ACAP and OR in the business and management literature. Hence, scholars may explicate this relationship from different perspectives and literature. The centrality of the review is also on knowledge-based and dynamic capability theories. Thus, future studies may examine the relationship from different theoretical lenses.

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Unpacking Key Sustainability Drivers for Sustainable Social Enterprises: A Community-Based Tourism Perspective

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Abstract: This study unpacked the key sustainability drivers for successful social enterprises or community-based tourism enterprises (CBTEs), based on a study of a Thailand's Best Responsible Tourism award-winner at Sapphaya Community in Chai Nat Province. Using a grounded-theory qualitative case study, our key research objective is to gain insights into how community and enterprise leaders of a national award-winning CBTE in Thailand can generate value by revalorizing its cultural heritage and local assets to achieve sustainable community-based tourism. The research also explores how the CBTE can increase local engagement with multi-stakeholders. Our findings indicated two key sustainability drivers, including leadership and local engagement, for sustainable social enterprises. An emergent model of leadership and local engagement in driving the sustainability of CBTEs is proposed. It implies an importance of CBTE leadership as a critical factor that helps preserve community endowments (e.g., historical sites and cultural heritage) as well as develops social capital. The local engagement with a good sense of ownership and community participation is the key enabler toward sustainable tourism. The results also suggest how-to processes in cultivating sustainable social enterprises in practice and toward policy implications.

Keywords: sustainable enterprise; sustainable entrepreneurship; social entrepreneurship; community-based tourism enterprise; community-based social enterprise; social enterprise; community-based tourism; sustainable tourism; sustainable development; sustainability; SDG

1. Introduction

Worldwide, corporate sustainability has become an essential topic among academics and businesses. Previous research mainly focused on large corporations [1–3], yet studies in small enterprises, such as community or social enterprises, are still underdeveloped [4,5]. Moreover, the COVID pandemic has severely hit these small community and entrepreneurial enterprises the hardest [6]. The pandemic crisis had adversely put tourism, a fast-growing socio-economic enabling sector in many countries, to a halt [5]. Additionally, sustainability in this sector toward sustainable tourism is questioned.

The United Nations World Tourism Organization (UNWTO) defined "sustainable tourism" as "Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities" [7] (p. 12). Since then, the literature in the field of sustainable tourism has been growing [8]. A distinct form of tourism toward sustainability is named community-based tourism, or CBT. Community-based tourism (CBT) emerged as an alternative means of promoting local community development and social empowerment while driving sustainable economic growth through tourism.

Largely, CBT is considered one type of sustainable tourism that aims to support sustainable development within the community and county to achieve the United Nations Sustainable Development Goals (UN SDG). At the international level, CBT has gained much interest, as it can help grow rural and sustainable tourism that purposefully helps to generate incomes and create jobs for near and far-reaching communities or rural areas in

the bottom of the pyramid [9,10]. In many developing countries, such as Thailand, CBT has gained popularity and acceptance due to the importance of the tourism sector in the emerging markets [11,12].

Moreover, CBT supports the development of community-based tourism enterprises (CBTEs) and social enterprises, particularly in the small- and medium-business sector [5]. The latest literature highlights that these CBT enterprises may be the most crucial driver for community development and social transformation toward socio-economic sustainability [13]. Yet, studies on the future development of social enterprises, such as CBTEs, have been lacking with little research [14,15]. The topic has become an important global issue with rising attraction.

The sustainability of community-based tourism enterprises (CBTEs) results from various factors such as leadership, utilization of local assets, local ownership, community participation, and engagement [5,16]. Among these factors, the literature emphasizes the importance of leadership and community participation as the key success factors of CBTE, since local people are "embedded" and are part of tourism products [17,18]. Previous studies in CBTEs have examined how CBTEs utilize local social capital and network with external stakeholders to sustain their organizations [19,20]. However, they tend to focus on sustainability at the macro, organizational level, while the fine-grained level study and research insights of how individuals (i.e., enterprise/community leaders and entrepreneurs) in CBTEs mobilize resources and engage with local and external parties is limited [21].

This study aims to unpack key sustainability drivers for successful CBTEs, using a grounded-theory qualitative case study. Our key research objective is to gain insights into how community and enterprise leaders of a national award-winning CBTE in Thailand, called Sapphaya Community in Chai Nat Province, can generate value by revalorizing its cultural heritage and local assets to achieve sustainable community-based tourism. In addition, we intend to explore how the CBTE can increase local engagement with multi-stakeholders. Therefore, our key research questions focus on:

(1) How can community and enterprise leaders of a national award-winning CBTE in Thailand at Sapphaya Community generate value to achieve sustainable community-based tourism?

(2) How can the CBTE increase local engagement with multi-stakeholders?

In total, our paper aims to contribute to the limited knowledge in this emerging field, particularly in the CBSE research context, in a fast-developing country such as Thailand. Later, we will provide the relevant literature review and a research methodology used in the study. Finally, we will discuss insightful findings, implications, limitations, and future research directions in turn.

2. Literature Review

2.1. Overview of Community-Based Tourism Enterprise (CBTE)

In the literature, community-based tourism (CBT) is considered as an alternative to socio-economic and environmental sustainability, and balance in communities and society [14,15]. The concept of CBT dates back to 1985 by Peter Murphy's *Tourism: A Community Approach Reference* (1988). Murphy used systems theory to explain that there is interdependence between the socio-cultural, environmental, and economic components of tourism, which are essential factors in formulating a successful CBT strategy [22]. CBT is a form of tourism development that emphasizes community participation in the planning, management, implementation, and evaluation of tourism services [23,24].

Scholars identify many definitions of CBT, as follows. Inskeep [25] mentioned that community-based tourism focuses on community involvement in the planning and development process, and developing the types of tourism which generate benefits for local communities. Leksakundilok and Hirsch [26] defined CBT was whereby tourism was managed and controlled by the community. Simpson [27] provided definitions and interpretations of community-based tourism centered on the question of ownership, management, and/or control of tourism projects. Hence, the definitions of CBT center on community,

whereby the community becomes the owner of tourism services provision. CBT enactment increases local communities' sense of belonging and pride by "sharing their stories" of cultural heritage and traditions with visitors [28]. CBT generates meaningful income for the community while sustaining cultural heritage [29]. In summary, these CBT definitions share commonalities, such as the local ownership of the community development, local involvement in planning and management processes, plus fair and equitable benefits sharing within the community.

Historically, the concept of social enterprises (SE) has been popularized worldwide based on 2006 Nobel Prize winner Muhammad Yunus's introduction to the social business concept. Yunus's social microfinance for poverty alleviation has increased the growth of the SE concept. The topic has interested international researchers, practitioners, and policymakers [30]. Iyengar [31] defines SE as businesses or organizations that primarily focus on delivering social or environmental benefits in a self-sustaining way. Compared with other non-profit organizations, which have a heavy reliance on philanthropic charities and donations, SE is a more sustainable approach toward sustainability [32].

A community-based enterprise is a form of SE. It is "a community acting corporately as both entrepreneur and enterprise in pursuit of community common good" [18]. In contrast, a Community-based Tourism Enterprise (CBTE) is a tourism enterprise that is managed by the community (e.g., local entrepreneurs and businesses). Their goals are to provide economic benefits (e.g., reducing poverty [33]), social purposes (e.g., empowering local communities), and environmental benefits to the community via entrepreneurial activities [16,34]. For instance, CBTEs can provide additional sources of income for villagers and allow communities to control tourism activities (e.g., Ban Maekampong, Thailand) [35]. Residents can manage their resources (e.g., environmental and cultural assets) and promote the local economy and well-being [17]. CBTEs can also support local businesses and entrepreneurs, serving as role models for community and rural development for CBTs in other regions [18,36].

2.2. Key Drivers for Corporate Sustainability in CBTEs

Previous studies identified several factors that underlie the success of CBTEs. These include leadership [16,37], local ownership [27,38], community participation, and partnership support from within and outside the community [39,40]. In the literature, the local ownership and community participation and partnership can be renamed as local engagement [16]. The literature suggests that these factors are key drivers for corporate sustainability in CBTEs. However, evidence-based case study research that uncovers insights into how a CBTE can drive corporate sustainability to achieve sustainable community-based tourism is still lacking. Therefore, this paper intends to unpack key drivers for sustainable social enterprises, particularly exploring how leadership and local engagement drives sustainability for sustainable tourism.

2.2.1. Leadership

Previous research addresses the importance of leadership and corporate sustainability in diverse contexts. A bibliometric review by Hallinger and Suriyankietkaew [41] reveals the growing significance of sustainable leadership worldwide over the past three decades. The leadership concept identifies how leadership is a critical factor towards sustainability in firms and societies. Leadership can also drive sustainability in large organizations [2,3] and small and medium enterprises, or SMEs [3,5]. In the context of CBTEs, the literature identifies vital factors leading to success and sustainability. Leadership is one of the most critical factors differentiating successful and non-successful CBTEs [5,42].

Community leaders need to align community values with the sustainability goal of CBTEs and build the capacity of their CBTEs [16,43]. They may lead entrepreneurial ventures and seek opportunities for their CBTEs. For example, Olmedo et al. [44] found that leaders of rural social enterprises in Ireland "revalorized" community material settings and infrastructure (i.e., their old and derelict police building) for local benefit. Leaders

can act as facilitators for sustainable development in tourism regions. For instance, tourist operators in Tasmania, Australia, promoted ethical employment and created economic benefits in the area [45].

Moreover, community development success depends on community leaders' ability to create local narratives and obtain resources from stakeholders. Many entrepreneurs utilize knowledge about their places for their marketing, creating value for their local community. For example, rural food-based entrepreneurs need to use local resources (e.g., their heritage, culture, and tourist venues) and communicate the uniqueness of their food and tourist sites to attract customers [46].

Since CBTEs operate in communities, they are embedded in local social networks [19]. Apart from being local entrepreneurs, leaders of CBTEs frequently function as network spanners (or "embedded intermediaries" [20]) that bridge the local resources of the community with external resources. To get extra support (e.g., for capital, knowledge, and marketing), community leaders need to bridge local resources with external ones. Korgsgaard et al. [46] found that rural entrepreneurs in Scandinavian countries relied not only on the pre-existing network resources and social capital, but also built new resources with external parties after they operated their social enterprises in the community. Although more research on CBTEs and social entrepreneurship have increasingly shed light on how social enterprises utilize their networks to generate benefits for community, these studies tend to focus on the entrepreneurial activities at the organizational level of their social enterprises. The fine-grained level explanation and insight into how community leaders and social entrepreneurs engage with their communities, while using their local and external networks, are still lacking [19,20].

In this paper, we postulate that leadership is a critical success factor in CBTEs, as suggested by previous studies. Moreover, the literature supports the idea that community leaders should act as social entrepreneurs and network spanners. Therefore, this study aims to explore insights and broaden our currently limited knowledge.

2.2.2. Local Engagement

Local engagement is another factor for the success of CBTEs [16] because CBTE operations need cooperation from their community. According to Peredo and Chrisman [18], the success of CBTEs depends on the high level of community-orientation. Community-oriented members would consider the needs of the community while regulating their individual needs and freedom of choice. Moreover, a sense of ownership needs to be instilled among community members [47].

Many studies suggest that when local community members have ownership rights, they are collectively responsible and emotionally committed to their CBTEs. More awareness of tourism's positive and negative consequences on both society and the environment tends to increase emotional commitment [48]. When the local community members have a strong sense of belonging to their CBTEs, they likely participate fully and have strong collective responsibility. As a result, such local ownership and being emotionally committed to the community can lead to long-term sustainable tourism development.

The locals need to have pride in their heritage and local assets, and develop a sense of local ownership so that the local engagement with the CBTE will be increased and sustained. Apart from pride and local ownership, the proper governance structure and fair profit sharing are essential for the sustainability of the CBTE. Mohammad and Hamzah [49] found that the shareholder of tourism co-operatives in Malaysia increased the engagement of members, developed social cohesion, and gained support from communities by distributing incomes fairly.

Since local engagement is crucial for CBTE's success, many studies examined the role of a "highly committed community" and how it affects the performance of CBTEs. For instance, a case study of CBTEs in China by Yang et al. [50] found that the "participation ability" of members moderated the relationship between the participation willingness of community members and tourism psychological empowerment. However, few have

explained how local engagement and a committed community are created, nurtured, and maintained [17]. The ability to engage residents is necessary for sustaining the CBTE in the long term [16,18].

In light of the literature, our study proposes that local engagement is another critical success factor in CBTEs. Yet, insightful knowledge about how local engagement that comprises local ownership and community participation may enable sustainable development in the tourism sector is still underdeveloped. This paper aims to provide an insightful discovery that expands our inadequate understanding of this realm.

2.3. Case Setting: Sapphaya Community in Chai Nat, Thailand

Sapphaya is a small town located in the Chai Nat province in the central region of Thailand (about 200 km from Bangkok, Thailand) (see Figure 1). The community comprises 3000 residents. The village of Sapphaya is either a one-day trip or a weekend getaway for Bangkok residents. The community's way of life is associated with the Chao Phraya River. It is a strong community with many cultural capitals. The village of Sapphaya's strength lies in its long-inherited and cultural roots. There are various sightseeing spots, such as the Sapphaya old police station, old town market, Sapphaya temple, and ancient chapel (Figure 2a,b). The old police station building was constructed in the reign of King Rama V about 100 years ago, and now serves as a community museum and landmark of the town. This building was awarded the "Best architectural preservation project" by the Association of Siamese Architects under Royal Patronage in 2018 (Figure 3). The Sapphaya temple and a small ancient chapel are the centers of archaeological sites and Buddhism artifacts (Figure 4).

Figure 1. Map of Thailand (Creative Commons license). The star indicates the location of Chai Nat province in the map.

(**a**)

(**b**)

Figure 2. (**a**,**b**) Map of Sapphaya and the Old market walking street. Source: authors' photo ((**a**) Map of Sapphaya's cutural heritage and national resources for main tourism attractions).

Sapphaya's local community and sub-district municipality decided to develop the old town market toward a community-based tourism initiative in 2015. The community's young generation, who work in both the public and private sectors, have collaborated and set up the "Sapphaya Old Market Restoration Club", which aims to revive all the old community's attractions and preserve traditions. The Restoration Club has foreseen the value of history, culture, and practices that have transcended from the past to the present, which will fade away if not well preserved. The club aims to nurture and promote cultural capital, enhancing social and economic value. Their youth and the public can learn and be proud of the community's history by following the guidelines for fostering sustainable CBT.

Figure 3. The old police station of Sapphaya. Source: authors' photo.

Figure 4. The walking street over the Chao Praya riverbank. Source: authors' photo.

The Sapphaya's CBT leader and club members have worked together with good harmony and understanding. At the first stage of CBT development, the local community did not have much tourism management knowledge, so they required know-how assistance from many external agencies. The Sapphaya sub-district municipality cooperated with the local community in utilizing the government budget for its Sapphaya historical research. The Sapphaya historical research project, which received support from the academic team from Suan Dusit University, King Mongkut's Institute of Technology Ladkrabang, Sripatum University, and International College of Mahidol University, contributes values to the community, such as a knowledge base, local awareness and conscience, and CBT project. The historical data educate and visualize the local community on how much the Sapphaya cultural heritage is valued, especially the old Sapphaya police station building. The findings of the Sapphaya historical research reveal the historical knowledge of their local people and Sapphaya areas. This research finding breeds local awareness and concerns about how to conserve their heritage and culture for the next generation's sustainably.

The Sapphaya Old Market Restoration Club collaborated with the Sapphaya sub-district municipality to organize the walking street over the Chao Praya riverbank from 2015 to 2017 (Figure 4). The street is about 500 m long—many tourist attractions along the routes start from Wat Sapphaya Wattanaram to the old Sapphaya house Building. In February 2018, many agencies, tourism personnel, and community members introduced the flea market along the walking street (Figure 5). The weekend flea market uses the concept of the green market, which refrains from using disposable foams and plastics, turning to environmentally friendly materials which are not harmful to health. In September 2018, the village of Sapphaya received a funding budget from Chai Nat province to organize a night market.

Figure 5. Flea market on the walking street. Source: authors' photo.

The village of Sapphaya is one of the successful CBT models newly developed in less than five years. It is a tourist destination promoted as cultural tourism, and attracts tourists who like history and culture to visit throughout the year. Before the CBT was introduced in 2015, residents of Sapphaya worked mainly in the agricultural sector. They had a minimal income to sustain their family without much savings. After the Sapphaya old market was launched, sellers and business owners in this area generated revenue of around 50,000 Thai baht per day (=1500 US dollars). The number of tourists visiting Sapphaya reached 1000–1200 per day before the pandemic. The Sapphaya old police station was awarded the Best Architectural Preservation Project in the Institute and Public Building category, organized by The Association of Siamese Architects under Royal Patronage in 2018. Sapphaya old market won the second prize in the Best Rural Tourism Award in the category of Best Responsible Tourism, organized by the Tourism Authority of Thailand in 2020. In 2022, Sapphaya was awarded one of the top 100 stories of Green Destinations from the Green Destination Foundation, The Netherlands.

Here are tourism products and services offered in Sapphaya. Tourists can choose services according to their interests:

1. The green market refrains from using disposable foams and plastics, turning to environmentally friendly materials that are not harmful to consumers' health.
2. Cultural walking tour along the Chao Praya riverbanks.
3. Community products include herbal tea from white shrimp plants, local Thai desserts, and food made from toddy palm.

3. Research Method

Qualitative case study is suitable for examining rich contexts and understanding multiple sources of data [51,52]. Qualitative research can be used to build theory when the theory in that area is in a nascent stage [53]. Over the past two decades, research in tourism and hospitality mostly used a quantitative approach; however, more recently, there have been increasing numbers of qualitative case studies in this field [54–58]. This study adopted a qualitative case study research design to provide insights into the leadership and local engagement of CBTE. Before entering the fieldwork, we reviewed the literature on CBTEs, and critical success factors of CBTE to gain theoretical sensitivity [59,60] of factors (e.g., leadership, local engagement, stakeholder management) in the award-winning Sapphaya community-based social enterprise (CBSE). The literature helped us plan the in-depth interview guidelines and data collection.

In general, a multi-data collection method was adopted to answer the research inquiries. The primary data were derived from various interviews with the community stakeholders, including the community leaders, local entrepreneurs, and residents. Moreover, we collected the primary data from in-depth interviews with its related external stakeholders from the CBTE award committees of Thailand Rural Tourism Award 2020 and tourists. The primary data were derived from a total of 20 voluntary participants. The study was conducted during the COVID-19 pandemic (2020–2021), using both online and onsite modes.

We also collected data from participative and non-participatory observations through an actual field visit to understand the real-life context [61]. The research was conducted according to the international ethical standard approved by the Mahidol University Central Institutional Review Board (MUCIRB). All participants were informed of the study objectives.

For the secondary data, we collected data from publicly available publications, such as newspapers and publicized social media (e.g., YouTube, Facebook pages, and official websites of Sapphaya) from reliable sources and institutes (e.g., the Tourism Authority of Thailand). The data were triangulated with in-depth interviews and observations for further analysis.

In the analysis phase, we used the qualitative data analysis software MaxQDA 2020. We analyzed the data using the grounded theory approach by coding data into open codes, selective codes, and core categories [60,62,63] (see Table 1 and Figure 6). We constantly compared data with our emerging codes and categories. For instance, one informant commented that they "*discussed among residents, village leaders, and municipality officers and decided to fund the historical research project to study the history of us [Sapphaya]*". We coded this data as one of our open code—"A1.1.1 Researching their cultural roots" (see the first row of Table 1). When we had many open codes, we grouped and regrouped them into a selective code. For example, the open codes A1.1.1 Researching their cultural roots and A1.1.2 Discovering historical data were grouped under the selective code of A1.1: Appreciate the value of heritage. Then, we tried to find relationships among our selective codes and formed core categories. For instance, the selective codes A1.1 Appreciate the value of heritage and A1.2 Revalorizing local assets into tourism resources are linked because these codes are about using the heritage and local assets of Sapphaya to build its tourism capability. Thus, we grouped these codes as a core category—A1 Using opportunities from local resources.

After finishing the coding and creating core categories, we have seven core categories. They are: A1 Opportunity from local resources, B1 Leadership ability of Sapphaya, C1 Local engagement, D1 Pride in their community, D2 Local ownership, D3 Engaging with future generations, and D4 Sharing benefits to stakeholders. Table 1 shows examples of codes and our core categories, A and B. Then, we started to build our grounded theory model of key success factors to sustain CBTEs. The core categories become the key factors in the model. We grouped and regrouped these factors and derived the relationship among

these factors. We then checked and finetuned the model against our research memo and the literature to tease out the contributions and implications of our study.

In summary, the described research method helped us gain insights and knowledge about the CBTE's contextual development from the evidence-based case study.

Table 1. Examples of open codes, selective, and core categories.

Data	Open Codes	Selective Codes	Core Categories
"We discussed among residents, village leaders, and municipality officers and decided to fund the historical research project to study the history of us [Sapphaya]."	A1.1.1 Researching their cultural roots	A1.1 Appreciate the value of heritage	A1 Using opportunities from local resources
"Our community and the Sapphaya Wattanaram temple wanted to celebrate the discovery of the ancient reclining buddha image in 2013. This Buddha image is one of the rarest." "Our old police station was built around 120 years ago during King Rama V's reign."	A1.1.2 Discovering historical data		
"We want to use the old police station for the learning center to teach us about our history, how our community evolves, how our religions and monarchy are linked with our community."	A1.2.1 Using historical site as learning center	A1.2 Revalorizing local assets into tourism resources	
"We decided to renovate our old police station because it is one of the kind that still exists in a very good condition."	A1.2.2 Renovating sites		
"Our CBT started from zero. We did not have any tourism knowledge" "We visited many tourist sites such as Sukhothai and Chiang Rai to broaden our perspectives and to convince ourselves that even though we are a small community, we can develop it into a CBTE."	B1.1.1 Bridging the gap in tourism ability	B.1.1 Creating tourism ability for Sapphaya	B1 Leadership ability of Sapphaya CBTE
"We want to differentiate ourselves from other CBTEs, and we thought that our traditional food such as Kang Bon [curry], Choochi Pla, Laab Plara, authentic Thai dessert such as Med Kanoon is our distinctive feature. Sapphaya is, in fact, a place that produces traditional Thai desserts."	B1.1.2 Differentiating its tourism offering		
"The community leaders fortunately attended a workshop offered by a tourism professor, Dr KT, from Mahidol University. We liked her training style, and thus we decided to hire her as a consultant. She provided us with the guideline for improving Sapphaya tourist offerings." "We, fortunately, received support from professional consultants. It gave us the shortcut from each lesson learned and helped us quickly develop our own Sapphaya Model."	B1.2.1 Seeking advice and expertise from experts	B1.2 Networking with external parties for opportunities and knowledge	
"We received help from many parties, both government and non-government. Sapphaya sub-district municipality, Sapphaya district community development office, and Chai Nat Provincial office helped initiate the renovations at Sapphaya old market."	B1.2.2 Seeking support from external sources.		
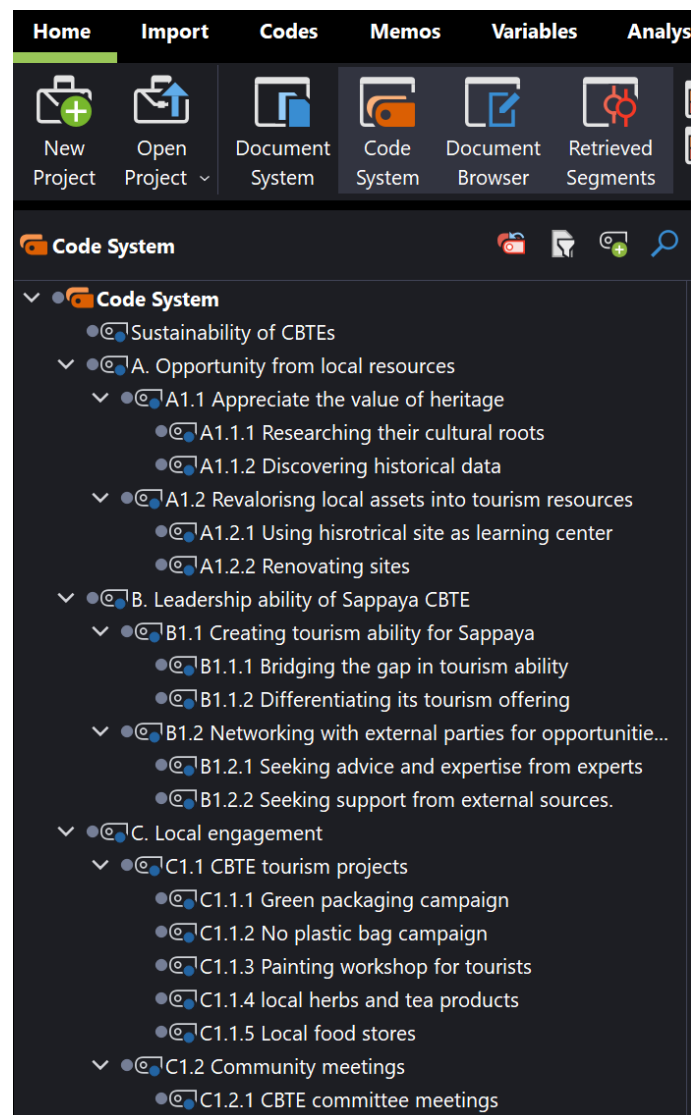
Figure 6. Coding structure of the case in MaxQDA 2020.

4. Findings

Our analytical findings are based on the grounded theory approach. This section also identifies the key sustainability drivers, namely leadership and local engagement, and its process to develop the Sapphaya social enterprise toward sustainable tourism. Section 4 starts with how the Sapphaya community discovered the community-based tourism opportunity from the government-funded historical research project (Section 4.1). Then, we elaborated on the leadership and local engagement process (Sections 4.2–4.4) in developing Sapphaya into an award-winning national CBTE of Thailand.

4.1. Opportunity from Local Heritage

Before 2013, the community had no interest in tourism since they thought they had no natural tourism assets. One resident commented, "*We didn't think that Sapphaya had any tourism potential*". However, the goal to develop their community into a community-based tourism site was initiated after they had serendipitously uncovered the history of their community from funded historical research from the government. The residents were surprised to learn about the history of the ancient reclining buddha image (see Figure 7), which is relatively rare. A community leader recounted the origin of the Sapphaya CBT: "*Our community and the Sapphaya Wattanaram temple wanted to celebrate the discovery of the ancient reclining buddha image in 2013. This Buddha image is one of the rarest. . . . We got*

government funding that allowed the community to specify what was best for our community. We discussed among residents, village leaders, and municipality officers and decided to fund the historical research project to study the history of us [Sapphaya]".

Figure 7. The reclining buddha image of Sapphaya. Source: authors' photo.

Furthermore, the research suggested that the old police station (Figure 3) was built in 1901 A.D. during King Rama V's reign, and this style of police station (with good condition) is scarce in Thailand. The Sapphaya old police station is not only a landmark of the community but also a catalyst to create a sense of place and local ownership among villagers. Thus, the residents utilized the historical knowledge of Sapphaya and set up the Sapphaya "learning centre" project to make locals appreciate their community's history. A community leader shared the objective of this learning center: "*We want to use the old police station for the learning center to teach us about our history, how our community evolves, how our religions and monarchy are linked with our community. ... We want to make the future generation realize the importance of our heritage through CBT activities*".

4.2. Leadership and CBTE Initiative

The community and municipality leaders wanted to promote these sites as part of their tourism spots. However, they were not confident they could become a successful community-based tourist site because they had no tourism experience, skills, or knowledge. "*Our CBT started from zero. We did not have any tourism knowledge*", said a resident. Thus, they visited other community-based tourist provinces and observed how these CBTEs operated. A CBT leader commented: "*we visited many tourist sites such as Sukhothai and Chiang Rai to*

broaden our perspectives and to convince ourselves that even though we are a small community, we can develop it into a CBTE".

The residents then agreed to form the Sapphaya Old Market restoration club. This club committee aimed to revitalize Sapphaya's old market areas (Figure 8) and promote their ways of life, local food, and history to differentiate its marketplace from other CBTs in Thailand. A community officer noted that the cultural and heritage advantage creates uniqueness for the Sapphaya tourism site: "*we want to differentiate ourselves from other CBTEs, and we thought that our traditional food such as Kang Bon [yellow curry], Choochi Pla [coconut curry], Laab Plara [spicy fish salad], and an authentic Thai dessert such as Med Kanoon [caramelized jackfruit custard] is our distinctive feature. Sapphaya is, in fact, a place that produces traditional Thai desserts*".

Figure 8. Sapphaya old market and walking street. Source: authors' photo.

Since they realized they had no tourism knowledge, the residents sought advice and expertise from external experts. During the CBTE forming/exploration stage, the sub-district municipality and academic researchers played essential roles in guiding and managing sustainable tourism in the community. The community committees hold meetings with academics to discuss improving entrepreneurial skills and managing tourism business operations. The municipality leader mentioned that the community leaders "*fortunately attended a workshop offered by a tourism professor, Dr KT, from Mahidol University. We liked her training style, and thus we decided to hire her as a consultant. She provided us with the guideline for improving Sapphaya tourist offerings*". The consultant provided a checklist on what to improve based on the World Tourism standard. "*We, fortunately, received support from professional consultants. It gave us the shortcut from each lesson learned and helped us quickly develop our own Sapphaya Model. The model is how to create, manage, and evaluate our community-based tourism activities*"—Head of Sapphaya community-based tourism enterprise. The committee also sought advice from other academics and tourism experts (e.g., what tourist products and services should be improved, how to do marketing, and how to communicate their uniqueness to attract tourists). Community leaders and municipality officers also attended workshops and training in tourism development in Bangkok and other provinces. The knowledge from consultants and training is considered the catalyst for the success of the Sapphaya old market.

4.3. Networking with External Parties for Opportunities and Knowledge

The CBTE leaders and management team networked with outside stakeholders, such as local governments, business enterprises, and academics, to revive the Sapphaya old market. When the Sapphaya Old Market Restoration Club was set up in 2013, it received help from many parties, both government and non-government. Sapphaya sub-district municipality, Sapphaya district community development office, and Chai Nat Provincial office helped initiate the renovations at the Sapphaya old market to preserve the traditional values and historical heritages. Scholars from many universities, including Suan Dusit University, King Mongkut's Institute of Technology Ladkrabang, and Mahidol University, encourage learning and provide advice, information, and workshops for conducting CBT. The Tourism Authority of Thailand offers funding and advertising to promote the destination. Sapphaya community-based tourism enterprise's committee (B) commented on the role of external support: "*A lot of the external cooperation and partnership has taken place to develop Sapphaya community-based tourism. Sapphaya sub-district municipality helped us connect with experts in each field, such as history, community tourism, marketing, and management. We also partner with the Tourism Authority of Thailand, Lopburi office, to promote the tour program, combining it with other attractive communities nearby*".

4.4. Local Engagement

This section discusses the role of local engagement in Sapphaya, which is another crucial factor underlying the success of this case. Sapphaya community members have active participation in revitalizing and restoring their community. The members help protect and conserve their cultural heritage from rapid urbanization and modern development pressures.

4.4.1. Pride in Heritage

Before the Sapphaya Old Market Restoration club was set up and historical research was conducted in 2013, not many people in the community knew how essential and invaluable the long history of the old police station and Buddha sculpture in Sapphaya Temple was. After the project was completed, the community leaders appreciated the historical information about Sapphaya. The committee realized how important it was. Thus, they aimed to utilize sociocultural and historical heritage as a community asset. They also sought to promote these sites' cultural significance to residents and tourists.

The Sapphaya Old Market Restoration Club committee is essential in creating pride among community residents and driving local engagement. The term of community committees is every two years to allow everyone to participate and experience managing tourism. The local market leader, Mrs. Ngeklang, works with the rest of the residents in the community. She is one of the key persons in consulting, guiding, and motivating community members to participate and be involved in decision-making about the change or improvement processes. "*Our management team must be responsible for all decisions we make. We must think carefully of both the positive and negative consequences of each action for the community*". *Head of Sapphaya community-based tourism enterprise.* An informant further commented on the strength of the committee's leadership: "*The enterprise committee does not have any conflict of interest. Everyone voluntarily joins the committee as they want our Sapphaya to develop and make our own decisions on tourism activities that enhance our community's well-being*".

The people of Sapphaya are proud of their community's authentic culture and heritage, especially the old police station, which was awarded the "Best architectural preservation project" by the Association of Siamese Architects under Royal Patronage in 2018. Traditional Thai food and desserts are well preserved beside traditional wooden shophouses, temples, and old local cuisine. They represent the authenticity of the community that has been attracting many visitors. The Head of Sapphaya community-based tourism enterprise noted the importance of their social capital and heritage: "*Our community has substantial social capital. This social capital derived from ancestors in the past and passed through the young generation, whether it is an old building, an ancient house, a hundred-year-old market, or Buddhist*

temples are our social capital". Residents in Sapphaya are aware of their cultural and natural resources, which are the primary tourist attractions. Visitors come to the market to shop, find something to eat, and discover and learn more about traditional lifestyles and old values.

4.4.2. Local Ownership

After people in Sapphaya perceived cultural and historic resources, particularly historic buildings and architecture, as valuable and irreplaceable, they were happy to preserve the community's culture, old buildings, and architecture. These are essential assets that attract visitors. They accepted the shared responsibility of developing, organizing and managing community-based tourism activities to remain attractive destinations for future visitors. "*When we ask for help in community initiatives, we do not have to wait long for residents to accept. They never hesitate to help. Instead, they respond quickly and are eager to solve those issues*"—commented Sapphaya community-based tourism enterprise's committee (A). For instance, every shop in the old market follows the rules not to use plastic bags. It encourages using recyclable materials (e.g., green packaging of desserts) to make the green market. An officer noted that it took a three-year effort to teach community members to recognize the importance of green consumption, waste management, and the sustainability of Sapphaya: "*for the green market initiative, we have the campaign to reduce [and ban] the use of plastic bags and foam. Everyone in the community comes to help. They keep an eye on each other and help spot something wrong. So, there is no need to have any dedicated inspector from the local official*".

Sapphaya community members set up community committees consisting of the shop owners in the market and the number of residents elected as representatives of the community. The annual meeting held at the sub-district municipality office encourages community members to participate, cooperate, and participate in decision-making processes related to sustainable tourism. Because each resident represents the community's image, they take care of the heritage assets, including keeping their buildings and pavement clean, and improving hospitality to enhance the tourist experience. "*The old market was restored through strong cooperation of local people in preserving their cultural and natural heritages. The subdistrict municipality helped with some funding and promoted our old market revitalization project. Community members cooperated and worked with them to reconstruct and repair wooden shophouses and surroundings to attract visitors*"—commented the Head of Sapphaya community-based tourism enterprise. Moreover, almost every household can provide tourist information, such as the history of the community, the attractions nearby the market, and the locations of famous shops and public toilets. Each household is encouraged to have responsible and sustainable use of cultural heritage and natural resources to maintain long-term viability.

4.4.3. Engaging with the Future Generation for the Sustainability of CBT

The community leaders realized the importance of engaging every segment of community residents (from young to old) to ensure the sustainability of the Sapphaya CBT. They paid more attention to training the future generation of residents of Sapphaya and aimed to inculcate a sense of pride and local ownership among them.

> "*We want to preserve our long history and culture. So, we think about how to pass it on to the next generation. So, we integrated this information and content into the school curriculum. We got support from the local primary education office in developing the course that talks about Sapphaya's long history, local way of life, unique traditions and cultures that might only be found in the area. Finally, our Sapphaya modules are put in the elementary school program.*"—Head of Sapphaya community-based tourism enterprise

With the support and partnership from both government and academics, the Sapphaya course was developed to educate the younger generations and children in schools. The course consists of two modules. The first module is on the history of Sapphaya. The second module focuses more on social study, focusing on the traditional culture. The Sapphaya course is integrated into the primary school curriculum from Grades 1 to 6 in the area. A

representative from the education office explained the details of the two modules: *"The first module on the local history link to the main Thai history class required by the ministry of education. At the same time, the second module on tradition and culture (such as the traditional of burning "Khao Lam" dessert [sweet coconut sticky rice in bamboos]) will link with the social studies and vocational workshop"*. The high-school students are encouraged to act as "communicator" or local tour guide to help give tourist information to tourists.

4.4.4. Sharing Benefits

Community participation in CBT allows members to gain more benefits from tourism. All participants agreed that benefits accrued from the success of CBT in the Sapphaya old market are being shared equitably among community members. The benefit-sharing scheme enhances community members' involvement and participation in tourism planning and development in their respective areas and specialty. When the community revives and revitalizes, everyone survives. Tourism brings sustainable incomes for households and restores the values of the traditional home-grown market. Local people are willing to participate in community projects. They contribute their time, labor, and money to those projects.

> *"The Sapphaya old market CBT introduces the development to every household regarding social and economic improvement. The benefits of tourism are shared and passed through local people. Moreover, when more tourists visit the market, our community increases its reputation, and local governments provide an additional budget for road improvement and direction signs in and around the neighborhood."*—Head of Sapphaya community-based tourism enterprise

In summary, the success of Sapphaya CBT was driven by the active role of community leaders, residents, and municipality officers who spotted the potential of their historical sites and traditional ways of life. They also equipped themselves with tourism knowledge, and made use of external networks (consultants, businesses, and government agencies) to develop the CBTE quickly. Based on the Butler's Tourist Area Life Cycle (TALC) [64], Sapphaya is in the development stage. The external partnership and support from local government, universities, and NGOs significantly contribute to its success. Academic researchers from Suan Dusit University, Mahidol University, and King Mongkut's Institute of Technology Ladkrabang, have played a role in supporting the development of Sapphaya as a CBT community. Government agencies and NGOs are the most critical external enablers leading to Sapphaya's success. Sapphaya has received research funding, marketing, and training support from several government agencies. As a result of a solid development network from the government, academics, NGOs, and private sectors, Sapphaya's CBT can enjoy the FastTrack of CBT development and shorten the learning curve.

During the COVID-19 pandemic, the Sapphaya green market and walking street were heavily affected by the outbreak. The travel restriction made it difficult for tourists to visit the market. Moreover, when the number of COVID-19 infections increased exponentially, the market was closed to comply with the preventive measures imposed by the government. The number of visitors sharply decreased compared to when the market was open before the COVID-19 outbreak. Since then, the number of tourists has been declining, and the amount of money they spend has been reduced. The leader and committee came up with selling the products online and on social media. The Tourism Authority of Thailand, Chai Nat office, together with the subdistrict municipality and scholars from universities, provides some funding, advice on online marketing, open shops in the e-marketplace, and operation process after the customer's order until the products are delivered.

> *"During the COVID-19 pandemic, we have the opportunity to attend professional workshops and new online and social media skills training by the government. In compliance with COVID-19 preventive measures imposed by the government, our walking street has been closed. So, the training helps our community to find another sales channel through online and social media. These new channels are an alternative sales channel*

that can support the lost income."—Sapphaya community-based tourism enterprise's committee (B)

4.5. The Underlying Model of Leadership and Local Engagement Factors in CBTEs

From the analysis of the Sapphaya case, we derive the model of how leadership and local engagement factors lead to success in CBTEs (see Figure 9). Firstly, communities spot tourism and social entrepreneurship opportunities from their local resources. These resources may be in the form of their natural resources (e.g., scenic landscapes, lush forests, and beautiful beaches) or social and cultural resources (e.g., unique histories, artefacts, or tourist venues). This factor is shown in Box A of Figure 9. In the case of Sapphaya, the opportunity for their community-based social entrepreneurship arose after the community discovered its history, heritage, and rare buddha image.
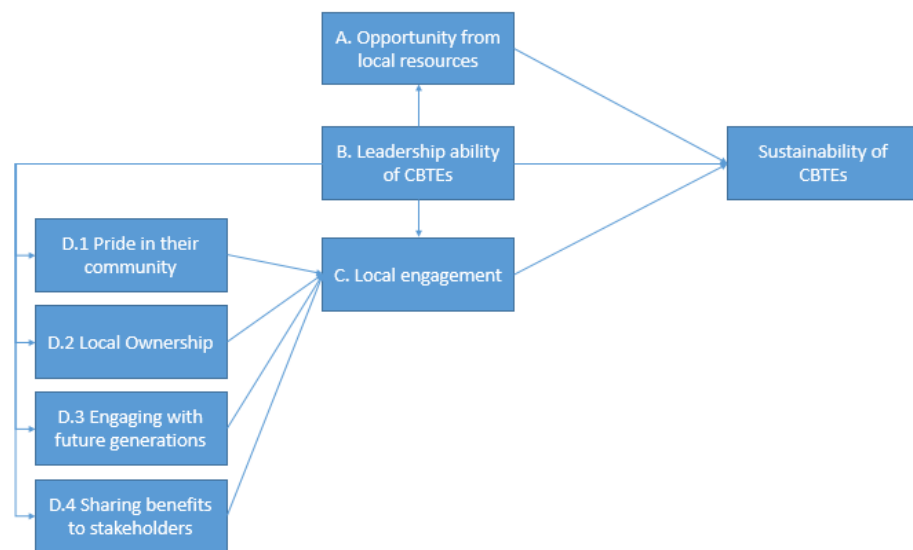
Figure 9. Emergent Model of Leadership and Local Engagement in driving the sustainability of CBTEs.

Secondly, the CBTEs have the leadership ability to marshal support from local communities and external networks (see Box B in the model). Leadership ability is crucial for the success of CBTEs because the leading team of CBTEs needs to address the issue of limited economic, social, and cultural capital in their communities by seeking help and bridging support from external bodies. Without enough external support (e.g., funding, knowledge, and skill development from NGOs, businesses, and governmental bodies), CBTEs may struggle to start or sustain their entrepreneurial activities. As for the Sapphaya CBTE, the leading team sought consulting advice from academics, and actively sought grants for training and financial support from local governments to build its tourism activities.

Thirdly, besides the leadership factor, CBTEs need to boost local engagement (Box C in Figure 9) to obtain support from residents in various entrepreneurial projects and activities (Box E). Local engagement may increase when the residents have developed a sense of pride in their community (Box D.1). The locals may be proud of their communitys' assets, such as environmental, social, and cultural capitals. For instance, Sapphaya residents were proud after learning about their cultural roots and the unique story of their Buddhist artefacts. The sense of pride may, in turn, boost local ownership (Box D.2). For example, the residents of Sapphaya also feel that they are the owner of the heritage and culture, and are motivated to preserve this cultural capital for future generations. The local ownership factor leads to a willingness to participate in CBTE's activities. For example, the residents of Sapphaya realized the importance of using green packaging and the "no plastic bags" campaign because they want to reduce waste from tourism activities.

Moreover, CBTEs should engage with various generations in their community in entrepreneurial activities, especially the young ages. By engaging with future generations (Box D.3), CBTE would guarantee the sustainability of their operations because younger generations would have opportunities to appreciate their heritage in various tourism activities. The engagement with the future generation allows CBTEs to prepare and nurture their future community leaders. Finally, residents would be demotivated to engage with CBTE's activities unless they were adequately rewarded for their contributions. Thus, CBTEs would need to develop fair profit-sharing schemes (Box D.4) to attract and engage residents. In the case of Sapphaya, residents and local businesses are happy to welcome tourists since their visits generate secondary income. When they feel they are the direct stakeholder in the success of CBTEs of Sapphaya, they are motivated to be a good host and make the community look attractive and welcoming for tourists.

5. Discussion

This study has unpacked the key sustainability drivers for a sustainable social enterprise at the Sapphaya CBTE. Our paper identifies that leadership and local engagement are critical success factors, and unpacks the essential process for developing successful CBTEs. Importantly, our study addresses the two research questions about (1) how the community and enterprise leaders of a national award-winning CBTE in Thailand at Sapphaya Community can generate value to achieve sustainable community-based tourism, and (2) how the CBTE can increase local engagement with multi-stakeholders.

We examined how community leaders of an award-winning national CBTE in Thailand (Sapphaya) generate value by revalorizing their heritage/historical assets for CBT tourism. Additionally, we studied how they increase engagement and develop local ownership in their CBTE. We found that the leaders of this CBTE (Sapphaya) were motivated to create a CBTE to provide secondary income for residents and preserve their community endowments (e.g., historical sites and cultural heritage). They have entrepreneurial roles in revalorizing historic buildings/sites for tourist attractions for the CBTE. The community leaders used local social capital (in entrepreneurial planning and aligning community goals) and marshalled support from external supporting parties (e.g., provincial and governmental offices, experts, and NGOs). The historical data about their community were incorporated into tourism activities, and local education and these initiatives created pride in their heritage and identity. The pride, in turn, promotes community participation and local ownership.

First, the findings suggest the active role of leaders of CBTEs is creating value, revalorizing local assets, and shaping the entrepreneurial activities of the CBTE. The community leadership team spotted the entrepreneurial opportunities (e.g., preserving the historical site of the 100 year-old police station of Sapphaya). They took risks and marshalled social capital (i.e., unity, sense of belonging, and reciprocity of community residents, family and friends, experts, and government officers) to build the community ventures. Thus, our findings align with previous studies on community-based enterprises that strong social capital in the community provides a solid foundation for community entrepreneurial activities [18,20,65]. The utilization of social capital in communities (e.g., social support, community reciprocity, goodwill, and community orientations) in this case has also been found in Relegan Siddhi, India. Their community leaders used social support, strong and weak ties, and goodwill among residents to fight economic hardship successfully [18,66,67].

However, our empirical case provides an interesting point that may enhance the previous theoretical model on the emergence of community-based enterprises [18]. Previous literature suggested that CBTEs typically build on their strengths (e.g., skills available locally) in the tourism offering [18,68]. However, we found that in Sapphaya, initially, the community lacked experience and knowledge in tourism. We saw the creation and development of tourism skills initiated by leaders and the communities (e.g., setting up a local tourist market and training craft skills in Sapphaya). The community did not own or have these skills, but they built and strengthened them and achieved the national award

in tourism. Hence, our study highlighted the vital role of leaders and the community in shaping and creating tourism value. They need not just rely on their pre-existing skills and resources [46]. They need to spot potential from their resources, take calculated risks to form ventures, combine old and new skills, and develop missing skills to achieve the success of CBTEs [69–71].

Second, the findings highlight the role of local engagement in the sustainability and success of the CBTE at Sapphaya. Although these results may confirm that local engagement is a crucial success factor of the CBTE [72–74], our paper unpacks the local engagement components (e.g., pride, local ownership, engagement with future generations, and sharing benefits). It emphasizes the agency of community leaders who saw opportunities in tourism income and the potential of their local endowments (e.g., heritage, traditional way of life). The local engagement is thus the result of the effort that leaders actively communicate the visions, goals, heritage, and benefits of CBTE to community members in formal and informal meetings. We found that communication and shared information boosts residents' sense of community-orientation and local ownership. The communities feel proud of their cultural heritage and feel they benefited from preserving their local endowments (e.g., cultural identity). This local ownership, in turn, increases the willingness to participate in the CBTEs [75,76].

However, our case study is still in its early stage of CBTE development; Sapphaya CBTE was set up in 2013. Previous studies in other regions (such as in Latin America and South Africa [77,78]) suggest that the governance structure, economic, and social relationships within communities would evolve. For instance, some members would want to pursue their entrepreneurial interests by setting up their own businesses and choose not to work for or help the CBTE. Thus, the change in social capital and economic activities in CBTE would raise the issue of local participation. Suriyankietkaew et al. [5] found that the case of the Thung Yee Peng CBTE in Thailand, the first winner of the Thai CBTE award, has seen the evolution of local entrepreneurship, leaders, and the governance structure of CBTE.

Moreover, Peredo and Chris [18] argued that the bigger the size of the CBTE, the more complex it would be for the leaders to mobilize local engagement. This difficulty is because the network structure of the community will comprise fragmented and independent social networks, instead of strong ties and close-knit networks of family and relatives. Hence, our findings raise an important issue of leadership succession, local engagement, and adaptation of the CBTE structure that matches changes in the local economy and social relations [20,79,80].

Third, our research responds to the call for more empirical studies, and examines how corporations achieve their organizational resilience and sustainability [81]. The theoretical model of organizational resilience put forward by Kantabutra and Ketprapakorn [82] suggested that organizational resilience is derived from a shared vision, values, and sustainability mindset. Since their model focuses on resilience at the organizational level, the micro-level view within organizations is not fully discussed. Significantly, the process of how actors within organizations create and shape shared values, visions, and mindsets is not elaborated. Hence, in our case studies, we provide insights into the actions of leaders and residents, and processes underpinning the resilience of CBTEs.

From the micro-level view, we found that although sustainability visions and sharing purposes may motivate organizational members to build resilience competence, the sense of pride and ownership of organizational members is also important. For instance, the residents of Sapphaya are proud to learn about their past heritage, and are more motivated to pass on this heritage to the next generation. Once the organizational members are convinced about the benefits and goals of the organization, they will develop ownership and be more motivated to develop organizational resilience and sustainability. Moreover, in their model, the factors leading to organizational resilience seem to suggest a linear relationship between factors. For instance, sustainability mindsets result in sustainability-related practices in organizations. However, our cases indicate that the practices in sustainable

tourism of residents of Sapphaya instill and boost their confidence and sustainability mindsets. Thus, our findings suggest the addition of a reiterative relationship between factors in the organizational resilience. Our study contributes to a more refined model of organizational resilience.

Regarding the managerial implications, our findings emphasized the two crucial factors (leadership and local engagement) driving the sustainability of CBTEs. Leaders of CBTEs who aim to improve the operations of their social enterprises should reassess or research their local assets (e.g., natural, cultural, and social resources in the area) to increase tourism potential. The case of Sapphaya is exemplary, in that the community lacks traditional tourism assets (such as beautiful beaches and scenic landscapes). However, the leaders of the CBTE managed to use their creativity and problem-solving skills to utilise their culture and heritage for tourism purposes. Moreover, our case also suggests that when the community discovers the value of their resources, it can use these assets to create a sense of pride and local ownership. Thus, leaders of CBTEs should actively promote the value of their resources and sense of ownership to their communities. Effective local engagement would unite the whole community and support the operations of their CBTEs.

Moreover, leaders of CBTEs should marshal support from their local communities by sharing benefits and seeking external funding to promote and sustain the CBTEs. Thus, leaders of CBTEs and social enterprises should expand their networks by engaging with business sectors, NGOs, academic institutions, and government agencies. Partnering with external organizations would bring in additional resources and knowledge to help develop their enterprises. Finally, we recommend that policy-makers focus on cultivating the resultant key sustainability drivers, specifically, strong leadership and local engagement in CBTEs, to develop social capital, grow sustainable social enterprises, foster sustainable tourism, and achieve our common goals of UN SDG.

6. Limitation and Suggested Future Research

The study provides a grounded-theory insightful analysis and results. However, the result is derived from a single case study within the critical time period (during the COVID-19 pandemic when the lock-down policy and travelling control were enforced). The contextual findings and understandings may fit the CBTE setting only. Thus, the CBTE results may not be generalized to other businesses in non-tourism sectors, or other types of social enterprises. Additional case studies in other regions should be conducted for further comparison to expand our limited knowledge and understanding of developing sustainable social enterprises in the CBTE context. Since each region and country have different local assets (e.g., natural resources, social heritage, and cultural resources) for tourism, we expect to see different strategies of CBTE leaders, and communities utilize their resources to create value and attract tourists.

Moreover, the cross-sectional data were only collected during the severe COVID-19 pandemic outbreak in Thailand. The researchers needed to collect data mainly through online video conferencing with limited numbers of stakeholders. Nevertheless, our team visited the location and experienced the tourism activities (e.g., local café, temple, old police station, local stores, and food shop) to validate the interview data and secondary data about the Sapphaya CBTE. Future research may collect more data from interviews with voluntary residents and tourists during the normal touristic seasons for comparisons. The insights into the tourists' and residents' perspectives would help the CBTEs develop their tourism offerings and better engage with residents in the community. This knowledge would also ensure the sustainability of CBTEs in the long run.

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Article

Bibliometric Analysis of Corporate Social Responsibility in Tourism

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Abstract: The large amount of research on corporate social responsibility in tourism shows its importance as a field of study. The role of tourism organizations and their impacts on sustainability have become increasingly important in recent decades. In addition, research on corporate social responsibility has expanded in scale and scope and can be found in a number of academic journals. The aim of this paper is to present the details of the academic work on corporate social responsibility in tourism and to demonstrate the intellectual structure of research in this field. This study analyzes 571 articles obtained from Scopus and published from 2002 to 2022 (August) and presents the development and growth of knowledge in corporate social responsibility and tourism. The study method used to extract the articles was based on the preferred reporting items for systematic reviews and meta-analyses (PRISMA). The results indicate that this field of study has expanded significantly from being studied primarily in Europe towards being studied also in developing countries, such as China and India. In addition, the research themes emerging in the field of corporate social responsibility in tourism include tourism behaviors and strategic approaches to corporate social responsibility. This review highlights the emerging trends in research on corporate social responsibility in tourism, the dominant academic journals, and the countries that focus on research in this area. Furthermore, directions for future research are also presented.

Keywords: corporate social responsibility; tourism; bibliometric analysis; sustainability

1. Introduction and Conceptual Background

Corporate social responsibility has become one of the most important topics in a variety of industries, including the tourism and hospitality industries, and is concerned with the values of all stakeholders, including social welfare and harmony, natural environments [1–3], and the social welfare and benefits of future generations. Furthermore, corporate social responsibility can help create consumer and employee trust [4,5], is one of the leading themes in current business environments, and is integrated as part of many corporations' strategic plans. Additionally, it is crucial that a company shows their commitments and responsibilities as a part of their sustainable development plans. However, based on most initiatives in corporate social responsibility from tourism organizations, the aims of tourism organizations are related to reducing cost savings and improving reputation rather than achieving the true outcome of corporate social responsibility [6].

Corporate social responsibility (CSR) includes all of the policies and practices that organizations implement to enhance the conditions and wellbeing of the participants, stakeholders, communities, and other parties in society in relation to the requirements, laws, traditions, and acceptance of the stakeholders [7].

Past studies on corporate social responsibility in tourism have branched out in various directions, with earlier work in this field tending to focus on macroperspectives [5,6,8] and later work exploring research more in terms of the microperspectives of corporate social responsibility in tourism. As the tourism industry has expanded, increasingly more

tourism businesses have emerged around the world, ranging from local to multinational companies. Furthermore, the tourism industry has a great impact on the usage of natural resources, human resources, and financial resources; therefore, ensuring that CSR processes and their implementation are effectively managed and monitored, including planning, impact assessment, resource allocation, monitoring, implementation, and evaluation [4–6], is important. In addition, CSR in tourism is represented by the responsibility of good corporate citizens of tourism organizations; as tourism develops, there are some potential negative consequences from the tourism activities and initiatives by the tourism organizations. For these reasons, the focus of CSR in tourism reflects the sustainable pathway of tourism developments and ethical behaviors to support the sustainable growth of the tourism industry [7,8].

Despite the ongoing COVID-19 pandemic around the world, several CSR initiatives were implemented to support society during this crisis. Several organizations [9], including tourism organizations, reflected on their social responsibility by in providing assistance to those affected by the pandemic, by employing or safeguarding workers despite the financial difficulties faced by the organization, and by creating many social programs to help stakeholders. CSR programs have evolved with changes in society; the economy; and the environment, including climate change. The social demands of stakeholders have particularly changed rapidly with recent new and emerging problems.

Therefore, CSR initiatives need to be updated and sensitive to the ever-changing environments in order to meet these new social needs and social goals, and firms should begin planning corporate social responsibilities with clear goals in mind and by using tangible measurements with respect to corporate social responsibility outcomes, such as fair income distribution, gender equality, and measurable improvements in environmental impacts from their corporate social responsibility [10]. CSR initiatives are expected to offer social and environmental benefits to the site of these CSR activities [11]. However, many studies in the past tended to focus on the CSR activities more than on the actual impacts of the CSR initiatives. The process behind these CSR initiatives includes its initial conception, activity development, implementation, and performance.

Generally, tourism development projects in private sectors are well supported by government agencies and public sectors for several reasons [12]: promoting employment, reducing income inequality, promoting the efficient use of resources, extending public transportation and city infrastructure, and developing worker skills. In addition, the development of the tourism industry can directly affect the development and improvement of traditions, cultures, festivals, and ways of life.

Tourism initiatives can result in both positive and negative impacts on the environment and society [12]. The role of CSR has been considered important not only for society and the environment but also for maximizing business returns [2]. In addition, CSR activities provide a positive image of the company by creating positive stakeholder relationships and thus promoting advocacy in their stakeholders.

CSR activities play important roles in sustainable development and are important in tourism organizations' strategies [2,13]. In addition, CRS not only can affect organizational operations but also can have positive impacts on the consumers' perceptions of the organizations themselves and on sustainability of the tourism industry.

In addition, collaboration among private firms, governmental organizations, and other non-governmental organizations is a key factor in developing CSR policies for the long-term success of sustainable tourism development because synergy and shared values among these parties are crucial for successful CSR implementation [5,7,13]. Moreover, CSR initiatives normally represent collaboration among various stakeholders, including private firms, public organizations, non-government organizations and local communities. Collaboration among these tourism-related organizations can shape their shared goals to ensure the expected outcomes, effective CSR planning and the efficient utilization of tourism resources.

Tourism organizations should always consider not only private benefits from tourism activities but also social benefits in the long-term development of sustainable tourism [6,14,15].

Some authors found that CSR strategies are crucial for companies as they offer great opportunities to contribute to society and allows companies to distinguish themselves from other competitors [16], especially when companies integrate the long-term implementation of CSR into their vision and mission [17].

Some authors also noted that the implementation of CSR constitutes an important activity for improving the level of awareness with respect to CSR activities, values, and strategies throughout a firm [16]. In this sense, CSR implementation not only includes taking action to achieve CSR outcomes but also includes communicating CSR activities to both stakeholders within the firms and those outside of the organizations [18]. It is obvious that successful CSR projects in tourism and also in other industries must pay attention to every step of corporate social responsibility from CSR planning and CSR activities, to CSR implementation and the measurement of CSR outcomes.

1.1. Scope of Corporate Social Responsibility

The scope of corporate social responsibility is presented in Figure 1. In terms of corporate sustainability, an organization demonstrates their corporate responsibility in three dimensions: social responsibility, economic responsibility, and environmental responsibility. In addition, all of an organizations' actions need to focus on their impacts on the planet, people, and profit (also known as the three pillars of sustainability or Triple Ps) [19,20]. Maintaining these three impacts in the implementation of a company's plans and in their vision, mission, and strategies is thus highly important.
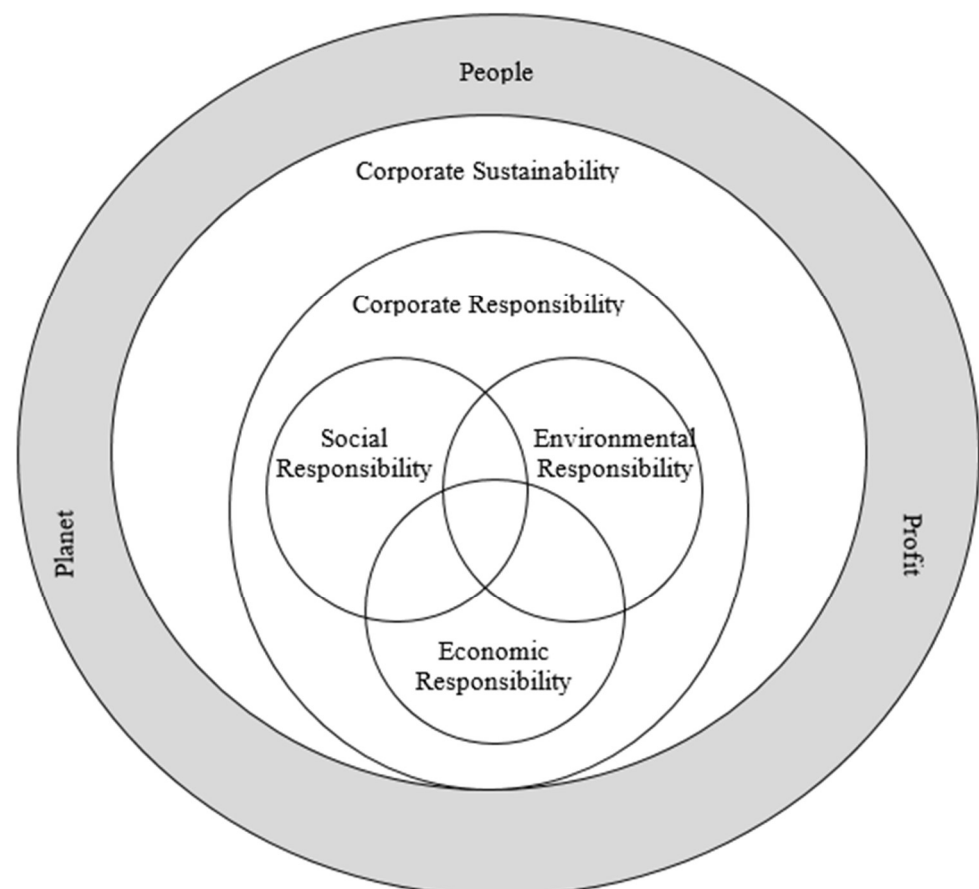
Figure 1. Scope of Corporate Social Responsibility. Source: Adapted from Marrewijk, V. M. (2003) [21].

The concept of corporate social responsibility has been developed through the lens of several theories, including the theory of the firm, resource-based view theory, institutional theory, agency theory, stakeholder theory, and stewardship theory [22].

Based on a review of articles published from 1992 to 2002, important topics related to the field of corporate social responsibility include environmental issues and ethics [23].

The benefits of corporate social responsibility include minimizing costs and corporate risks, improving legitimacy and corporate reputation, creating competitive advantages, and creating new values via the development of synergy within the organization [24].

One of the fast-growing aspects of corporate social responsibility in tourism is the identification of effective ways and methods of measuring corporate social responsibility performance, including reporting and external assurance for tourism and hospitality organizations [25]. The measurement of corporate social responsibility in tourism is one of the most important tools for developing this field of research, and measurements should be included at all levels, from the organizational level to the employee and consumer levels [26,27].

1.2. Conceptualizing Corporate Social Responsibility in Tourism

A large number of studies have been conducted and has set up a strong foundation for research in corporate social responsibility in tourism. In this review, data from research articles and journals dated between 2002 and 2022 are included. The following research questions represent the main focuses of this paper:

➢ Research question no. 1: What are the characteristics of scholarly work on corporate social responsibility in tourism published from 2002 to 2022?
➢ Research question no. 2: Which journals, authors, and articles on corporate social responsibility in tourism have achieved the greatest scholarly impact?
➢ Research question no. 3: What is the intellectual structure of research on corporate social responsibility in tourism?

2. Materials and Methods

This review adopted a science mapping approach based on bibliometric analyses, which is a process for documenting and synthesizing knowledge in the field of corporate social responsibility in tourism. Using this approach, this review offers an intellectual composition of knowledge developments in the field of corporate social responsibility in tourism. The evolution of this field and its other important dimensions are presented in maps or tables. The results of this methodology provide a clearer understanding of the topic, as well as identifies the key authors, influential articles, and the leading academic journals in the field. Therefore, the findings help guide new directions in research.

Search Criteria and Identification of Sources

The data used in this review were obtained from the Scopus database. Scopus is considered one of the most respected and widely used databases in social science research studies [28,29]. The time frame ranged from 2002 to 2022 (August), providing approximately 20 years of research in the field of corporate social responsibility in tourism. As the tourism industry is an important sector for many countries, including developed and developing countries, the focus of corporate social responsibility in tourism has expanded across many different fields of study, including tourism, hospitality, economic development, the environment, society, and cultures.

To develop an effective review process, the PRISMA guidelines (preferred reporting items for systematic reviews and meta-analyses) were used to search for and to identify articles in the Scopus database [30], as shown in Figure 2. The authors used (TITLE-ABS-KEY ("corporate social responsibility in tourism") AND TITLE-ABS-KEY (CSR in tourism)) in the keyword search, resulting in 1332 articles that were appropriate for inclusion in the data analysis. To implement the bibliometric analysis effectively, the authors

followed the protocol closely to ensure proper data analysis planning and execution, and transparency [31,32].

Identification	Screening	Eligibility	Included
All papers published on "corporate social responsibility" in SCOPUS (n = 8183 articles)	All articles found (n = 8183 articles)	Article abstracts assessed for eligibility (n = 1332 articles)	Articles included in bibliometric analysis and synthesis (n = 571 articles)
	Articles excluded based on application of exclusion criteria (n = 6851 articles)	Articles excluded due to relevance and unidentified bibliometric (n = 761 articles)	

Figure 2. The preferred reporting items for systematic reviews and meta-analyses (PRISMA) flow diagram detailing the steps in identifying and screening sources.

Most of the search results were from journal articles, conferences, and books. Moreover, the search results included sources with data from the relevant fields and mainly contained academic work published in English. The last step in the data preparation was screening and verifying the articles' eligibility, especially for duplications and article types. Finally, 571 articles qualified for the bibliometric analysis.

3. Results

3.1. Data Extraction and Analysis

Descriptive statistics methods were mainly employed to analyze the geographic distribution, size, trajectories, and growth of data in the articles included in the study. In addition, for the main types of analyses, the authors applied several techniques, including citations and co-citations [33–35]. The authors used descriptive statistics to investigate the size, growth trajectory, and geographic distribution of articles in the review database [36,37] and applied citation and co-citation analyses to evaluate the roles and impacts of article titles and author names in the area of corporate social responsibility in tourism.

For the citation analysis, the influence of the articles in the selected database are studied by focusing on how frequently each article was cited by other authors or articles [38,39]. In addition, citation analysis showed the quality of the academic work from the viewpoints of other researchers.

Additionally, co-citation analyses involve evaluating how many times two articles or two authors are included in the references of the articles included in the current review [40–42]. Co-citation analysis is also known as an approach to help indicate the importance of a particular study in terms of interdisciplinary ideas.

Authors or articles being co-cited by other researchers represents intellectual similarity, showing the significant impacts of those authors or articles [43,44]. Another type of analysis used in the current study was keyword co-occurrence, which involves exploring the number of times a keyword co-occurs in the Scopus database. This type of analysis can highlight the changes in the focus of research in the field of corporate social responsibility in tourism over time, and the trends can provide future research directions in the field [36].

3.2. Review Findings

Table 1, shown below, highlights that research on corporate social responsibility in tourism is truly interdisciplinary by nature because the topic has been discussed in various journals and has focused on different themes, namely business management, tourism, hospitality, sustainability, the environment, and energy. In the analysis, the threshold for minimum number of articles required was 5 out of 248 sources, and 24 journals met the threshold. Tourism Management had the most citations for corporate social responsibility in tourism, with 1975 citations, followed by the International Journal of Contemporary Hospitality Management, with 1078 citations. In addition, the total link strength indicates the total strength of the citation links between a given journal and other journals.

Table 1. Ten major journals focusing on corporate social responsibility in tourism.

No.	Journal	Subjects	Articles	Citations	Total Link Strength
1	Tourism Management	Tourism and management	22	1975	162
2	International Journal of Contemporary Hospitality Management	Hospitality and business	13	1078	89
3	Journal of Sustainable Tourism	Tourism and sustainability	30	831	109
4	International Journal of Hospitality Management	Hospitality and management	11	608	66
5	Current Issues in Tourism	Tourism and business management	16	445	45
6	Journal of Travel Research	Travel and tourism	8	337	34
7	Journal of Cleaner Production	Strategy and business management	6	304	16
8	Sustainability	Environment and energy	33	259	82
9	Asia Pacific Journal of Tourism Research	Tourism and business management	8	148	32
10	Corporate Social Responsibility and Environmental Management	Corporate social responsibility and environment	6	90	11

Table 2 presents the co-citations of sources in the selected research articles. These results support those of the citation analysis by highlighting the influence of each source or journal in this field of research. The results showed that Tourism Management (1159 co-citations) had the top co-citations, followed by the Journal of Business Ethics (1102 co-citations), the International Journal of Hospitality Management (1089 co-citations), and the Journal of Sustainable Tourism (908 co-citations). Interestingly, the Journal of Business Ethics was not within the top ten highly cited sources but ranked second in terms of most co-cited source. Furthermore, the total link strength indicates the total strength of the co-citation links between a given journal and other journals.

Table 2. Top ten co-citations of sources in articles on corporate social responsibility in tourism, 2002–2022.

Rank	Sources	Co-Citations	Total Link Strength
1	Tourism Management	1159	42,373
2	Journal of Business Ethics	1102	39,102
3	International Journal of Hospitality Management	1089	46,969
4	Journal of Sustainable Tourism	908	32,519
5	Annals of Tourism Research	626	22,032
6	International Journal of Contemporary Hospitality Management	608	27,407
7	Journal of Cleaner Production	442	14,544
8	Academy of Management Review	338	13,188
9	Journal of Business Research	293	13,495
10	Corporate Social Responsibility and Environmental Management	277	10,875

In Table 3, the ten most highly cited articles on corporate social responsibility in tourism are presented. The top cited article had 568 citations [45], followed by the articles by Inoue and Lee, with 389 citations; by Sparks, Perkins, and Buckley [46,47], with 309 citations; and by Henderson, with 262 citations [48]. The authors also provided further analysis based on the research perspectives of the leading articles in the field of corporate social responsibility in tourism.

Table 3. Ten most highly cited articles on corporate social responsibility in tourism based on Scopus citations, 2002–2022 (*n* = 571), in order.

Rank	Articles	Research Perspective	Citations	Links
1	Manaktola, K., & Jauhari, V. (2007). Exploring consumer attitude and behavior towards green practices in the lodging industry in India. International Journal of Contemporary Hospitality Management, 19(5), 364–377.	consumer perception	568	9
2	Inoue, Y., & Lee, S. (2011). Effects of different dimensions of corporate social responsibility on corporate financial performance in tourism-related industries. Tourism management, 32(4), 790–804.	CSR performance	389	26
3	Sparks, B. A., Perkins, H. E., & Buckley, R. (2013). Online travel reviews as persuasive communication: The effects of content type, source, and certification logos on consumer behavior. Tourism Management, 39, 1–9.	consumer perception	309	1
4	Henderson, J. C. (2007). Corporate social responsibility and tourism: Hotel companies in Phuket, Thailand, after the Indian Ocean tsunami. International Journal of Hospitality Management, 26(1), 228–239.	CSR review and policy	262	26
5	Font, X., Walmsley, A., Cogotti, S., McCombes, L., & Häusler, N. (2012). Corporate social responsibility: The disclosure–performance gap. Tourism Management, 33(6), 1544–1553.	CSR performance	190	18
6	Coles, T., Fenclova, E., & Dinan, C. (2013). Tourism and corporate social responsibility: A critical review and research agenda. Tourism Management Perspectives, 6, 122–141.	CSR review	189	30
7	Chou, C. J. (2014). Hotels' environmental policies and employee personal environmental beliefs: Interactions and outcomes. Tourism management, 40, 436–446.	Employee perspective	179	5
8	Zhu, Y., Sun, L. Y., & Leung, A. S. (2014). Corporate social responsibility, firm reputation, and firm performance: The role of ethical leadership. Asia Pacific Journal of Management, 31(4), 925–947.	CSR performance	166	2
9	Frey, N., & George, R. (2010). Responsible tourism management: The missing link between business owners' attitudes and behaviour in the Cape Town tourism industry. Tourism management, 31(5), 621–628.	Customer perspective	159	8
10	Theodoulidis, B., Diaz, D., Crotto, F., & Rancati, E. (2017). Exploring corporate social responsibility and financial performance through stakeholder theory in the tourism industries. Tourism Management, 62, 173–188.	CSR performance	130	11

Figure 3 presents the research perspectives obtained based on the relationship among important keywords found in the top cited papers on corporate social responsibility listed in Table 3. These results highlight the focus of research in terms of evaluating corporate social responsibility from the perspectives of the consumer, employee, policies, and organization. In addition, the multidimensional perspectives on this topic can provide an improved understanding on the initiatives, development, and the implementation of corporate social responsibility in tourism.
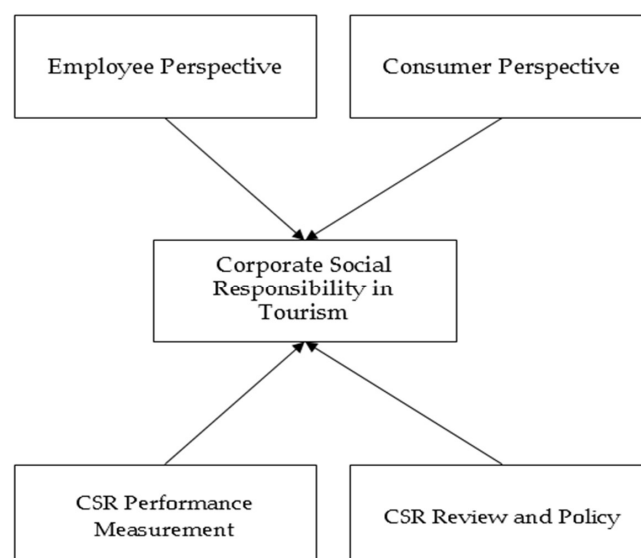
Figure 3. Research perspectives on CSR in tourism.

Table 4 below shows the co-citation analysis, presenting the degree or strength of the link for the articles that were co-cited within the 571 articles in this study. Remember, however, that these co-cited articles may be found in either the Scopus database or another academic database. In additional, these co-cited papers are considered by the authors or articles included in this review as very influential papers, implying that the journals of these highly co-cited papers are important in the field of corporate social responsibility in tourism: Tourism Management Review, International journal of hospitality management, Tourism Management, and Business Horizons.

Table 4. Ranking for the top ten most co-cited articles on corporate social responsibility in tourism, 2002–2022 (*n* = 571).

Rank	Cited Reference	Citations	Total Link Strength
1	Coles, T., Fenclova, E., & Dinan, C. (2013). Tourism and corporate social responsibility: A critical review and research agenda. Tourism Management Perspectives, 6, 122–141.	51	84
2	Kang, K. H., Lee, S., & Huh, C. (2010). Impacts of positive and negative corporate social responsibility activities on company performance in the hospitality industry. International journal of hospitality management, 29(1), 72–82.	30	75
3	Inoue, Y., & Lee, S. (2011). Effects of different dimensions of corporate social responsibility on corporate financial performance in tourism-related industries. Tourism management, 32(4), 790–804.	30	73
4	Henderson, J. C. (2007). Corporate social responsibility and tourism: Hotel companies in Phuket, Thailand, after the Indian Ocean tsunami. International Journal of Hospitality Management, 26(1), 228–239.	28	66
5	Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. Business horizons, 34(4), 39–48.	28	64
6	Holcomb, J. L., Upchurch, R. S., & Okumus, F. (2007). Corporate social responsibility: what are top hotel companies reporting?. International Journal of Contemporary Hospitality Management, 19(6), 461–475.	28	63
7	Carroll, A. B., & Shabana, K. M. (2010). The business case for corporate social responsibility: A review of concepts, research and practice. International journal of management reviews, 12(1), 85–105.	27	64
8	Dahlsrud, A. (2008). How corporate social responsibility is defined: an analysis of 37 definitions. Corporate social responsibility and environmental management, 15(1), 1–13.	24	47
9	Garay, L., & Font, X. (2012). Doing good to do well? Corporate social responsibility reasons, practices and impacts in small and medium accommodation enterprises. International Journal of Hospitality Management, 31(2), 329–337.	22	63
10	De Grosbois, D. (2012). Corporate social responsibility reporting by the global hotel industry: Commitment, initiatives and performance. International Journal of Hospitality Management, 31(3), 896–905.	22	60

In terms of the top countries (Table 5) publishing articles on corporate social responsibility in tourism, several countries from different continents showed a high number of citations in this field, including the United Kingdom (2305 citations) and Spain (1239 citations) in Europe and the United States (1622 citations) in North America.

Table 5. Top countries publishing research on corporate social responsibility in tourism from 2002 to 2022.

Rank	Country	Citations	Articles	Total Link Strength
1	United Kingdom	2305	69	618
2	United States	1622	72	466
3	Spain	1239	64	369
4	Australia	1095	46	178
5	China	784	52	316
6	India	688	14	93
7	Canada	489	13	173
8	South Africa	483	18	139
9	Taiwan	468	14	124
10	Hong Kong	348	19	165

One study highlighted that the majority of CSR research is mainly conducted in developed countries, including research reports on the environmental impacts and social benefits from CSR initiatives. However, from Figure 4, significant improvements in the amount of CSR research conducting in developing countries, including China, Malaysia, Turkey, Egypt, Saudi Arabia, India, and Pakistan, can be seen. In addition, Figure 3 demonstrates five clusters among the top countries with the most scholarly work on CSR in tourism. One of the most important highlights in Figure 4 is that each cluster includes countries from different regions or continents, implying that the scopes and issues of research on CSR in tourism has become more universal across continents. However, many existing studies on CSR in tourism primarily focus on advanced economies, and whilst environmental reporting is well established, research on the social impact of CSR and social reporting is either limited or absent [49].
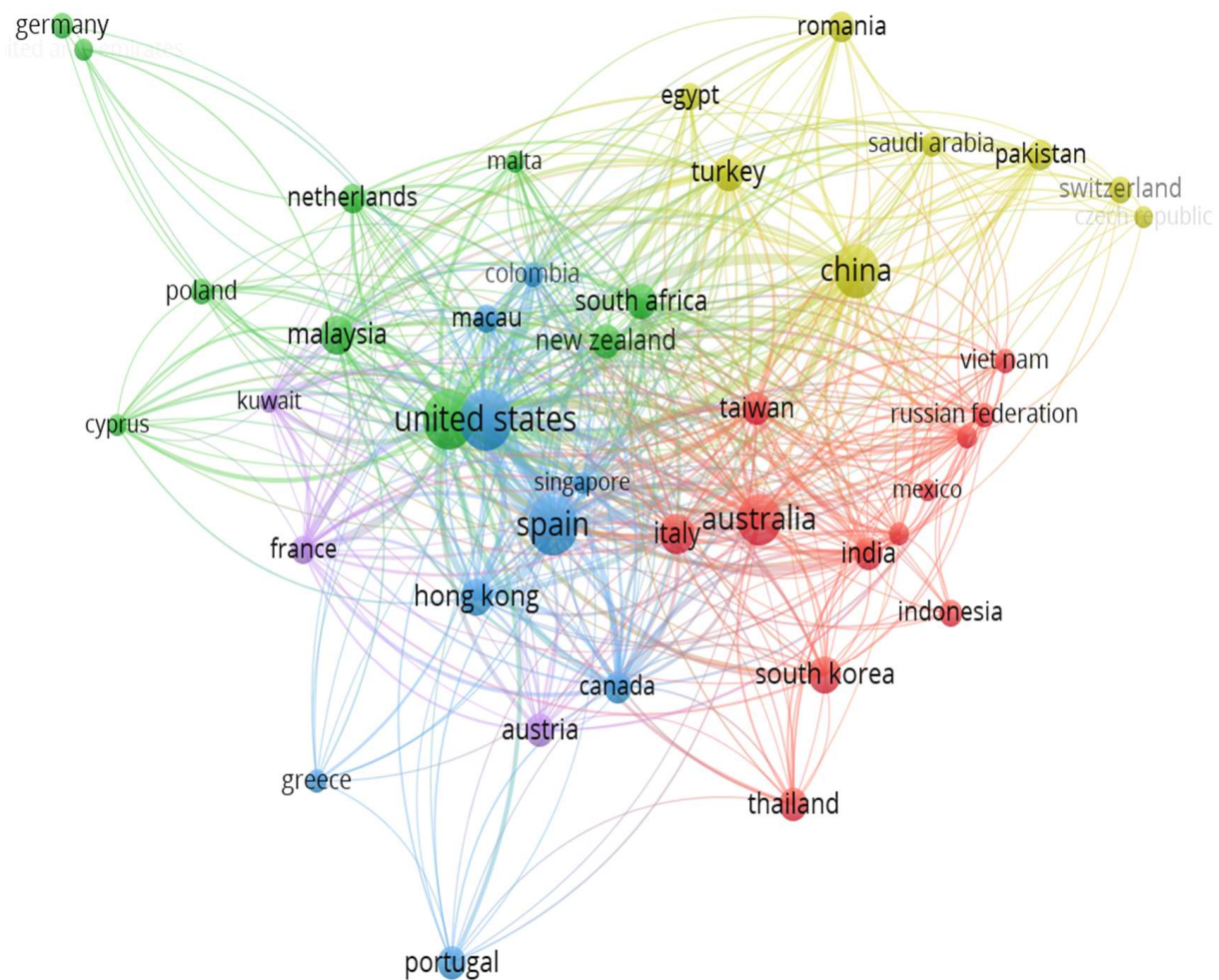
Figure 4. Map of the top countries focusing on corporate social responsibility in tourism.

The co-occurrence analysis presented in Figure 5 offers the structure of keywords with respect to corporate social responsibility in tourism and offers the relative focus of research based on the frequency of keywords. In addition, the keywords shown in the map are commonly used by researchers.

Figure 5. Co-word map for articles on corporate social responsibility in tourism published from 2002 to 2022 (threshold, 10 co-occurrences; displayed, 38 keywords).

The keywords in the study of CSR in tourism can be classified into five clusters. Cluster 1 includes keywords such as business, marketing, perception, strategic approach, and tourism economics. This shows that the research focus of CSR in tourism is in the areas of business management and strategic management.

Cluster 2 focuses on keywords such as sustainability, stakeholder, governance approach, and environmental management, representing another important cluster: research on policy related to CSR in tourism. Additionally, cluster 3 includes corporate social responsibility, economic and social effects, and sustainable development. Furthermore, cluster 4 contained ecotourism, ethics in tourism, and responsible tourism, showing that research on CSR focused on each type of tourism activity and practice. Finally, cluster 5 showed the aspects of CSR in the hospitality industry and in terms of the COVID-19 pandemic. This last cluster suggested a close relationship between tourism and hospitality and implied that even in a crisis, such as the COVID-19 pandemic, CSR issues are always an important concept to consider.

In terms of emerging themes in research on CSR in tourism (Figure 6), a greater number of scholars shifted their research in the early 2000s to 2006 from responsible tourism, tourism market, and corporate strategies to new research areas such as tourist behaviors; hotel industries; strategic approaches; and the COVID-19 pandemic, from 2018 to 2022. From 2020 to 2022, the COVID-19 pandemic clearly affected various areas of the tourism industry, including the scope of corporate social responsibility. Moreover, the emerging trends in research on corporate social responsibility in tourism have become a prominent strategic approach, implying that corporate social responsibility practices have been implemented in long-term plans and integrated into the visions and missions of tourism organizations.

Figure 6. Co-word mapping of corporate social responsibility in tourism based on 571 articles from 2002 to 2022.

The results in Table 6 show that Font, X. led the number of citations, with 809 citations in topics related to CSR in tourism, followed by Lee, with 637 citations. Su contributed 5 articles with 219 citations; Su is the third most-cited author in this field. In addition, the table below presents the authors' various research areas as well, which include sustainability and tourism, corporate social responsibility, corporate philanthropy, and corporate governance and strategy.

Table 6. Top cited authors on corporate social responsibility in tourism (*n* = 571).

Rank	Author	Affiliations	Research Area	Citation	Articles	Total Link Strength
1	Font, X.	University of Surrey, UK	Sustainability, marketing in tourism and hospitality	809	9	32
2	Lee, S.	Pennsylvania State University, United States	Corporate social responsibility	637	10	26
3	Su, L.	Central South University, China	Corporate social responsibility; corporate philanthropy	219	5	7
4	Uyar, A.	Excelia Business School, France	Corporate governance, sustainability reporting, corporate reporting	88	6	31
5	Karaman, A. S.	American University of the Middle East, Kuwait	Corporate social responsibility, sustainability	85	5	27
6	Kuzey, C.	Murray State University Murray disabled, United States	Corporate social responsibility performance	85	5	27
7	Camilleri, M.A.	University of Malta, Malta	Strategy, sustainable development, technology adoption	43	5	11
8	Ahn, J.	Hanyang University, South Korea	Brand personality; community participation	37	5	3
9	Manente, M.	Ca' Foscari University, Italy	Responsible tourism and corporate social responsibility (CSR)	23	7	0
10	Minghetti, V.	Ca' Foscari University, Italy	Responsible tourism and corporate social responsibility (CSR)	23	7	0

The co-citation analysis based on cited authors used the minimum number of citations, with 40 and 118 authors meeting the threshold.

The co-citation analysis of authors in Table 7 highlights the important role of the authors with a high number of citations in confirming the impact and influence of corporate social responsibility in tourism. The results indicated that Lee, S. (437 co-citations) led in terms of ranking for co-citations in this field, followed by Font, X. (347 co-citations), Carroll, A.B. (257 co-citations), and Bohdanowicz, P. (156 co-citations). Obviously, these leading authors are also the top authors in the citation analysis, re-stating the importance of their work and contributions to the literature with respect to corporate social responsibility in tourism.

Table 7. High-impact scholars in the area of corporate social responsibility in tourism based on co-citations.

Rank	Author	Co-Citations	Total Link Strength	Focus
1	Lee S.	437	14,856	Corporate social responsibility
2	Font X.	347	11,347	Sustainable marketing in tourism
3	Carroll A.B.	257	7136	CSR; business ethics
4	Bohdanowicz P.	156	5172	Environment and sustainability
5	Bhattacharya C.B.	148	4694	Corporate responsibility, business ethics and sustainability
6	Sen S.	148	4421	Consumer behavior and sustainability
7	Okumus F.	136	4371	Tourism and hospitality
8	Han H.	134	3624	Sustainable tourism and hospitality marketing
9	Hall C.M.	131	3311	Tourism and sustainability
10	Kang K.H.	120	4077	Corporate governance and corporate social responsibility

3.3. Intellectual Structure of Research on Corporate Social Responsibility in Tourism

Using the results of the co-citation analysis with respect to the authors, VOSviewer showed 30,223 authors from 571 research papers (Figure 7). The map generated by VOSviewer presented 118 author co-citations with a threshold of 40 co-citations.
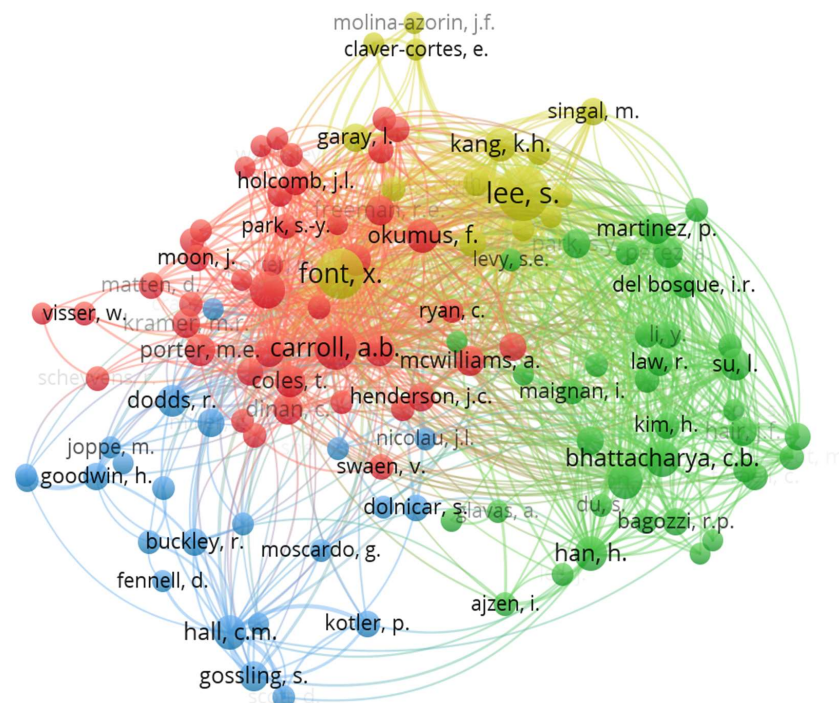
Figure 7. Co-citation analysis map for corporate social responsibility in tourism, 2002–2022 (threshold, 40; displayed, 118 authors).

The four schools of thought from the data are as follows: To start, the first school of thought can be considered corporate social responsibility performance, with the leading scholars being Lee (437 citations), Font (347 citations), and Kang (120 citations) (CSR performance (shown in yellow circles)). Next, corporate social responsibility policy is the

second school of thought, including scholars such as Carroll (257 citations), Bohdanowicz (156 citations), and Okumus (136 citations) (shown in red circles). The third school of thought includes business ethics and includes leading authors such as Bhatacharya (148 citations), Sen (148 citations), and Han (134 citations) (shown in green circles). Lastly, the theme of sustainable tourism and environment is represented in the literature on corporate social responsibility in tourism by important authors such as Hall (131 citations), Dodds (104 citations), and Gossling (91 citations) (sustainable tourism and environment (shown in blue circles)).

4. Discussion

The current review achieved the objectives mentioned in the Introduction; this paper presented new insights related to academic investigations into corporate social responsibility in tourism. Influential authors, articles, and journals were presented and discussed.

The findings of the current study directly respond to all of the research questions. For the first research question, the author offered scholarly work on corporate social responsibility in tourism published from 2002 to 2022, and the current review showed that corporate social responsibility in tourism has been explored using different points of view, including the perspectives of the consumer, employee, organization, and stakeholders. Research in these areas expanded mainly from countries in Europe, especially the United Kingdom, to several developing countries in the Asia Pacific regions and African countries.

Regarding research question no. 2, high scholarly impact journals in the context of corporate social responsibility in tourism included Tourism Management, International Journal of Hospitality Management, and Journal of Sustainable Tourism. In addition, influential authors and articles were discovered, presented in Tables 4–7.

For research question no. 3, the intellectual structure of research on corporate social responsibility in tourism was observed in four school of thoughts: corporate social responsibility performance, corporate social responsibility policy, business ethics, and sustainable tourism and environment. These four school of thoughts provide guidelines for and the focus of future academic studies in order to investigate each area in more depth and to explore the connection and relationship among these schools of thoughts.

The current study presented an important trend of increasing CSR research in developing countries by showing significant improvements in the number of CSR research studies in developing countries, including China, Malaysia, Turkey, Egypt, Saudi Arabia, India, and Pakistan. This new trend of academic work indicates that developing countries should study, monitor, investigate, and offer sustainable guidelines for CSR in tourism, which would help raise awareness and discussion among stakeholders in the tourism industry in order to support the appropriate CSR initiatives and to help avoid the negative impact of tourism business development in the long run.

In existing studies, based on a review of areas related to corporate social responsibility from 1992 to 2002, environmental issues and ethics were found to be important topics [23,50]. However, the current review showed that emerging research areas in corporate social responsibility, especially in the tourism areas, include strategic approaches to corporate social responsibility, the understanding of tourist behaviors, and hospitality management. The findings of this review introduced new dimensions and new focuses with respect to research in this field.

This review aimed to provide maps from past articles on the topic of corporate social responsibility in tourism. With a total number of 571 articles from the Scopus database, several bibliometric data analyses offered new highlights and findings that are useful for obtaining a deeper understanding and that are helpful for new researchers.

5. Conclusions

5.1. Interpretation of the Findings

This review was conducted based on strict data analysis guidelines, and a total of 571 articles in the field of corporate social responsibility in tourism were thoroughly

selected and analyzed in this study. In addition, the number of studies on corporate social responsibility in tourism has increasing become significant in the past two decades, indicating the significance of this field as a topic of interest in the research community.

As shown in the results, the geographical distribution of research studies in the field of corporate social responsibility in tourism expanded beyond developed countries toward developing countries, including China, showing that the gap in the literature has been narrowed, thus meaning that the acceptance of or interest in corporate social responsibility with respect to tourism organizations has become a norm in corporate practices. In addition, several academic journals and conferences have increasingly addressed or proposed themes or Special Issues related to the field of corporate social responsibility in tourism.

Furthermore, the leading journals publishing studies on corporate social responsibility in tourism included the top journals in tourism research: such as Tourism Management, International Journal of Contemporary Hospitality Management, Journal of Sustainable Tourism, and International Journal of Hospitality Management. Interestingly, this review discovered that the topic of corporate social responsibility in tourism has also been highlighted in regional journals (e.g., Asia Pacific Journal of Tourism Research and African Journal of Hospitality, Tourism and Leisure), demonstrating growing interest with respect to this topic in various parts of the world.

Additionally, this review showed that the evolution of research on corporate social responsibility in tourism started in responsible tourism but has moved towards performance or outcomes of corporate social responsibility, and the new focus will be on understanding changing tourist or consumer behaviors as part of tourism organizations' corporate social responsibility.

5.2. Limitations of the Current Study

This review is not without limitations. First, the data used in this study were obtained only from the Scopus database; though this database is known as one of the largest academic databases in the world and many articles are included in Scopus, some articles on corporate social responsibility in tourism are only available in other databases.

Second, the co-citation analysis, which is one of the main techniques used in this review, cannot be directly interpreted and requires substantial knowledge of the subject for a better understanding of the results of this type of analysis [51].

5.3. Directions for Future Research

Even though this study used only Scopus, which is one of the database with the widest coverage of academic work, future research should include the Web of Science (WOS) or other databases, which may present additional dimensions and some other highlights in the field of corporate social responsibility in tourism. Another suggestion for future research work is a comparative investigation of the concept of corporate social responsibility in tourism in specific regions, such as Asia and Europe, which could help researchers to discover more in-depth and region-specific dimensions; therefore, the recommendations and implications for policy implications would be more applicable to the issues found in those regions. Moreover, future research may focus more on the impact of the COVID-19 pandemic on CSR in tourism as the results of this review showed that understanding the dimensions of crisis management (e.g., COVID-19) and providing a more in-depth analysis should lead to a greater understanding of corporate social responsibility.

Institutional Review Board Statement: This study was conducted according to the guidelines of the Declaration of Helsinki and was approved by the Central Institutional Review Board of Mahidol University.

Informed Consent Statement: Informed consent was obtained from all subjects involved in this study.

Data Availability Statement: The data presented in this study are available on request from the Corresponding author. The data are not publicly available due to the privacy of informants as several of them are government officers.

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Conflicts of Interest: The authors declare no conflict of interest.

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Article

Tourism Forecasting Using the Delphi Method and Implications for Sustainable Tourism Development

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Abstract: Tourism forecasting is one of the most important aspects of tourism studies in today's competitive environment. It is crucial not only for tourism businesses to understand and foresee trends and future changes, but also for government agencies to develop the competitiveness of their tourism sectors in order to stay competitive or even outperform other tourist destinations. The purpose of this research is to conduct tourism forecasting using the Delphi technique and to collect data from experts in the field of tourism and hospitality, providing useful information about the future of Thailand's tourism directions and sustainable development. The results show that Thailand could maintain its tourism strengths in many aspects, including tourism attractions for tourists from various income groups, and the cultural uniqueness of "Thai-ness". Thailand's tourism capabilities can support the growing importance of tourism development in Southeast Asia. In addition, the research findings reveal some areas for improvement for Thai tourism to support sustainable tourism development, including the necessity for improving the quality of training programs for human resources in tourism-related organizations, a less strict immigration policy, the adoption of new information technology, and more updated tourism information. The discussion of findings and practical implications for sustainable tourism development are also discussed in detail.

Keywords: tourism forecasting; sustainable tourism development; Delphi method

1. Introduction

The tourism industry in Thailand continues to develop along with the popularity of traveling to Thailand from both Thai and foreign tourists, leading to the development of revenues and careers for the local Thai people. Moreover, tourism development also supports the preservation and restoration of tourism resources in Thailand in a sustainable manner in order to sustain their existence and preserve Thai identities [1]. The tourism industry is an essential industry for the sustainable development of the Thai economy, in the same way as many developing countries around the world are developing their tourism industries to create growth and strength their economies, societies, and communities [2,3]. The tourism industry is becoming an important industry for generating revenue in Thailand, and the Thai government has empowered the Ministry of Tourism and Sports and the Tourism Authority of Thailand to initiate strategies to develop the Thai tourism industry to attract more tourists, both first-time tourists and revisiting tourists [4].

Tourism forecasting is an important tool used in the tourism industry to examine the environment and implications of the industry's current situation, which is intensively competitive. Tourism forecasting plays an important role in the business sector as it helps businesses to understand trends and to forecast future changes in the tourism industry; moreover, tourism forecasting also provides important information for the government sector in developing the potential of the nation's tourism industry to compete with other countries. Malaysia, Singapore, and other neighboring countries in the ASEAN are the main competitors for Thailand in the tourism industry since they are in the same region and have similar tourism aspects to Thailand [5].

Sustainable tourism development has been the core focus of executives and managers at all levels of tourism-related organizations, from local to international tourism organizations, and from the private sector to the public sector and policy makers. Many areas of tourism development can result in the deterioration of both tangible resources (e.g., forests, land, and natural resources) and intangible resources (e.g., tradition, cultures, or social cohesion). It is highly important for tourism planners to consider the various impacts of tourism development and the development directions of new tourism products. Gössling and Scott [6] state that scenario planning and tourism forecasting play important roles in sustainable tourism development and tourism business planning.

Furthermore, tourism forecasting can provide data on trends related to opportunities and threats which may occur and have impacts on the tourism industry in the future. There are many techniques used in tourism forecasting, for example, time series, econometrics, and so forth. The understanding of trends, the development of new tourism themes, and the introduction of new factors in the tourism industry, such as technological advancements that reduce transaction times, are important, as they allow entrepreneurs and government agencies to prepare themselves for changes which may happen in the tourism industry. Lin, Tang, Shyu, and Li [7] and Zhang, Song, Wen, and Liu [8] indicate that there are several techniques used to forecast changes to understand factors related to the growth and development of business sectors in the tourism industry. Moreover, those techniques are used to forecast important situations such as crises. Most of the techniques used in forecasting are quantitative techniques and generally use historical data to forecast trends in the future.

However, currently, there is one technique that combines both qualitative and quantitative research to provide more precise and reliable results. This research technique is named the Delphi technique or method. The Delphi technique is an effective forecasting tool that uses information from a group of experts in the relevant industry. Valls and Sarda [9] state that the Delphi technique helps researchers to investigate an event which may occur in the future for particular research topics by using information that was examined by a group of experts from the particular industry in order to achieve the final conclusion. Therefore, in the current study, to align with past research studies [8,9], the samples include experts with several years of experience from the tourism, hospitality, and related fields in order to better represent various dimensions of the tourism industry.

Moreover, the Delphi technique is considered to be highly effective in research environments that have high complexity or many relevant factors that are constantly changing [10]. Song, Qiu, and Park [11] and Witt and Witt [12] state that the Delphi technique provides greater forecasting compared to other forecasting techniques that were implemented under complex situations. Since the tourism industry is an industry that deals with various essential factors that are highly dynamic, including political, social, and environmental factors, the Delphi technique is therefore an appropriate tool to employ in the present research.

The contributions of the study are, firstly, to provide insights from tourism experts towards long-term future development trends of the tourism industry. Secondly, the current research can provide implications for sustainable tourism development, especially clear directions and crucial dimensions of sustainable tourism development.

2. Literature Review

The current research aims to investigate the tourism forecast by adopting the Delphi technique. The importance and role of tourism forecasting was provided earlier in the introduction. Therefore, in this part, the details of the Delphi method will be explained. In their paper, Landeta [13] describes the history of the Delphi technique: In the late 1940s, researchers at the RAND Corporation started a study on the scientific application of expert opinions. The study was published and showed the benefits of the use of individual experts' opinions and of decision-making based on expert opinions towards issues of inexact science. The Delphi technique was used for the first time by the RAND Corporation

in a military project. At present, the Delphi technique is used as a social research technique to obtain reliable group opinions from a group of experts. The Delphi technique also creates communication within a group of people to generate an essential opinion for solving the complex problem [14].

Fontanari and Berger-Risthaus [15] and Landeta, Matey, Ruíz, and Galter [16] stated that the Delphi technique is a social research technique that aims to retrieve reliable information from a panel of experts and helps to arrange structure for communication among groups of people who can solve complex problems. This technique is also implemented in order to find a consensus of opinions in uncertain situations in which other techniques may not be used or may not be able to offer a clear understanding.

The Delphi technique provides valuable information for researchers and decision makers to analyze results, make decisions, and implement these decisions in complex situations. Because of its accuracy and positive evaluation from researchers, the scientific community still trusts this technique and believes that it is an important research tool to retrieve and process information from a panel of experts. In addition, this technique can be used on its own or combined with other techniques.

Song, Qiu, and Park [11] and Czaplicka-Kolarz, Stańczyk, and Kapusta [17] stated that the Delphi technique is an important process in forecasting projects related to the study of macro-forecasting. Both studies [11,17] used a complex process in which Delphi statements were employed to provide general conditions related to the policies and economy of the nation, as well as the state of environmental protection, social aspects, and safety in the future.

According to the research of Curtis [18], the Delphi technique is a study method focusing on the expression and selection of the opinions from a group of experts, which is better than opinions from one expert. Moreover, the Delphi technique could be implemented in the development of indicators for sustainable tourism to forecast the risks that may occur in the tourism industry by structuring questions to which experts from various fields can provide answers or opinions that are beyond the specific knowledge of each individual.

Kennell and Powell [19] and Ronde [20] stated that many researchers use the Delphi technique in implementations related to national systems of innovation. This implementation of the Delphi technique focuses on the main characteristic of the technique by collecting the responses from the panel of experts at time (t) and then comparing them with the second collection of responses from the same panel of experts after the mean responses from the first round of data collection were distributed. The experts are then asked to reconsider their answers in the second round. This process shows the different behaviors of experts between the two rounds of data collection, and more shared opinions are found in the second data collection.

Steinert [21] proposed that the Delphi technique aims to decrease the variation from the panel of experts under the condition that it reduces the bias among experts. The Delphi technique is accepted as a substitute for direct experimental research that currently does not exist. This makes Delphi a technique gaining popularity in many fields, including education and business. Currently, the Delphi technique can be implemented in real time by using computers, which can decrease costs and time in conducting the research.

Despite the benefits of the Delphi technique, there is a gap in the tourism research in that a limited number of studies have applied this technique in the context of tourism forecasting, especially in the context of emerging economies. Therefore, based on the above literature, the current research applied the Delphi technique to investigate the insights of tourism forecasting and their implications for sustainable tourism development in Thailand.

3. Research Methods

In this section, the use of the Delphi technique in tourism forecasting is discussed in more detail. The details of the sample group taken as representatives of the tourism industry, as well as the process of data collection, are also described.

3.1. Tourism Forecasting with the Delphi Technique

This research used the guidelines from the previous studies, including Yong, Keng, and Leng [22] and Lin and Song [23], on tourism forecasting using the Delphi technique to collect data from a group of experts in the tourism field. The results from their study revealed the changing trends and found that foreign tourists from Western countries paid more attention to travel to Eastern countries or Asian countries, which showed the changes in trends and opportunities, especially the opportunity for a continuous increase in the development of tourism products. LB Knowles [24] noted that the Delphi method is useful to help develop transformations towards sustainable tourism. Kennell and Powell [19] indicated that the Delphi method can be applied to study various types of tourism research and tourism development, including dark tourism.

In order to develop the questions used in the research, the authors adopted the guidelines from the study of Yong, Keng, and Leng [22]. A panel of experts was selected to answer three main research questions:

1. The probability that an event related to tourism may occur in the future, evaluated as a percentage, in which 0% means never and 100% means will definitely occur.

2. Indicating the year for events to occur in the future.

3. Providing the importance level of events affecting tourism development by rating the importance on scale of five levels from the least important to the most important.

This research selected the issues related to tourism forecasting by studying the information from McDowall and Choi [25], Tavitiyaman and Qu [26], and Yong, Keng, and Leng [22]. These important events or activities are as follows:

1. Thailand is becoming a major tourist center in the world;
2. Thailand's general tourism information is updated and easy to access;
3. Major technological advances lower international travel costs to prices affordable to the majority of Thai people;
4. Demand for part-time training programs for people currently employed in the hospitality industry in Thailand will increase substantially;
5. Hotel and restaurant managers in Thailand require more specialized and formal educational training;
6. The ASEAN is successfully accepted as a single travel destination;
7. Sustainable revival of traditional activities (e.g., "Floating Market", "100-Year-Old Market", etc.) in Thailand;
8. Much business travel is replaced by video-conferencing technologies and other forms of telecommunications (e.g., satellites, the Internet, etc.);
9. Political instability in this region is affecting the flow of tourists;
10. Thailand is increasing its image of being a shopping paradise in this region;
11. Border formalities (e.g., visa customs) of most countries are relaxed;
12. Liberalization of international airline agreements increases travel through the country;
13. Online social networks are becoming the major communication tools for tourism;
14. Oil prices are directly related to tourism planning;
15. Climate change is becoming a barrier of tourism activities;
16. Creative tourism is becoming a new era of the tourism industry;
17. Destination Management Organizations can protect the local environment, heritage and culture of their communities;
18. Thailand will need effective organizational structures and management systems (e.g., disaster planning, security, training, etc.) to develop and sustain the tourism industry;
19. Thailand will need effective tourism development programs with continuous improvement;

20. An effective transportation system is available throughout tourism destinations nationwide;
21. Thai tourism packages are attractive in the region;
22. Thailand is an affordable tourism destination for both low- and high-end economic groups;
23. Thailand is becoming a destination for short training courses (e.g., golf classes, cooking classes, etc.).
24. Thailand is becoming a cultural center of the region;
25. Thailand is becoming a hub for meetings, incentives, conferences, and exhibitions (MICE);
26. Thailand is becoming an agro-tourism destination in the region;
27. Thailand is becoming a long-stay destination in the world (e.g., destination for foreign retirees).

These twenty-seven forecasting issues were used as the research questions to collect the data from a sample group of experts in the tourism and hospitality industry, and this data will be used for the analysis in this research.

3.2. Sample and Data Collection

3.2.1. Sample Characteristics and Sample Size

In this study, the sample group was comprised of high-level managers in tourism- and hospitality-related organizations, which were classified into seven groups: hotels, airlines, travel agencies, duty-free department stores, foreign tourism organizations, and Meetings, Incentives, Conferencing, and Exhibitions business groups (MICE). All high-level executives in this study could be considered as experts in the tourism and hospitality industry in Thailand. The sample size of the expert group should be at least seventeen people in order to minimize the deviation and to ensure that it is large enough for accuracy and reliability in the research [27]. Moreover, Galanis [28] and Habibi, Sarafrazi, and Izadyar [29] suggested that an expert group of between 15 and 20 people is acceptable in the Delphi method.

In this research, firstly, the researchers contacted top managers to invite them to participate in the survey. Twenty-six executives from twenty-six organizations in all seven groups agreed to participate. The number of participants in this study is above the minimum requirement for the sample size in the Delphi method. The sample consists of six hotels, five airlines, five travel agencies, one duty-free department store, two government tourism organizations, three foreign tourism organizations operating in Thailand, and four MICE (Meetings, Incentives, Conferences and Exhibitions) organizations.

3.2.2. Data Collection

In this research, the Delphi technique was employed to collect data by using high-level executives working in the tourism and hospitality industry in Thailand as the respondents. After receiving their confirmation to participate in this research, the questionnaires were distributed to the participants. In the first round of data collection, twenty-six organizations returned the questionnaires. The list of those participants' profiles is presented in Table 1 below.

Table 1. Details of Experts and Years of Work Experience.

Category	Respondent	Position	Experience (Years)
Hotel	Hotel 1	Sales Manager	12
	Hotel 2	Public Relation Senior Staff	6
	Hotel 3	Sales Senior Staff	10
	Hotel 4	Sales Manager	20
	Hotel 5	Human Resource Manager	17
	Hotel 6	Director of Marketing	8
Airline	Airline 1	Director of Marketing	15
	Airline 2	Director of Sales	12
	Airline 3	Director of Marketing	8
	Airline 4	Director of Sales	7
	Airline 5	Director of Marketing	9
Tour Operator	Tour Operator 1	Sales and Marketing Director	6
	Tour Operator 2	Sales Director	7
	Tour Operator 3	Sales and Marketing Manager	12
	Tour Operator 4	Human Resource Manager	22
	Tour Operator 5	Sales and Marketing Director	19
Duty-free Department Store	Department Store 1	Public Relation Manager	7
Government Tourism Organization	Government 1	Director	8
	Government 2	Director	14
International Tourism Organization	International 1	Human Resource Manager	7
	International 2	Public Relation Manager	10
	International 3	Public Relation Manager	14
MICE Organization	MICE 1	Director of Sales	15
	MICE 2	Director of Sales	13
	MICE 3	Director of Sales	12
	MICE 4	Director of Sales and Marketing	14

The questionnaire used in this study asked participants to rate the importance level of fifteen core and twelve supporting events or activities which may have impacts on the tourism development of Thailand in the future. The respondents can rate the score from 1 to 5, which means least important to most important, respectively. To interpret the rating data, the range of scores and their importance levels are presented in Table 2.

Table 2. Mean Range and Importance Levels of Events or Activities.

Range of Mean Score	Importance Level
1.00–1.80	Not Important
1.81–2.60	Somewhat Important
2.61–3.40	Important
3.41–4.20	Quite Important
4.21–5.00	Critically Important

Once the first-round data were returned, descriptive statistics were performed, including percentage, mode, and mean. Those results were presented in tables and sent back to the experts for the second-round evaluation. In the second round, the participants could see the mean scores of all executives' ratings, and then made a second consideration for each event or activity, rating each item again for what degree from 1 to 5 they agreed with each item (event or activity). After the second round of data collection, a consensus was achieved. The findings for the tourism forecast and direction for sustainable tourism development are shown in the results section.

4. Findings and Discussion

4.1. Core Events or Activities in Thai Tourism Forecasting

The data collected from the sample group of twenty-six participants in the first and second rounds were analyzed by computing the mean scores of each core event or activity in tourism development in Thailand. The results of both rounds are shown in the following Table 3.

Table 3. Mean Scores of Importance Level of Core Events or Activities.

Events/Activities	Round	Mean Score
Thailand is an affordable tourism destination for both low- and high-end economic groups.	First Round Second Round	4.85 4.96
Thailand is becoming a cultural center of the region.	First Round Second Round	4.69 4.81
Sustainable revival of traditional activities (e.g., "Floating Market", "100-Year-old Market", etc.) in Thailand.	First Round Second Round	4.65 4.85
Hotel and restaurant managers in Thailand require more specialized and formal educational training.	First Round Second Round	4.54 4.04
Thailand is becoming a major tourist center of the world.	First Round Second Round	4.42 4.31
Thailand will have effective organizational structure and management systems (e.g., disaster planning, security, training, etc.) to develop and sustain the tourism industry.	First Round Second Round	4.38 3.88
Creative tourism is becoming a new era of the tourism industry.	First Round Second Round	4.35 4.27
Thailand will have effective tourism development programs with continuous improvement.	First Round Second Round	4.42 4.15
Thailand is gaining an image as a shopping paradise in this region.	First Round Second Round	4.23 4.
Thailand is becoming a hub for Meetings, Incentives, Conferences, and Exhibitions (MICE).	First Round Second Round	4.12 4.19
Thailand is becoming a destination for short training courses (e.g., golf classes, cooking classes, etc.).	First Round Second Round	4.04 3.96
Thailand is becoming an agro-tourism destination in the region.	First Round Second Round	3.65 3.42
Thai tourism packages are attractive in the region.	First Round Second Round	3.46 3.62
Thailand is becoming a long-stay destination in the world (e.g., for foreign retirees).	First Round Second Round	3.46 3.23
Thailand's general tourism information is updated and easy to access.	First Round Second Round	3.42 3.19

In Table 3, among the 15 items of core events or activities in the Thai tourism forecasting gained from the participants in the first round, the rankings of the most important events were the same in both rounds, whereas the rankings of the second most important ones were different. The discussions of the two most important items are as follows:

1. Thailand is an affordable tourism destination for both low- and high-end economic groups (Mean = 4.96).

From the second round of data collection, the sample group assessed the question of "Thailand is an affordable tourism destination for both economical and high-end groups" as being critically important, with a mean = 4.96, which is the highest mean in this research. The mean increased slightly from 4.85 in the first session of data collection to 4.96. Kaosa-

ard [30] stated that Thailand is a world-famous tourism destination for tourists from both low- and high-end economic groups, and there are many tourism spots and accommodations to meet the needs of each group of tourists. This can attract all groups of foreign tourists from around the world to travel to Thailand. Bangkok ranked first for the world's most visited destinations for several reasons, including its superior economic value [31]. Moreover, Thailand is famous for its good value and low travel costs; for example, Thailand was chosen by the readers of Lonely Planet India [32] to be the best value destination. This supports the result in this research that Thailand is an affordable tourism destination for both low- and high-end economic groups.

2. Sustainable revival of traditional activities (e.g., "Floating Market", "100-Year-Old Market", etc.) in Thailand (Mean = 4.85).

From the second round of data collection, the sample group assessed the question of "Sustainable revival of traditional activities (e.g., "Floating Market", "100-Year-Old Market', etc.) in Thailand" as being critically important (Mean = 4.85, increased slightly from 4.65 in the first round of the data collection. The sustainable revival of traditional activities is also very important to attract tourists to travel in the local community. For example, Samchuk Market in Suphanburi Province is considered as a traditional market, and it has faced several crises and difficulties during of the development of the country. For instance, in the past, transportation and traveling by boats in the river was popular; however, in 1967, there were new roads built to Suphanburi that allowed more people to travel by car, and this impacted the popularity of Samchuk Market [33]. Later, local people in Samchuk Market tried to restore and develop the market again in 2000 by maintaining the traditional style of the market, which won the Samchuk Market community many tourism awards [33]. The study of Suwannasi and Intarat [34] indicated that the spectacular cultural aspects of local identities, environments, and ways of life of the local people can attract a large number of tourists to Taling Chan and Bang Num Phueng Floating Markets, which are the most famous floating markets for cultural tourism in Thailand. In addition, the preservation and restoration of local cultures and traditions can develop into economic resources for the community and can develop the potential of the local community for competition at national and global levels in the future [35,36].

In contrast to the top two events, the two least important core events or activities in both rounds of experts' rating remained the same, as presented in Table 3. These two items are the following:

1. Thailand's general tourism information is updated and easy to access (Mean = 3.19).

From the second round of data collection, the sample group assessed the item of "Thailand's general tourism information is updated and easy to access" as being important (Mean = 3.19), and the mean was decreased from 3.42 from the first round of the data collection to 3.19. Up-to-date tourism information will make the process of buying products and services more convenient. The provision of relevant and up-to-date tourism information enables tourists to use such information for their travel planning. In addition, tourists can also access tourism information from various advertisements on printed media and from information on websites. Airlines, travel agencies, hotels, and shops develop their own websites or mobile applications to serve and respond to the needs of tourists swiftly [37].

2. Thailand is becoming a long-stay destination in the world (e.g., for foreign retirees) (Mean = 3.23).

From the second round of data collection, the sample group assessed the question of "Thailand is becoming a long-stay destination in the world (e.g., foreign retirees)" as being important (Mean = 3.23), and the mean was decreased from 3.46 in the first session of the data collection. Seehawattana [38] stated that Thailand is an interesting destination for foreign tourists to stay for a short period of time or to live permanently and is more popular compared to other countries in Southeast Asia. Foreign residents from all over the world stay in the leading cities in Thailand such as Bangkok and Chiang Mai; furthermore, there was an increase in the buying of real estate in Thailand by foreigners; for example, 31% of condominiums in Bangkok were sold to foreign residents, and the nationalities that bought

the highest proportion of those condominiums are English, American, Singaporean, Hong Kong, and French, in that order. This supports the result in this research that Thailand is becoming a long-stay destination in the world (e.g., for foreign retirees).

4.2. Supporting Events or Activities in Thai Tourism Forecasting

Similar to the data collection of core events or activities discussed earlier, in both round one and two, the twenty-six participants in our sample were asked to rate the importance level of supporting events or activities. The mean scores of each supporting event or activity on tourism development in Thailand are shown in Table 4 as follows.

Table 4. Mean Scores of Importance Level of Supporting Events or Activities.

Events/Activities	Round	Mean Score
Political instability in this region is affecting the flow of tourists to this region.	First Round Second Round	4.62 4.81
The ASEAN is successfully accepted as a single travel destination.	First Round Second Round	4.58 4.81
Destination Management Organizations (DMO) can protect the local environment, heritage, and culture of their communities.	First Round Second Round	4.35 3.88
Online social networks are becoming the major communication tools for tourism.	First Round Second Round	4.15 3.65
An effective transportation system is available throughout tourism destinations nationwide.	First Round Second Round	3.96 4.31
Oil prices are directly related to tourism planning.	First Round Second Round	3.88 3.54
Much business travel is replaced by video-conferencing technologies and other forms of telecommunications (e.g., satellites, the Internet).	First Round Second Round	3.65 4.12
Liberalization of international airline agreements eases travel movement through the country.	First Round Second Round	3.46 3.23
Climate change is becoming a barrier to tourism activities.	First Round Second Round	3.38 3.58
Major technological advances lower international travel costs to prices affordable to most Thai people.	First Round Second Round	3.27 3.15
Border formalities (e.g., visa customs) of most countries are relaxed.	First Round Second Round	2.85 2.88
Demand for part-time training programs for people currently employed in the hospitality industry in Thailand will increase substantially.	First Round Second Round	2.81 2.88

The ranking of the two most important supporting events or activities in Table 4 are discussed as follows:

1. Political instability in this region is affecting the flow of tourists to this region (Mean = 4.81).

From the second round of data collection, the sample group assessed the question of "Political instability in this region is affecting the flow of tourists to this region" as being critically important (Mean = 4.81), and the mean was increased from 4.62 in the first session of the data collection. Rittichainuwat, Laws, Maunchontham, Rattanaphinanchai, Muttamara, Mouton, and Suksai [39] stated that during times of political turmoil in tourism destinations, many countries issue warnings for their people to avoid traveling for tourism, business, or investment purposes. Moreover, many airlines stop flying to destinations with political problems for security reasons. Ingram, Taberi, and Watthanakhomprathip [40] also supported that the political turbulence in Thailand negatively and heavily affected its tourism and hospitality businesses. This highlights that political stability plays an

important role in tourism, especially in international tourists' destination choices for their trips.

2. The ASEAN is successfully accepted as a single travel destination (Mean = 4.81).

From the second round of the data collection, the sample group assessed the question of "ASEAN is successfully accepted as a single travel destination" as being critically important (Mean = 4.81), and the mean was increased from 4.58 in the first round of the data collection. The ASEAN has already developed the Roadmap for Integration of Tourism Sector, which aims to liberalize the trade in services to facilitate travel in the ASEAN, to develop human resources, to accelerate the liberalization of the tourism sector, to support ASEAN tourism promotion and marketing, and to support tourism investment and tourism standards among the ASEAN countries, providing more benefits to international tourists traveling to the ASEAN. For example, the launch of the ASEAN Single Visa for international travelers can help promote tourism in ASEAN countries under the concept of the ASEAN Single Destination [41]. From Promsivapallop and Kannaovakun [42], popular regions for tourists are East Asia and Southeast Asia, showing the increasing trend of global tourists visiting these regions. Furthermore, Hitchcock, King, and Parnwell [43] found that a large number of international tourists planned their trips across several countries when visiting a certain region, including Southeast Asian countries. Therefore, collaboration among countries in Southeast Asia, and flexibility and connections among these countries, can encourage tourists to travel more to these countries.

In addition, from Table 4, the ranking of the two least important events are discussed as follows:

1. Demand for part-time training programs for people currently employed in the hospitality industry in Thailand will increase substantially (Mean = 2.88).

From the second session of the data collection, the sample group assessed the question of "Demand for part-time training programs for people currently employed in the hospitality industry in Thailand will increase substantially" as being important (Mean = 2.88), and the mean was increased slightly from 2.81 in the first round of data collection. There are many short courses for hotel management and tourism services providing training for interested participants. The available programs in training are offered in both Thai and English languages and aim to increase the potential of the participants, from operators to high-level executives [44].

2. Border formalities (e.g., visa customs) of most countries are relaxed (Mean = 2.88).

The item of "Border formalities (e.g., visa customs) of most countries are relaxed" is considered to be important (Mean = 2.88), and the mean increased slightly from 2.85 in the first round. Thailand exempts the visas for forty-eight countries around the world, and foreign tourists from nineteen countries can obtain a visa on arrival when they visit Thailand, which provides greater convenience for foreign tourists. This relaxation of border formalities helps to increase the number of foreign tourists traveling to Thailand [45].

5. Conclusions and Recommendations

5.1. Conclusions

In this study, researchers aimed to forecast the tourism trends in Thailand by implementing the Delphi method. Moreover, the consensus among those twenty-six experts was used to reduce the deviation and obtain consensus among them. From this study, it is clear that Thailand is known as the tourism hub in the ASEAN as a result of the long-established Thai culture and other tourism attractions. Furthermore, Thailand has sufficient tourism resources which can help develop new tourism themes, such as cultural tourism and creative tourism, to attract tourists from all over the world and from both high-income and low-income groups. Furthermore, new themes of tourism can lead to sustainable tourism development in the future, for cultural and festival tourism.

The aspects to be further improved include the provision of education to the new generation of Thai people on contemporary methods in tourism and hospitality management in order to improve the capabilities of the Thai tourism industry. This should be

developed into course syllabi, including diplomas or bachelor's degrees. Additionally, more relaxed policies in visa applications and immigrant investigations would help to increase the revenue from the tourism industry in Thailand. For the technological aspect, improvements in technologies leading to travel cost reductions may increase the number of tourists. New technologies can support the process of airline ticketing or hotel reservations by using social media or mobile applications. It is necessary to develop programs to help personnel gain a better understanding of the use of new technologies and to promote the dissemination of those technologies to the people working in the tourism and hospitality industry.

5.2. Practical Implications

The recommendations in this study are divided into two parts, which are recommendations for business applications and recommendations for government organizations for their supporting policies.

The results in this study provide recommendations for executives in the tourism industry. The opinions from the experts showed that Thailand is a tourism destination for both high-income and low-income tourists. Furthermore, management in the tourism industry in Thailand should consider and initiate various marketing and sales models such as lower tourism package prices in the low season to respond to the tourists' needs and to capture all segments of tourists.

At the government level, the Thai government should support tourism in terms of policies and implementations, such as the human resource development of careers related to tourism in Thailand. There is a large number of foreign tourists traveling to Thailand, however, there is a low number of Thai people who can fluently communicate in English. Even though many Thai people have studied English from kindergarten to degree level, only a small proportion of Thai people can communicate fluently and effectively in English with foreign tourists. Hence, the Thai government should support the study of English language for real-life situations. Moreover, the Thai government should support infrastructure for transportation and communication in Bangkok and other provinces. Transportation in Thailand is still an obstacle for foreign tourists. Providing a variety of transportation modes for international tourists can encourage tourists to visit different parts of the country. In addition, the fast-growing number of low-cost airline services and several mobile platforms to support the movement of tourists, such as Grab, can also help tourists to efficiently travel throughout the country. Furthermore, as the results indicate, greater policy support from government agencies and public organizations is needed, including energy policies, not only for oil prices but also for alternative energies, such as solar or wind energy, to promote the trend of sustainability in the long run. Additionally, liberalization in other types of laws and regulations, including air transportation and ease of obtaining a visa, should be increased to allow for the effective flow of tourists and the efficient usage of resources. Finally, the Thai government should focus on the restoration of Thai culture and promotion of the Thai people to realize their value and continue to maintain Thai culture, since Thai culture is a very important attraction for foreign tourists. In addition, sustainable cultural tourism appears as one of the main aspects of Thai tourist attractions and, therefore, Thai governments and local communities should emphasize the traditions and cultures and promote the celebration of festivals and cultural events. More importantly, promoting cultural tourism can greatly increase the importance of this category of tourism.

5.3. Directions for Future Research

Although this research offered several contributions for managerial implications, some limitations remain. The current research did not study each type of tourism product in detail, only the overall views of tourism activities. Therefore, new and emerging themes of tourism in Thailand may not be captured in the study, such as the areas of virtual tourism. In addition, the nature of this research was cross-sectional and thus the findings

and contributions may not be able to reflect the ever-changing environments in the tourism industry in the next decades.

As described earlier, one limitation in the present study was the lack of in-depth study of specific areas of tourism development. The results of this study reveal that Thailand has a large pool of resources and that those resources are not only in cultural or traditional aspects but also in other aspects, such as MICE. Consequently, the new themes in tourism in Thailand should also be examined; for example, currently, many foreign tourists travel to Thailand for annual physical check-ups in what is called medical tourism, and researchers should conduct more research in forecasting health and medical tourism in order to develop new tourism products and to attract more foreign tourists. In addition, new areas of research, such as creative tourism and medical tourism, should be further investigated. It could be suggested that personal interviews with the group of experts for a more in-depth analysis should be implemented to find more in-depth information about the key concepts of tourism development and growth.

Additionally, future researchers could also conduct quantitative research to investigate the relationships between the concepts identified in the current study, identifying cause–effect relationships among those factors for greater understanding.

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Article

A Quest for a Sustainable Social Enterprise Model: The Case of Amphawa Chaipattananurak, the Kingdom of Thailand

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Abstract: The social enterprise concept, a business with specific social objectives, has been questioned by scholars and practitioners for its sustainability. More importantly, a paucity of research exists on how a social enterprise can be sustainable, indicating the necessity of developing a sustainable model of social enterprise, particularly in the Asian context. Filling in the gap in the literature, the present study's prime objective is to explore a sustainable social enterprise model. The bodies of knowledge on social enterprise and sustainable enterprise are reviewed, followed by identifying a sustainable social enterprise model for exploration. The identified model is among the few sustainable social enterprise models available, thus making it appropriate for the exploration. To explore the model, the phenomenological paradigm is adopted. The study uses the case study approach with open-ended, semi-structured interview methods as well as documentation to explore a case enterprise called Amphawa Chaipattananurak (ACCP) in Thailand. To ensure data validity, the data, method, investigator, and theory triangulation methods are adopted. Ninety-five stakeholder informants were interviewed, ranging from the management team, staff, community people, and visitors to customers. In terms of analysis, the working analytical framework is adopted to analyze the collected data. Findings indicate that the ACCP practices and outcomes are consistent with those of the sustainable social enterprise model, indicating the model's applicability. Based on the findings, a refined sustainable social enterprise model is derived. Limitations, future research directions, theoretical contributions and implications, and managerial implications are also discussed.

Keywords: sustainability; sustainable enterprise; social enterprise; sufficiency economy; social entrepreneurship

1. Introduction

Although the body of knowledge on social enterprise and sustainable enterprise is flooded with a wide variety of concepts, only a few reports address both concepts as a sustainable social enterprise or contain a holistic approach to develop one [1,2]. In particular, scholars have critiqued to which extent a social enterprise with social objectives can be sustained over a long period of time to achieve its objectives [3]. In the end, they question whether the social enterprise concept is effectively sustainable [4–7].

The present study's objective is to fill in this specific gap in the literature. Built upon prior studies that focus on a philosophical approach to sustainable enterprise called sufficiency economy philosophy [2,8], the present study explores the extent to which a community enterprise that adopts the sufficiency economy philosophy in guiding its development can be sustainable.

A social enterprise (SE) is defined in the present study as an independent organization that recognizes, evaluates, and exploits business opportunities resulting in the creation of social value [9–12]. SE serves as a "double bottom line" that is a simultaneous blend between the financial and social returns by focusing on investment and reinvestment for shareholders, who are social, environmental, or communal [13].

The distinguishing characteristic of SE is sustainable orientation, while the social mission is the core [8,14]. As for SE, sustainable orientation refers to the interconnection between the social, economic, and environmental factors [15]; therefore, SE attempts to achieve its goals in the social, economic, and environmental spheres, with the aim of stakeholders being able to continue to lead healthy and productive lives, with the objective of maintaining both physical and mental wellbeing [16], and in our view it is extremely challenging to perform such an ambidextrous role. In addition, SE activities are mainly geared towards the creation of social value through innovation, risk management, and energetic collaboration among stakeholders over profit making [17,18], focusing on prioritization of social over economic value creation, and this is often regarded as the key boundary separating social enterprises from traditional business ventures—even for those engaged in advanced forms of corporate social responsibility (CSR) [19].

When considering the main triple goals of SE: social, economic, and environmental, these were found to be consistent with the United Nations Sustainable Development Goals (SDGs). The SDGs, which were set as a 2030 global sustainability agenda, cover people (social goals), prosperity (economic goals), and the planet (environmental goals) [20]. According to the study of Kulshrestha, Sahay, and Sengupta (2022) [21], when SE has been applied to attempt achievement of these goals, there has been a failure to tackle challenges, which is in our view highly daunting given the multiple tensions among the goals that need to be managed to reach a dynamic balance. In particular, sustainable development problems are in our view a "wicked problem", with solving one problem leading to creating more problems. These challenges have been found in terms of strategic formulation and implementation [21], human resources management [21,22], and financial acquisition [21–23]. Among these, the main challenge facing SE and that which could not be overcome is financial management [23], endorsed by a recent study that discovered in Thailand that only 19% of SEs obtained broke even after the COVID-19 pandemic [24].

Even though there are some research studies on the factors driving SE to achieve its goals from various perspectives, generally, knowledge remains scattered and fragmented. For all that, the most recent systematic review on social enterprise sustainability conducted by Kulshrestha, Shay, and Senggupta in 2022 [21] showed that only a few deep-thinking researchers proposed SE as a theoretical model in relation to sustainability. These are Ketprapakorn and Kantabutra (2019) [8], Ketprapakorn and Kantabutra (2022) [14], and Lumpkin et al. (2013) [25]. The theoretical development in their studies explicitly explains the linkage between corporate sustainability practices and sustainability performance outputs such as socioeconomic performance, brand equity, and environmental performance.

Among these mentioned, only Ketprapakorn and Kantabutra [8,14], as informed by the sufficiency economy philosophy, focus on the Asian context. According to the systematic review [21], sustainable SE is an underrated research topic despite it being an important aspect of today's sustainable development. Therefore, understanding this pivotal model regarding the relationship between practice and output is considered crucial. However, by the very nature of the studies adopting a quantitative research method, there were some limitations, with no detailed explanation in terms of how to strategically implement it, particularly in the case of SE beneficial in the maintenance of sustainability. Thus, this paper attempts to bridge this research gap by using the framework from Ketprapakorn and Kantabutra's model [8,14] and then extend knowledge on how a sustainable social enterprise model can be implemented. Furthermore, this study aims to explore how SE, as informed by the philosophical approach of sufficiency economy, can be used to cope with the challenges and opportunities in the creation of social enterprise sustainability. The broad research question below is used to guide the development of the present study.

Research Question: To which extent and how can the sufficiency economy philosophy be used to ensure social enterprise's sustainability in Thailand?

Since (a) a recent literature review [14] has indicated that the literature on social enterprise is dominated by conceptual and empirical studies and (b) many of the concepts introduced in the literature also lack theories or models that provide the answers to the

theory building questions: "what", "how", and "why", of the social enterprise phenomena [26], our present study introduces a refined model of sustainable social enterprise that features the process of social entrepreneurship [27], our significant contribution to the social enterprise literature.

2. Background Literature

This section discusses relevant concepts of social enterprise, sustainability, and the philosophy of sufficiency economy, followed by the sustainable social enterprise model used to explore the research question.

2.1. Social Enterprise and Sustainability

The emergence and evolution of the social enterprise (SE) concept in academia are still unclear because many scholars have different views [28]. However, a few researchers note that the term SE was first introduced in 1970 by Borzaga and Defourny in their book entitled "The Emergence of Social Enterprise" [29]. In the early stages, SE was viewed as part of organizational skills and activities that aimed to solve social problems.

Ten years later, after the initiative by the Nobel Peace Prize winner Prof. Muhammad Yunus on a microfinance revolution and the emergence of a social business model, SE became widespread and gained attention globally by both practitioners and academic researchers [30]. However, during the 1980s, although gaining increasing significance, in practice, each organization was implementing the SE concept differently.

In the 1990s, with the creation of the New Labor era by the UK government, the attempt to link capitalism and socialism increased the focus on the social enterprise (SE) concept [31]. Inequality and problems of endemic poverty dictate that organizations focus on doing business with society. This is the key concept of SE, that there is a return on investment for the community. Gradually, the focus of SE has shifted to the implementation of the non-profit making organization.

What followed was that SEs increased in both number and scale because governments around the world encouraged it, and perceived SE as a global concept to alleviate poverty [32]. By and by, Peter Drucker added to the SE concept by introducing the term social innovation. Therefore, SE is now viewed as a managerial practice to enhance efficiency in the creation of social wealth [33].

Later on, SE gained recognition as a separate discipline in academic research and applicable in all types of non-profit organizations, both private and public. This is not only because of their purpose to "respond to the needs of others" but also because of their growing contribution to economies [34,35].

However, the lackluster world economy caused a reduction in government funding, and this lack of support to SE resulted in its collapse as operating costs could not be covered [36,37]. Therefore, the concept of sustainability has now been integrated into SE. However, it is still a question of debate amongst researchers whether SE can really be sustainable [5,6]. This may be because the early studies on SE addressed mainly the principles of SE and the viewpoints of practitioners and policy makers [30]. These studies mainly addressed SE as a suitable approach to accelerate the implementation based solely on philanthropic charities and donations [38].

However, various researchers believed that SE could be sustainable if we understand what standard sets of corporate sustainability measured items are, particularly when the business is facing the threat of world economic downturn and the impacts of COVID-19. Understanding the factors that influence SE to attain sustainability is in the spotlight [39].

In the context of SE, sustainability refers to, first, whether an SE can survive in business. Second is whether an SE can financially support itself and, last, whether an SE can be resilient over time. The foregoing studies stated that sustainability of SE comes from the combination of three components: social sustainability, environmental sustainability, and economic sustainability. This is known as the "the triple bottom line" introduced by Elk-

ington in 1998 [40] which is similar to what business persons called the 3Ps: people, profit, and planet. This is the fundamental principle used widely in the field of sustainability.

To achieve long-term sustainability, SE needs to involve the local community. This is because community ought to play initiative roles in ensuring the operational efficiencies, appropriate management, and control [41]. As involving community is a priority, nowadays there is an increasing interest in research studies to examine in detail how SE has been sustainably implemented in different contexts [36,42,43].

In Kerlin's study on seven regions of the world, he suggested that the Southeast Asian region has unique characteristics but far less discussion [44]. Several developing countries in Asia are facing the problem of multidimensional poverty which has worsened after the COVID-19 pandemic. Thus, sustainable SE is expected to contribute to help alleviate poverty. Unfortunately, very limited studies were carried out [42]. Among those SE studies, newly industrialized contexts such as Thailand are examined [8,14,42]. Studies on SE in Thailand gradually increased since the Asian economic crisis in 1997 [42]. This may be because of the need for the country to empower local communities and grassroots in order to help improve economic conditions.

2.2. The Philosophy of Sufficiency Economy (SEP): Thailand's Sustainable Development Approach

The philosophy of sufficiency economy (SEP), initiated by the late His Majesty King Bhumibol Adulyadej, is a holistic approach to sustainable development [45]. Although SEP was introduced to Thailand later than elsewhere, it has now been recognized and adopted universally.

During the 1950s, the late King had been traveling throughout the country aiming to establish centers in different regions for the purpose of understanding the prevailing conditions of areas. His Majesty conducted research and came up with specific strategies for developing those areas properly. From this research work, SEP has been derived. The ideology is to help the country through globalization, with a balanced and integrated approach to globalization, while maintaining the value of community, comprising three principles: moderation, rationality, and self-immunity, with two underlying conditions: knowledge and morality, in the formulation of an enterprise sustainability strategy [46]. According to Kantabutra (2006) [47], moderation is a prerequisite for reaching a state of sufficiency. Moderation means a business should be grown naturally and not driven into either an over-consumption or an underconsumption condition. Rationality is accumulating knowledge and experience, along with an analytical capability and foresight, to evaluate the reasons for any action in order to understand its full holistic consequence. Self-immunity occurs when an enterprise has been armed with the economic, social, cultural, and environmental defenses needed to resist and ward off both internal and external threats. Successfully implementing SEP using three principles also requires morality and knowledge.

SEP addresses the middle path that is built upon a foundation of resilience, thus creating a balance of social, environmental, and economic conditions [48]. Various types of organization, public and private, business, government, non-government, or SE, can apply SEP to ensure sustainable development [45]. Enterprises can practice it according to their strengths, conditions, and limitations [49]. Furthermore, SEP is also applicable for sustainable development at all levels of the community [46]. SEP puts a high value on ethical behavior toward others [8]. This is in lieu of the concept of SE that places the responsibility of carrying out an ethical approach on all stakeholders.

The result of adopting SEP is the resilience to cope with the impact from economic, social, and environmental changes [50,51]. Embedded SEP helps an enterprise to prepare for negative impact, from both internal and external changes, and to mitigate risk from crisis [45,48–52]. Integrated operation of SEP resulted in excellent brand and reputation, and improved social, economic, and environmental performance [53,54] while focusing on the creation of long-term stakeholder values [48].

2.3. SEP and the Sustainable Social Enterprise Model

Ketprapakorn and Kantabutra (2019) [8] in their literature review on SE sustainability suggested that by incorporating SEP along with other profound internationally recognized sustainability theories, a social enterprise model could be achieved. These internationally recognized theories included the self-determination theory, the stakeholder theory, the sustainable leadership theory, the complexity theory, the knowledge-based theory, the dynamic capabilities theory, and the knowledge management theory, and by conducting an empirical test [8], they then proposed the sustainable SE model as presented in Figure 1. We introduce each of the model components one by one below.
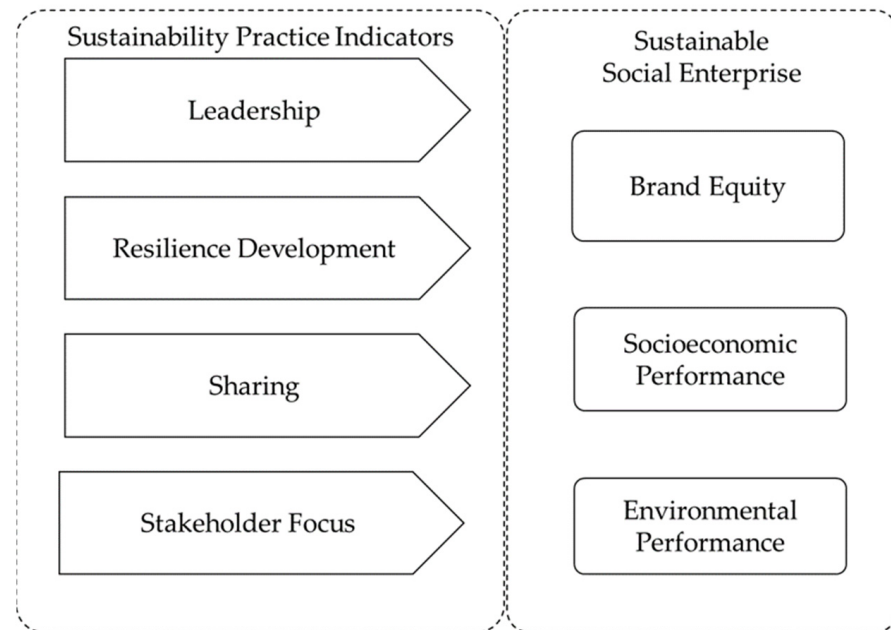
Figure 1. Sustainable Social Enterprise Model. Source: Adopted from Ketprapakorn and Kantabutra (2019) [8].

2.3.1. Resilience Development

The term resilience is from the Latin word meaning "rebound" [55]. It was used in the field of ecology in the research by Holling, who defined resilience as "a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables" in the 1970s [56]. In the social studies field, resilience is often mentioned in sustainable development as "the ability of a system to absorb disturbances and retain its basic function and structure" [54–57]. According to SEP, resilience is the ability to bounce back from external impacts. In the context of SE, a community requires that collaborative behavior become entrenched in the group. SE should emphasize risk management, diversity of products and services, and the use of acquired knowledge and information to plan for volatility, and thus create a readiness to stand against a crisis [55]. SE, by nature of its characteristics, has a greater ability than other types of enterprise to be resilient. SE is more flexible and adaptable [58]. For SE to increase resilience, innovation plays an important role. Some researchers have pointed out that SE is innovative in achieving social goals [10]. For SE, social innovation could cover the development of new products, services, or a variety of approaches to address social problems. SE can retain the innovative character that requires monitoring changes in the environment and capturing new opportunities while cooperating with other stakeholders [58]. SE, with resilience, would have a risk management plan, diversity in product and services, and use the acquired knowledge and information to be prepared for a stand in the event of a crisis.

2.3.2. Stakeholder Focus Practice

SE should understand the need of aiming to build long-term relationships with stakeholders to ensure long-term and sustainable success [59]. The lack of support from key stakeholders could end in the demise of SE. Focus on stakeholders means managing the stakeholder engagement process, as SE should share common goals with key stakeholders [60]. According to SEP, reasonableness occurs from having knowledge and experience; therefore, acquiring technical and managerial skills from stakeholders can help SE to scale its social impact [61]. SE should consider investing in customers, society, and the environment. SE should provide a standard quality of the product and service for paying customers, plus systematic support, and development of the internal customer, i.e., its own employees. For society, SE should develop local communities and eliminate problems to improve the community's quality of life. For the environment, SE should preserve natural resources and protect the environment [8]. The trustworthiness of SE will strengthen relationships with stakeholders, and furthermore could introduce increased numbers of stakeholders to the SE network [59].

2.3.3. Leadership

Leadership is affirmed in many studies as one of the antecedents driving sustainability in SE [1]. There is a tension in managing SE as one of the goals is to deliver an impact to society whereas the second goal is to create a sustainable business that is financially successful. Therefore, having a leader with a sustained vision is mandatory [4] to development of a sustainable SE based on SEP. According to Kantabutra's study on SEP and leadership [47], a leader ought to have a clarity of vision for abstraction, challenge, and future orientation. The vision must comprise moderation, reason, the need for a self-immunity mechanism, knowledge, and morality imagery that is directly associated with sustainable employment and customer satisfaction, and with a satisfactory financial outcome [1]. Another study by Phukamchanoad [62] confirmed that the leader in a community should be committed to the application of SEP in order live a life of sufficiency. They are mainly concerned with the interests of the community, and pay attention to community communication, not only within the enterprise but also with external partners [62]. For the internal community, the SEP leader often communicates their vision and motive in order to empower employees and followers. For the external community, the leader liaises with the community, government, and private enterprise in order to achieve the social mission. These leaders were found to be conflict resolution types who utilize their qualities of respect, honesty, and dignity, and are aware of the diversities among stakeholders from different cultures, ways of life, and beliefs. SE ought to have a leader who is considerate toward the diversities of stakeholders [31]. With the belief in moderation, knowledge, and virtue, a community leader often makes logical decisions with consideration of the factors involved and careful anticipation of the outcomes that may be expected from such actions [62].

2.3.4. Sharing

Sharing, which means giving and receiving, is an underlying concept of SEP, and is a virtue [14,63]. Virtue in a community can be either be inherited or learned [64]. Shared virtues in a community create the community norm. However, without knowledge sharing, virtues are not enough for SE to achieve sustainable goals [65]. For SE, sharing knowledge refers to not only explicit but also tacit knowledge as well as feelings, experiences, and skills among those stakeholders in the enterprise [66]. The resulting benefit is the speeding up of new ideas and the enterprise-learning processes, which, as a consequence, lead innovation within the enterprise [67]. In the case of business enterprises that adopt SEP, there is even more sharing of knowledge with those who are external, even with competitors. Sharing knowledge can also help increase the adaptive capacity of the enterprise [68]. Adaptability enables organizations to have flexibility and be capable of breaking through barriers and restoring scalability. This is interrelated with self-immunity. Sharing is not only beneficial

for the enterprise itself in terms of efficiency and success, but also helps improve and create value within the entire supply chain.

2.3.5. Corporate Reputation and Brand Equity

Increasingly, corporate reputation and brand equity are used as measures for corporate sustainability (e.g., Avery and Bergsteiner, 2011 [69]; Kantabutra and Ketprapakorn, 2020 [70]). Corporate reputation is the perception of the enterprise from the viewpoint of all stakeholders in relation to its main competitors [71]. Corporate reputation positively influences brand equity. A sustainable strategy is a tool to enhance the corporate reputation and even increase brand equity [72]. Brand equity is considered as value added to a product by virtue of its brand name [73]. Based on the SEP concept, resilience, sharing, virtue, and self-immunity are related to how the enterprise behaves morally, and develops strong relationships with customers and other stakeholders and therefore results in greater sustainability. Corporate reputation and brand equity are the most valuable intangible resources because, first, they help reduce stakeholder doubt regarding the future performance of the enterprise. Second, they lead to stakeholder trust [72]. This trust, based on the relationship with customers and other community members, serves as an important component and guarantor of self-immunity during times of economic hardship [74].

Based on a recent stakeholder model by Winit and Kantabutra (2022) [75], an enterprise has to deliver both functional and emotional benefits in order to increase the level of stakeholder trust that is a precursor to brand equity. Therefore, sustainable enterprises promote the delivery of functional benefits that lead to improving emotional benefits to improve stakeholder trust, leading to improved brand equity, given that functional benefits leading to psychological benefits empirically lead to stakeholder trust and thus brand equity [75].

2.3.6. Socioeconomic Performance

Drawing from their study, Ketprapakorn and Kantabutra (2019) [8] proposed socioeconomic performance as a measure for social enterprise performance. Generally, socioeconomics, a term used in various contexts, is how economic activity affects and is shaped by social processes. At the community level, it refers to the way social and economic factors influence one another in local communities and households. The measurement of socioeconomic sustainability is found to be the relationship between quality of life and health [76], life satisfaction of community members [77], community wellbeing [78,79], etc.

At the personal level, it is how each group that shares values behaves within the society in the relation of economics to social values [80]. The measurements at the personal level were found to be individual quality of life [81], the relationship between happiness and longevity [82], and mental health and personal relationships [83].

In the case of SE, in which the ultimate goal is to conduct business in service of the social mission, social benefit, community wellbeing, and economic benefit outcomes coupled with financial freedom are all inseparable. A previous study on SE at a hospital in Thailand [6] found that when SE members shared the same vision on SE sustainability, they viewed financial and social outcomes as related [8]. Members in SE devoted themselves, as they strongly believed in contributing good things to the community. Thus, this leads to greater social outcomes, and consequently helps build improved brand reputation. After all, not only do they have loyal patients, but also new patients who attend as they trust in the brand and want to support SE. These things, at the end of the day, turn into SE financial success [70]. This is the key difference between sustainable SEs regarding achieving socioeconomic performance and those with corporate social responsibility (CSR). Some studies [84,85] argued that CSR alone could not lead to a win–win situation. Particularly in the case of developing countries, CSR is implemented as part of corporate philanthropy, not for the sake of the community. Those who participate in CSR activities do so on a voluntary, temporary basis and thus it is not sustained. Furthermore, economic power,

benefit, and decision making belong to the enterprise that manipulates CSR activities, and not the community [85].

This corporate philanthropy approach is also consistent with an introduction to the development of the Directive of the European Parliament and of the EU Council [86], which obliges certain large entities and groups to consider and report social issues in their environment regarding the disclosure of non-financial and diversity information. In other words, the CSR activities are conducted because enterprises are directly or indirectly required to by rules and regulations. On the contrary, Thailand's sufficiency economy philosophy approach guides business enterprises to contribute to developing the society because the enterprises view themselves as part of the society [87]. If the society cannot exist, neither can the enterprises. With this mindset, the sustainable enterprises as informed by the sufficiency economy philosophy perform CSR activities because they want to ensure a pleasant society, as opposed to being required to by certain rules and regulations. In our view, it is this mindset that guides them to view their performance as a balanced combination between social and economic performance outputs, or socioeconomic performance outputs.

2.3.7. Environmental Performance

One of the outcomes from a sustainable SE is measured by its environmental performance. SE, although doing business for society, exploits the community resources and environment by its activities. Environmental sustainability is directly linked to the socioeconomic performance. It is how a community has economic growth while balancing the wellbeing of community members and efficiently utilizing and managing community natural resources without destroying the natural environment [88]. SE therefore exists to provide help and support for a wide range of environmental reasons that "give back" to society—hence, reflecting the "multibottom line" [89] or virtue in SEP. SE could embed environmental responsibility as part of its social mission.

Sustainable SE takes into consideration the physical input to production, emphasizing environmental life-support systems. These environmental components include the atmosphere, water, and soil, which all need to be healthy, meaning that their environmental service capacity must be maintained [90]. During its business operation process along the supply chain, SE ought to preserve and regenerate resources starting from development through to the delivery of products or services [91]. Previous studies reported the measurements of the environmental sustainability as the environmental performance that a sustainable enterprise should consider; for example, assessment of environmental inputs [92], reduction of chemical usage in the operation [91], use of renewable energy resources [93], minimization of waste and waste management [94], pollution alleviation [88], consideration of the environmental footprint such as carbon, land, water, material, etc. [91], and adopting green marketing strategies such as the production of environmentally friendly products, eco-labeling, and packaging [95].

In summary, SE should be compliant to balance the needs of business, but not operate over capacity or oversupply product and services, without supporting the community ecosystems, and at the same time meet the needs of the society [59,60]. The present study adopts the sustainable social enterprise model [8] to explore the research question. The following section introduces the research methodology designed to explore the research question.

3. Research Methodology

In exploring the research question, the phenomenological paradigm of research is adopted. We explain the overall research design, data collection, and analysis approaches in this section.

3.1. Case Study Approach

This study employed the qualitative research method in order to obtain a deep understanding of how SE embraced the Thai sufficiency economy philosophy to achieve its

sustainable performance. The case study approach was adopted, as it is well suited for explorative theory-building research [96]. The case study could provide more detail and could go beyond the quantitative model. Furthermore, it could help explain anomalies or unexpected results [97].

The case study approach allowed researchers to deeply understand the holistic and meaningful characteristics of SE and its managerial processes. Yin [98] encourages the case study approach in a study that wishes to explore the complexity of organizational phenomena. The case study approach helps capture the history of the organization, its phenomenography on how the concept of SEP was put in place, its past and current scenario, and how the organization implemented a better expression of leadership and innovation in order to achieve the organizational goals and minimize or control negative aspects.

3.2. Case Study Selection

We use the case of Amphawa Chaipattananurak Conservation Project of the Chaipattana Foundation (the ACCP) to explore the sustainable social enterprise model for the following reasons.

In terms of sustainable enterprise, the ACCP, since its foundation in 2002, has demonstrated its organizational abilities to deliver competitive performance (see the sustainability performance outcomes for details), go through crises including the subprime crisis from 2008–2009 and the COVID-19 pandemic crisis starting in 2020, and maintain market leadership [99] as evident by the fact that it is regarded as one of the outstanding projects that received an honorable mention cultural heritage conservation award from UNESCO [100].

In terms of social enterprise, no universally agreed definition of social enterprise exists [53]. While a social enterprise is defined by some scholars as an enterprise that tries to maximize long-term profitability for a private owner to spend on social development activities as part of corporate philanthropy, the concept is defined by others as a commercial, non-profit enterprise that wants to contribute to improving society and is very clear in its social mission [101,102]. With a wide variety of descriptions, the overarching goal of both extremes is clear, to benefit society. By this commonly shared definition, the ACCP is considered as a social enterprise because it was started with a social vision to develop and preserve the Amphawa community, details of which are discussed in the following section.

Since the present study used the sufficiency economy philosophy as part of the framework, the ACCP is also appropriate as a case study because (1) it belongs to the Chaipattana Foundation, a development foundation founded by HM King Rama IX who formulated the philosophy of sufficiency economy, and (2) it is an SE showcase that successfully demonstrated how SEP could create awareness and rejuvenate an abandoned community to its previous vitality, according to UNESCO [100].

Thus, the ACCP is considered suitable as a subject of study for the present study because it can be justified as a sustainable social enterprise, the development of which is informed by the sufficiency economy philosophy.

3.3. Data Collection and Triangulation

In order to answer the research question of how SE could create sustainability through the SEP concept, it is crucial to understand the context of the socioeconomics and environment of the case study from various stakeholders. A semi-structured interview guide was developed based on the concept of SEP and Ketprapakorn and Kantabutra's sustainable model [14]. Using semi-structured interviews, this study was able to extract the necessary characteristics of a successful sustainable SE that key stakeholders were attempting to achieve. The semi-structured interview guide and data collection processes were conducted under the approval of the Institutional Review Board of the Institute of Population and Social Research, Mahidol University (MU-IPSR IRB).

To ensure the validity of the studies, data triangulation was conducted at various levels of the project, from top down to operational level, while full- and part-time volunteers of

the case were interviewed. Furthermore, in the local community people such as the local governor, local school teachers, local merchants, villagers, etc. as well as tourists were other important entities that this study paid attention to. With the understanding that all stakeholders play a significant role in crafting SE, this methodology allows for the recognition of paths fundamental to the development of SE sustainability. This methodology emphasizes the need for continued dialogue to minimize the gap of understanding between different stakeholders [103].

In addition to extensive data triangulation, we also adopted (a) method triangulation, (b) investigator triangulation, and (c) theory triangulation [104,105]. In terms of method triangulation, we adopted the probing technique, non-participative observations during five field visits, collecting data from the same informants at different times. We adopted the investigator triangulation by using four different investigators in collecting and analyzing the data. Each investigator was trained on the framework, the analytical framework, and how to evaluate the data. Findings from each evaluator were compared. If the findings from each evaluator arrived at the same conclusion, data validity was determined to be sufficient. If, however, the conclusions were different, the investigators investigated further to unearth the "certain" and "true" finding. In terms of theory triangulation, we finally explored and analyzed our data through different theoretical/conceptual frameworks as shown in the following section of Findings and Discussion.

In reference to theory triangulation, we would like to point out that the sustainable social enterprise framework we used as the research framework alone is supported by seven key theories [8]. To be precise, the leadership practice is endorsed by the self-determination and sustainable leadership theories, while the stakeholder focus practice is endorsed by the stakeholder theory. The sharing practice is endorsed by the knowledge-based, knowledge management, and dynamic capabilities theories, while the resilience development practice is endorsed by complexity and sustainable leadership theories. Thus, if the findings are consistent with the framework, the findings must also be supported by these seven key theories, endorsing the findings' validity.

3.4. Participants

A total of 95 participants were purposely interviewed in this study. They were selected as they had experience working with the ACCP for at least 1 month. As for the community members, they had experience with ACCP activities or products/services. Face to face interviews of 1–1.5 h were conducted. Participants are presented in Table 1.

Interviews with internal stakeholders were designed to cover not only the management level, but also those at the operational level of the project. Volunteers who joined the operation of the SE consisted of two groups. The first group was in the majority. They were students from various educational levels: elementary school, high school, under- graduate, and graduate level, in the community. The second was those who were impressed with the SE's brand reputation and only joined the activities from time to time.

Partners of the projects consisted of two groups. The first is project consultants. Project consultants were those expert professionals in industries who were invited to coach and give feedback to the SE projects and activities. They joined on a part-time basis. Project collaborators were mainly universities, for example, faculties from Chulalongkorn University and Suan Sunandha Rajabhat University, which despite not being located in the community areas came and worked in collaborative events or activities such as research studies. Merchants in the project were those local villagers who were suffering from floating market land price manipulation and those locals born in the Amphawa community who wished to return home, looking for an affordable rental place to do business.

Table 1. Research participants.

No.	Informant	No.	Relationship with the ACCP	Classification of Informant
1	Project director of the Chaipattana Foundation	1	Employee	SE member
2	Former project director of the ACCP	1	Employee	SE member
3	Manager	1	Employee	SE member
4	Staff	10	Employee	SE member
5	Students	9	Volunteer	SE member
6	Linguistic mentor	1	Volunteer	SE member
7	Project consultants	2	Partner	SE member
8	Project collaborators	3	Partner	SE member
9	Merchants in the ACCP project	12	Customer	SE member
10	A deputy director of Thailand tourism	1	Stakeholder	Community member
11	A former municipal mayor	1	Local community stakeholder	Community member
12	A vice chairman of the Cultural Council of Samut Songkarm Province	1	Local community stakeholder	Community member
13	Villagers	15	Local community stakeholder	Community member
14	Local businesses in the community	15	Local community stakeholder	Community member
14	Community schoolteachers	2	Local community stakeholder/Partner	SE member and Community member
15	Local artists	2	Local community stakeholder/Partner	SE member and Community member
16	Visitors	8	Customer	Community member
17	Tourists	10	Stakeholder	Community member
	Total	95		

By the nature of SE, various groups of stakeholders were included. The first were government officers. A former municipal mayor, a deputy director of tourism, and a vice chairman of the Cultural Council of Samut Songkarm Province were interviewed in order to understand the background, situations, needs, and problems arising in the Amphawa community before and after the operation of the ACCP. Another group was villagers. Villagers were those living in the Amphawa community, who experienced the community boom and bust, as well as having seen the development of the ACCP. Some of them had participated in the ACCP activities. Some had experience as suppliers to the ACCP whereas some were buyers of the ACCP products. Third, in the case of Thai local communities, community schoolteachers are considered as one of the key community influencers. As the ACCP attempted to regain the culture of local music and art, it encouraged teachers and students of the Amphawa district to participate. Two teachers were involved in the ACCP activities. Both were interviewed as partners and community stakeholders. Third, two

local artists who returned to their hometown had experience of participating in exhibitions at the ACCP galleries. They were considered as partners and community stakeholders. Fourth are local businesses in the community. They are local businesses in the Amphawa tourism ecosystem: hotels, home stays, tourist boats, restaurants, boat venders in the floating market, local groceries, etc. and both medium-sized and small businesses. Last, the biggest group was tourists and visitors. Tourists were those visiting the floating market. The majority of tourists experienced both boom and bust times. Few were first-time visitors to the ACCP and Amphawa floating market. Visitors were those who visited the ACCP project activities for learning purposes; they were mainly farmers from other provinces. Some were government officers and some were from educational organizations.

After data collection, we transcribed the data recorded during the interviews. Although highly time-consuming, the transcription facilitated our later data analysis. We transcribed interviews while details and reactions of the interviewees were still fresh. All of our 95 interviews were very lengthy, lasting in total about 65 h. At the end, we had about 254 A4 pages of interview transcript for analysis. In addition, other types of data such as observed data and reflective notes were made into an organized written form for analysis.

3.5. Data Analysis

In terms of analysis, qualitative data analysis typically takes place concurrently with the data collection. Therefore, findings frequently develop gradually over time in a non-linear manner. By design, we thus transcribed the interviews by ourselves. Given the deductive approach to qualitative data analysis, the framework approach was adopted [106]. Our framework approach involved analyzing qualitative data based on a theoretically and empirically predetermined structure as shown in Table 2 below, since from the literature review, we could anticipate the responses from the interviewees. The framework approach helped us focus the coding on those critical issues identified by the existing literature.

Table 2. Example working analytical framework.

No.	Type of Interviewee	Interview Quote	Leadership	Stakeholder Focus	Sharing	Resilience Development	Brand Equity	Socioeconomic Performance	Environmental Performance
1	Management	"By Conservation and Development, we want to develop the Samut Songkhram community to be sustainable allowing people to have a good quality of life. At the same time, the resources, wisdom, ecosystems will remain for the next generations to come. In terms of development and conservation, these must be carried out in parallel".	X	X	X			X	X
2									
3									
4									
5									

X = consistent.

In addition, the framework approach was suitable for the present study, that is, cross-sectional analysis with descriptive data, because it enabled us to view different aspects of the observed phenomena under exploration [106]. Given the framework approach, the resulting interpretations of interviewees' experiences were transparent [106]. It also provided clear steps to follow and bring about highly structured outputs of summarized data. It also allowed us to move back and forth across the data until we reached a coherent account [106]. Most importantly, the framework approach allowed us to constantly refine emerging themes as more data were collected.

We introduce the case enterprise, justified earlier as a sustainable social enterprise, in the next section.

4. Case Study: The Amphawa Chaipattananurak Conservation Project (ACCP)

Amphawa is the name of a district in Samut Songkarm Province, central Thailand. Amphawa has long been a small community situated by a river. In the 16th century, it was very famous as one of the key floating market centers in the country. However, faced with changes such as the advent of urbanization and the reduced importance of waterways for transport, the younger generation abandoned the place. Amphawa was therefore considered a dead city, with an aging population and a deteriorating socioculture. The community had gradually lost its local culture and norms. Consequently, some of the community land had become degraded and unusable and some parts were even considered as a "slum" [107].

In 1997, the Tourism Authority of Thailand and the Department of Community Development cooperated with the local community in the redevelopment of tourism in Samut Songkarm Province by reviving the night floating market, boat tours for firefly visits, and home stay within the local community. This promotion was so successful that the community became a tourist destination. However, without a long-term plan, problems occurred [108].

With an unclear strategy in the management of community interests, lack of participation by the majority of villagers, and ignorance of sharing local knowledge and norms, a void in culture developed between villagers and tourists, which brought about a negative impact. Although there was a consistent economic performance from the community [109], the first negative impact noticed was the change in cultural identity. The traditional floating market was changed from daytime to nighttime all to serve the needs of tourists. Local fruits and products were changed to encourage tourist purchases. Secondly, and the more serious, was that land prices dramatically increased. Land and shop areas changed hands to investment capitalists, which included the shifting of investment from people in the local community to outside investors. Thirdly, the traditional rowboats were changed to motorboats to meet the excessive tourist demands which resulted in an increase in environmental pollutants, such as noise and air, and landslides. Some local villages decided to cut down all indigenous trees within the habitat to encourage fireflies and almost 50 families deserted the community [110].

From boom to bust, villagers who were in the tourist business faced hyper-competition and business conflicts between local villagers and outside investors. The naturally green areas of Ampahwa, normally an agricultural area and orchard, disappeared to be turned into a residential hotel area. Problems of the degradation of resources and the environment occurred, such as the state of trees and soil along the riverbank and the accumulation of solid waste, because there was no preparation for the problems that occurred. All these problems were compounded by the fact that the agencies in the area did not have a clear policy to solve the developing problems [111].

In 2002, Miss Prayong Nakawarang presented her 1 rai of land (8.3 acres) in Amphawa to Her Royal Highness Princess Maha Chakri Sirindhorn. Other donations of land have since increased the site to 25 rai (9.9 acres) in total area. Princess Sirindhorn charged the "Chaipattana Foundation" with developing this site for the benefit of the local community. Thus, the Amphawa Chaipattananurak Conservation Project (ACCP) was embarked upon [112]. The key objectives of the Amphawa Chaipattananurak Conservation Project are reflected in its name: "Pattana" means "development" and "Anurak" means "conservation". The core working philosophy of the ACCP is based on applying SEP principles in collaboration with the local community [113].

Under the ACCP, development began by exploring sociogeographic factors, promoting their "cultural value" and then turning them into "marketable values". All ACCP activities, at each step, from cultural conservation to preservation of the traditional way of life, local wisdom, and environment, involve the local community. Using close cooperation in conservation as well as in development, the ACCP believed that sustainability could be within realistic reach. This belief is reflected in the "Chai" part of the Foundation's name, which adds "victory" to the development and conservation concepts [112].

To run the project, HRH Princess Maha Chakri Sirindhorn provided four royal initiatives as a guideline for operations:

(1) Develop and conserve arts, ways of life, and local culture unique to the Amphawa community in both the physical and other ways of life of residents in the area and community.

(2) Develop the area to be a conservation destination, attractive to tourists. Link the ACCP areas with the other tourist attractions of Samut Songkhram Province as well as make it a source of education and dissemination of knowledge about native plants by maintaining the orchard ecology as a source of information about the way of life of the Amphawa community.

(3) Create value added products and income for the community by the sale of produce and services, with emphasis on eco-tourism.

(4) Promote holistic development by creating opportunities for the local community. Play a role in the management of the area to achieve a balance in development and community self-reliance according to the concept of a sufficiency economy system [112].

The project development and conservation activities can be systematically divided into three phases.

1. Rehabilitation.
2. Self-sustaining community.
3. Holistic sustainability.

In the Rehabilitation phase, the ACCP started by renovating the land and buildings in 2002. Prior to the land donation, many people had rented land from Miss Nakawarang, with good relationships between the parties. The ACCP was concerned with these people and wanted them to remain living in the area. In developing and managing the land in Amphawa, the ACCP considered various alternatives but chose those that least adversely affected the people living in and around the areas and the community generally.

Sustainable development requires systematic management. However, the challenge the ACCP faced in this phase was that people who had been living in this area for a long time had no rental contracts with the former landlord. The ACCP needed to introduce legal contracts, but in doing so attempted to ensure that people clearly understood the contract details, agreed upon the contract terms, and accepted the contract obligations. The ACCP used the first contracts it signed with the people living at Amphawa as a way of keeping the balance in the Amphawa community. In this phase, the principle of equity in society was of key concern to the ACCP.

Rehabilitation was financed from an initial rehabilitation fund from the foundation, the local municipality, and donations from Denmark and with assistance from Chulalongkorn University. In addition, the ACCP encouraged the local people to become involved. If residents were interested in restoring their buildings, they could obtain a 50% subsidy, supplying 50% themselves. Later, this concept was extended to other community development activities such as schools and community assets.

In the self-sustaining community phase, the ACCP rejuvenated and implemented the floating market idea. However, the first and foremost challenge was a conflict of interest with the nearby community on the other side of the river where a floating market was already established. The ACCP involved all stakeholders in solving this problem, and found a community consensus that resulted in the Amphawa market officially opening in 2008.

Currently, the ACCP offers a range of services. First, the agriculture areas are the zone for planting local plants for conservation, the traditional coconut sugar stove, and greenhouses producing vermicomposting fertilizer. In this area, tourists and visitors can learn and experience how coconut sugar is made with green traditional processes and how to produce vermicomposting fertilizer for home and commercial use. In addition, in this area the ACCP sells various local foods and types of coconut sugar. Second, the ACCP market is a rental area for local farmers to sell local products. Third, Nakawarang stage

is a space for arranging local art and craft performances, where students in Amphawa are encouraged to perform traditional Thai music. The area is also a space for other activities with partners such as an eco-friendly market. Fourth, the ACCP retail shop sells consignment products that are local home-manufactured products inspired by local wisdom, as well as local products from nearby areas. Examples include coconut basketwork, handicrafts, and calcium salt talcum powder. Fifth, the Chan-cha-la shop is a shop located next to the floating market. The ACCP offers free space for tourist and visitors. The ACCP decided to sell only natural drinks and not foods to avoid competition with local restaurants.

Finally, the ACCP also offers an exhibition room with a low rental price for artists to show their art pieces. The ACCP also invited the local community experts to demonstrate various local handicrafts, aiming to educate and preserve the knowledge for the next generations.

5. Findings and Discussion

Overall, the resulting findings are to a large extent consistent with the Sustainable Social Enterprise model. As part of the theory triangulation, we discuss the findings in relation to the extant theoretical, empirical, and conceptual literature in this section.

5.1. Sustainable Social Enterprise Practices

In relation to the broader literature and as part of the theory triangulation, we present and discuss the findings in relation to the four practices and their outcomes in this section.

5.1.1. Leadership Practice

Consistent to the broader literature on sustainable leadership (e.g., Avery, 2005 [99]; Avery and Bergsteiner, 2011 [69]), the ACCP adopted a farsighted management policy with a visionary decision. The project decision making was based on long-term impacts in order to achieve a sustainable business and community-based tourism.

The project started with emphasis on long-term planning aiming at reviving the local culture and community, as endorsed by the corporate sustainability practice of geosocial development where development takes place by considering the requirements of the locals [70]. However, because there were tenants who were local residents in a row of houses by the river, the land was given to the foundation when the ACCP commenced its operation; they first set up an administration system to prevent the land being sold to financial investors. The ACCP hence initiated a contract system, adapted to suit stakeholders for efficient management of resources. The fair contract system was based on the benefits in using the common areas to satisfy all parties as informed by the stakeholder focus practice [70]. The visionary leadership of the management team of the ACCP created value for relevant stakeholders based on "common interests", endorsed by the broader literature on sustainable enterprise (e.g., Avery, 2005 [99]; Avery and Bergsteiner, 2011 [69]).

> *"By Conservation and Development, we want to develop the Samut Songkhram community to be sustainable allowing people to have a good quality of life. At the same time, the resources, wisdom, ecosystems will remain for the next generations to come. In terms of development and conservation, these must be carried out in parallel".*
>
> *Former project director of the ACCP*

For those who apply to be merchants in the area of the ACCP, the project will not charge expensive space rental fees, supported by the corporate sustainability practice of moderation [70]. The research team asked to see the rental receipts of the shops in the project and found that the rental price is about 80% cheaper than other places in the floating market. The key consideration criterion is that the merchants have to be local people, selling locally made products or offering a service to the local villagers. In addition, merchants in the project areas are encouraged to help each other and produce products and services that contribute to conservation, development, and sustainable self-reliance. This principle

is also informed by the corporate sustainability practice of knowledge sharing in which knowledge sharing among stakeholders is promoted [70].

In addition, the ACCP focuses on the cause of sustainable conservation of the identity of the riverside community. Therefore, the policy of development mainly focuses on space allocations. The ACCP utilized its space to organize various activities with the concept of local culture and wisdom preservation such as a traditional Thai music band and traditional local cuisine and desserts that will benefit the community. This finding is supported by the sufficiency thinking model [87] in which the quadruple bottom line performance is suggested by including the cultural dimension with the prevailing triple bottom line concept [40].

> *"The project has come to help the community in many ways. . . . visit Amphawa is learning a cultural conservation, not only in terms of shopping and eating then leaving . . . The project is to be a center of learning. It is the center of learning in the community".*
>
> ACCP volunteer

Consistent with the sustainable enterprise literature (e.g., Avery, 2005 [99]; Avery and Bergsteiner, 2011 [69]; Ketprapakorn, 2019 [114]; Suriyankietkaew, 2019 [115]), the ACCP recognizes the importance of employees in a concrete way by continuously retaining and developing employees even in times of crisis. In addition to this, there is also an emphasis on the development of a management team from within the organization. Both the promotion from within the organization and the high staff retention rate are crucial to maintaining a strongly sustainable organizational culture [2].

The ACCP then focuses on the importance of selecting employees from people in the community as well as being a source that helps train employees in various specific skills. The internal training of organization-specific skills and knowledge is found to be important in sustainable enterprises, particularly in a time of disruption. The organization-specific skills and knowledge help in timely responses to an abrupt change [111]. Therefore, the ACCP is not only a workplace but also a school and an internship place for villagers. The concept of recruitment was reflected in the interviews as follows:

> *"Sometimes, being a new graduate from a village it is very competitive to get a job without experience. Although we know that it is normal that when they have had experience they will quit the job, we want them to learn team roles and responsibility, in order, to prepare them to be good community citizens. Here we work for society and community".*
>
> Project director of the Chaipattana Foundation

At the ACCP, the management team believes that human resources are one of the most valuable assets, a core principle of sustainable enterprises around the world (e.g., Avery, 2005 [99]; Avery and Bergsteiner, 2011 [69]; Ketprapakorn, 2019 [114]). Tacit knowledge can be turned into financial value. In order to do so, value creation needs to be built from human resource development. Therefore, the ACCP encourages and trains farmers to be trainers, so that they can change their roles to that of community philosopher. These philosophers are the main speakers and trainers for those who come to learn and visit the ACCP.

In line with the practice of sustainable enterprises of all sizes around the world (e.g., Avery and Bergsteiner, 2011 [69]; Ketprapakorn, 2019 [114]), the ACCP focuses on retraining and developing employees from within, for example, providing opportunities for self-development and preparation for career advancement, e.g., promotion to management positions. Also consistent with the broader sustainable enterprise literature is the teamwork approach at the ACCP (e.g., Avery and Bergsteiner, 2011 [69]; Ketprapakorn, 2019 [114]) since teamwork often leads to innovative ideas, required for corporate sustainability [70].

> *"The ACCP consists of many working teams. We need to train the new young blood for the sake of a sustainable community in the long term. Should the foundation withdraw from the community, the ACCP will have a strong and capable local management team".*
>
> Project director of the Chaipattana Foundation

At the ACCP, creating value through developing people's potential is key. The ACCP creates organizational culture that believes in human value and development of individual competencies, providing the opportunity for people to learn and undertake challenging tasks.

The cultural development practice at the ACCP above is endorsed by the sustainable enterprise literature that found a strong organizational culture operating in sustainable enterprises around the world (e.g., Avery, 2005 [99]; Avery and Bergsteiner, 2011 [69]; Ketprapakorn, 2019 [114]; Suriyankietkaew, 2019 [115]). Baumgartner (2009) [116] and Kantabutra and Ketprapakorn (2020) [66] also assert that a strong organizational culture is a precondition for the development of sustainable enterprise. A strong organizational culture is also critical in ensuring organizational resilience in difficult times [117].

5.1.2. Stakeholder Focus

Sustainable enterprises view themselves as an entity operating within society (Avery, 2005 [99]; Ketprapakorn, 2019 [114]). If the society cannot exist, neither can they. This is the reason they focus on a wide range of stakeholders including future generations. Like other sustainable enterprises, the ACCP places high priority on the protection of all stakeholders, particularly for the future of the community and retaining those society and community benefits even if this incurs additional cost.

The population residents are mainly the elderly and children. Restoring the local life of a floating market provided the creation of business opportunities for local villagers. The ACCP focuses on a "geosociety" and the common interests of the community. This particular approach of the ACCP is consistent with the corporate sustainability practice of geosocial development [70], indicating that any development must take into consideration the surrounding society, culture, environment, and economy. The data triangulation with the minutes of the monthly meeting of the subdistrict administrative organization committee as well as the interview with the former mayor of the district confirmed the geosociety focus of the ACCP. The former mayor shared his point of view that:

" . . . ACCP, they charged a very low rental rate and reserved it solely for local villagers. . . . the project prohibited the resale of the rental business areas to others. With this fresh opportunity, our younger generation started coming back home and doing business with new ideas".

Former mayor of Amphawa Subdistrict Municipality

Adopting the corporate sustainability practice of moderation [70], the ACCP is willing to pay more to generate income while maintaining local culture and products, which is also consistent with the philosophy of sufficiency economy that promotes local wisdoms [118]. One of the main activities of the ACCP is the natural coconut sugar stove. The traditional process has been replaced by an industrial process that may consume less time but product quality and the safety of the process are reduced. The ACCP supported and encouraged villagers to return to the making of authentic coconut sugar, which is beneficial and safer for both the villagers and consumers. To motivate villagers, the project then purchased village produce at a higher price than the market. This was an effective strategy as it prompted some villagers return to the use of the local authentic processes. In addition, the project promoted the use of local natural packaging. This helped preserve the traditional occupation of villagers and the production of packages from local plants. Even though this led to higher cost, the ACCP strongly believed this short-term loss would eventually lead to long-term profit (Figure 2).

Core to the sufficiency thinking model is to preserve and develop the cultural capital [87]. The ACCP promotes the cultivation of the young generation to love and preserve the locality. One of the key activities of the ACCP is called the little tour guide program. The ACCP invited children in the community to participate in the program. ACCP volunteers joined the program as mentors, helping develop children's potential to communicate in foreign languages such as English and French, and also improve their presentation skills.

The program was a success in building the confidence of children. This created a sense of pride in them, and they feel proud of being community hosts. Data triangulation with the voice of the visitors reveals the success of the program. The visitors appreciated this initiative of the ACCP.

> *"Our little tour guide did a big thing. They are not only the representatives of their hometown, but also the representatives of the country . . . They not only learned about their origins, but also about how to grow up as good citizens".*
>
> *Mentor of the little tour guide program*

Figure 2. The traditional coconut sugar: a forgotten art.

Involving community children is very important to the local culture. Only if the children appreciate their culture and identity will the local community identity be preserved and continued in years to come.

> *"I joined the little tour guide program because I wanted to learn something new about the culture and the history of the community . . . "*
>
> *A girl, who joined a little tour guide program*

Efforts of the ACCP in jointly preserving the identity of local arts and culture through "social landscape" conservation and development always adhere to the principle of participation of many parties, especially people in the community. The ACCP plays an important role as a co-driver in learning that will truly be "beneficial to the public".

> *"Amphawa people are very proud that our children can preserve the local art".*
>
> *A visitor to ACCP Facebook*

This stakeholder engagement practice at the ACCP is also endorsed by a recent study on a much larger, over a hundred years old, industrial conglomerate, named the Siam Cement Group (SCG), in Thailand where stakeholder engagement is used not only to develop local communities but also to instill its corporate virtuous values among its participating communities [119]. The stakeholder engagement practice at the ACCP is also found in a sustainable social healthcare enterprise in Thailand [14] where a social vision is espoused organizationally to bring about the delivery of endocrine care services both in Thailand and abroad.

5.1.3. Sharing

A hallmark of the theory of corporate sustainability [70] is knowledge sharing among stakeholders, including competitors, which frequently leads to innovation. The ACCP considers itself as a knowledge organization, sharing and dissimilating knowledge. Like other farmers, agricultural products often encounter the problem of low and fluctuating pricing. This causes farmers to use modern methods that can produce large quantities without much concern for environmental hazards and food safety for end consumers. The

ACCP therefore encourages farmers who still have traditional folk wisdom, combined with modern engineering techniques and knowledge. After organizing and recording local wisdom, by trial and error success was achieved. Sharing and dissimilating knowledge not only bring a sense of pride to farmers but also instruction in new techniques from visitors or ideas for product line extension. Although the ACCP operates the business by selling agricultural products produced by staff in the projects, it also supports the local community by offering a low fee for community consignment products. The ACCP also keeps conducting R&D and develops its own innovation capabilities through cooperation with its partners who are well known as innovating companies, such as the Siam Cement Group (SCG) [119].

> *"We work and learn from our partner then transfer knowledge to community . . . we take leading role for R&D in a simple way . . . the community began to follow . . . "*
>
> *Former project director of ACCP*

The sharing practice at the ACCP is endorsed by the broader corporate sustainability literature. According to an Asian sustainable leadership model [120], knowledge sharing is required for a sustainable corporation, since it improves corporate innovation. Internally, knowledge sharing helps corporations to identify best practices, and promotes new ideas and organizational learning. At times, corporations need revolutionary thinking from corporate members and stakeholders to innovate products and services. Innovation is achieved when a corporation executes its strategies that integrate sustainability within them to align economic, environmental, and social value for future generations [99]. The sharing practice is also underlined by the dynamic capabilities theory [121–123]. The dynamic capabilities theory asserts that sustainable corporations develop and renew their external and internal knowhow through knowledge sharing within themselves, between corporations, and with external stakeholders to keep them competitively sustainable. They continue to renew their competencies as the external environment changes, concurrently developing their organizational resilience capacity [117]. Through this way, they can continue to ensure business continuity and enhance profitability, while improving the society and environment.

5.1.4. Resilience Development

Consistent with the resilience development practice of sustainable enterprises, particularly in Asia [114], the ACCP has learned from the past to prevent future risks to achieving sustainability. To prevent risks and create a sustainable community-based management of tourism, the ACCP set up a non-competition policy, with the businesses of the ACCP as different from local merchants. The ACCP attempted to promote an eco-friendly product and share knowledge with local farmers. At the ACCP retail shop, they helped support knowledge on product development and feedback on eco-friendly packaging among local farmers to be different. This system prevented local farmers producing the same products or copying each other's product and ending up with cutthroat prices to enable the sale of products. The ACCP took the role of premarket examiner, providing feedback and ideas in terms of product quality, product packaging, and design.

The practice at ACCP above is underlined by the organizational theory of resilience where organizational buffering capacity needs to be developed [117]. It is also directly in line with the "resilience" or "self-immunity" principle of the sufficiency economy philosophy [118]. The organizational buffering capacity is fundamental to organizational resilience as it immunizes the organization from external shocks.

Consistent with other sufficiency economy businesses [118], the ACCP manages risks by having an in-depth understanding of the product, market, and the business prior to making an investment decision. The ACCP adopted risk management through various strategies. First, the ACCP has a wide range of products. During a field visit, the research team examined the product list which presented the record of new products and delisted products. This is consistent with the interview result that ACCP attempted to have

more product categories which helped mitigate the effect of price competition. Second, the ACCP applied market development strategies by looking for new target groups and new geographic markets. However, investment decisions were based on solid market information.

> " ... *Our ACCP operational decisions were based on how we are able to manage the outputs. We always learn from previous problems and mistakes* ... "
>
> *ACCP staff 1*

In addition, in selecting products to sell in community stores at the ACCP, the staff helped by playing a coaching role to help farmers develop products to meet the target market in order to reduce risk and increase the opportunity to sell the product for profit.

> " ... *Unlike a commercialized channel, we accept low volume products. From trial and error, farmers can minimize the risk from high investment and at the same time minimize our risk as a distributor*".
>
> *ACCP staff 2*

The resilience development practice at the ACCP is endorsed by the broader literature on organizational resilience. Conceptually, organizational resilience is a path-dependent, latent set of capabilities that organizations develop by noticing and correcting for maladaptive tendencies to help them to encounter unexpected, challenging circumstances [124–126] such as crises, shocks, and disruptions of routines as well as ongoing risks. It comes from the capabilities of quickly processing and responding to environmental signals [125] and developing flexible resources that can be applied to a wide range of interchangeable alternatives [127]. With resilience outcomes of continuous improvements, low volatility, and strong viability, the resilience development practice helps enterprises to endure over the long term and through crises.

All the sustainable social enterprise practices above lead to the following outcomes of brand equity and socioeconomic and environmental performance, to be discussed next.

5.2. Sustainable Social Enterprise Outcomes

We present and discuss the outcomes from adopting the sustainable social enterprise practices at the ACCP in this section: brand equity, socioeconomic and environmental performance.

5.2.1. Brand Equity

Given that the ACCP does not have a systematic approach to measure brand equity, we present some evidence to indicate that the ACCP has accumulated brand equity over time. First, the ACCP, as an outsider to the Amphawa community, has successfully mingled and received a welcome from the local community. This is very significant, particularly at the beginning of its business operation. If the local community does not appreciate SE practices, there is a high risk that the community will not patronize the SE and that the SE will not be able to survive. A transparent and accountable policy along with action leads to brand trust [128]. When the local community trusts in the ACCP, they can influence the community stakeholders to engage in the project activities. Thus, the ACCP can move forward by the following steps, demonstrated by the findings below.

> " ... *We used to suffered as outsiders took advantage of our community assets. After we observed the ACCP. They are sincere. ... They help recreate Amphawa brand as an eco-friendly tourism which is very good for our community. The people here and nearby believe that the ACCP is a trustable brand. ...* "
>
> *Villager 1*

From the results of the study, it was found that the actions of the community really reflect its clear policy on doing things for the benefit of the community, by commitment and serving unmet needs. The local community trusts in the ACCP brand. Local farmers from

other communities in the province by positive word of mouth came to join the activities that the ACCP arranged.

"I did not live close to the ACCP but not that far. I do not know business much. . . . The ACCP helps me with product development. . . . I am glad that I am be the part of the good reputation brand the ACCP".

Merchant 1

Moreover, by using natural local products, the brand name of the ACCP has an excellent reputation. Tourists and visitors trust in the brand and are willing to support the ACCP in other products as well as those that local farmers produce and sell in the ACCP market.

"I and my friend have a strong intention to come to Amphawa to visit the ACCP to buy coconut sugar. . . . Everyone trust the coconut sugar here as well we want to support the project".

Tourist 1

Nowadays, the ACCP is considered as a famous learning center for those who are interested in SEP. The ACCP has a strong brand recognition as a sustainable SE applying SEP. Visitors from various regions come to the ACCP to learn how the SE turned a donated slum area into a business area, operating for local farmers. Accumulated knowledge of the ACCP is now turning out to be a product, capable of producing sources of income that help to sustain ACCP activities.

"I am also a farmer from another province producing sugar from Palmyra palm. Generally, others may think that we are competitors unlike the ACCP. They are very open-minded . . . I also will tell others to come, visit and learn how to work and live like a sustainable farmer from here".

Visitor 1

"I am a medical doctor. The hospital arranged the trip to visit here to learn on sustainability SE. We are interested in the Sufficiency Economy Philosophy and practice at our hospital. . . . The ACCP and the foundation have very good reputations. As for medical personnel, we can learn from their challenges and successes then apply to suit with our way of working".

Visitor 2

"In the Philippines also, we do not have floating market, but we also attempt to promote the sustainable tourist. It is very impressive coming to learn from the ACCP. Being the non-community members then came to community development is not that easy. I am a government officer.I know how hard it is. . . . for SE, if you win their heart. If one asks me, where should they visit to learn on sustainable SE, I strongly recommend here, the ACCP".

Visitor 3

The findings on brand equity at the ACCP are consistent with the broader literature. In particular, the theory of corporate sustainability [70], asserts that, in today's fierce market, competitiveness through tangible, functional benefits is no longer sustainable. It suggests that a corporate brand, considered as functional and emotional benefits, is pivotal in ensuring corporate sustainability. As a matter of fact, any corporate activities benefitting stakeholders contribute to improving corporate sustainability since stakeholders in society will support and protect the reputation of a virtuous enterprise [129,130]. Focusing on marketing and branding in the ACCP strategic direction helps raise the reputation as suggested by Kholiavko et al. [131].

5.2.2. Socioeconomic Performance

Based on the SEP principle of starting from within, the ACCP was oriented towards the people. The employment opportunities offered to the younger generation, aging

groups, and women helped those groups earn income to support their families. Based on the interview results, all local staff confirmed strongly that they have a very happy and healthy work–life balance. Young graduates at the ACCP obtained better positions when they changed their jobs to the brand endorsed by the ACCP. The elderly and women in the Amphawa district become active community citizens, with higher self-esteem in the knowledge that they can contribute their knowledge to their society.

The ACCP increased opportunity, thus some of the younger generation took the chance to return home and start their own businesses, reviving the local economy. They value work–life balance. From multiple visits, more younger generation merchants helped increase wealth throughout the local supply chain. More agricultural products as raw materials have higher sales volumes whereby logistical costs are eliminated. Farmers also obtained a greater profit margin as compared to previously. When the merchants were confident with the fixed rental rate, they could better manage their business. When they felt secure with their investment, they then began to invest in new product development. More products that added value were developed. This action reflects the importance of common interests as a center and encourages perseverance in development of new products from merchants participating in the ACCP. When there were successful cases of local businesses, the new generation decided not to go to work in the city. Moreover, the greater the success of the operation of the farmers' businesses, the lower the likelihood that the new generation would sell their land. The problems of land price manipulation were minimized. When the working generation stayed in the community, this helped to reduce the family age gap.

> *"I visit my family here every weekend because of my mom' health. I want to live here but it is impossible because of no job her. I rent a place at ACCP with low fees... I finally ended up resigning from the famous Japanese company and living here. I and my mom have a happy and healthy life. I even encouraged my friend to come back here".*
>
> *Merchant 1*

> *"We train our students not to lose our culture identity. The ACCP provides an opportunity, open a stage for children to show their talents. . . . The children were very excited and happy . . . Parents are so proud of them. . . . It is a matter of how we sustainably preserve our local culture".*
>
> *Music teacher from community school*

Other evidence for socioeconomic performance is the project to extract sugar from coconuts. Not only did the ACCP preserve the traditional method of producing coconut sugar, which was about to be a forgotten art, but the sugar produced by this traditional method also achieves higher prices and is marketed by the ACCP. This, in turn, helps create added value to the sugar supply chain.

> *"The ACCP promotes and encourages the use of woonden skewer and Krathong. I am too old to get another job. I want to stay home. Now I have a stable job. Besides, I sell it at a better price than before. I do not know how to thank you the ACCP".*
>
> *Villager 4*

The learning center is considered a new rising star product that generates revenue for the ACCP. Knowledge is a commodity, and it was found that when traditional wisdom is brought back to the local community before loss, it preserves this knowledge for the new generation that wants to learn. These local trainers in turn help increase household family incomes for the community. However, the most important thing is the sense of pride from the development of the project.

> *"Although I am an ordinary villager, people here encourage me to be a speaker. .I also earn money from being a speaker, I can pay off my family' debts. No more debt now.. I intend to save this speaker fee for my two children to study in the university level".*
>
> *Staff 1*

"I come here to demonstrate how to weave hats from coconut leaves... If I die, knowledge will disappear. I want to teach it to the younger generation to preserve our local knowledge . . . "

Volunteer 1

The ACCP has a "systematic study of the area" to understand the problems that arise and "solve problems from small points", "step by step", making the project proceed in an orderly manner. The administration prevents problems that had occurred with the tourism management of Amphawa in the past.

The results reflect in the operation of the Chan-cha-la shop (Figure 3). At the shop, the ACCP sells only drinks and snacks to avoid competing with the local merchants at the floating market. Now, tourists buy food to eat from the floating merchants. Additionally, this shop has become a place for training children with practical knowledge of operating a coffee shop, while enjoying some part-time income. This brings mutual benefits to both the ACCP and the local merchants. Currently, revenue from the shop is the major source of income (approximately 75%) for the ACCP.

Figure 3. The Chan-cha-la shop.

The ACCP's successful performance led to the opening of a new area for renting food kiosks. Now, the younger generation who had left the community to work in the city are seeing market opportunities and many have returned home to help continue the family business. This return of the younger generation also helped bring in new ideas for local product development and innovation. The rental fees contribute approximately 10% to the ACCP. It has taken the ACCP eight years to become self-funded and financially free from the rehabilitation investment. The floating market and rental kiosk spaces became so successful that trade-offs between financial revenue and the social environment started to threaten cultural domains.

5.2.3. Environmental Performance

Promoting local products, grown within the Amphawa district, helps support not only the local economy but also helps to preserve the environment. Generally, farmers must sell their products in other areas, which of course needs transportation, but the more distant the buyers, the greater the fuel consumption. This then releases more harmful greenhouse gas emissions.

" . . . Using local ingredients helps in many ways, for example to reduce production cost and transportation costs. I used to work in the automotive industry. Transportation

consumes energy and is a part that create air pollution. I can save money and safe the world at the same time".

Merchant 1

In order to create a market opportunity for an eco-friendly local product, many local farmers tend to keep their products organic and preservative and pesticide free. This is not only advantageous for the health of consumers, but is beneficial for the environment as well. By not using pesticides and other harmful toxins, farmers are improving air quality and preventing water and air pollution. In addition, with awareness of the economic value of local crops, they continue growing and harvesting the local plants of the area, such as Amphawa lychees. These offer different tastes from lychees grown in other areas of the country; this also benefits the environment in terms of biodiversity.

" ... We are very concerned on environemnat protection ... When the ACCP was set up, there were no fireflies in our areas. Last two year, we found fireflies in our areas. Having fireflies is one of the indicators of good environment, good water, and good air ... "

Project director of the Chaipattana Foundation

Previously, Amphawa has suffered from the huge waste from tourists that impacted the eco-environment and threatened to change the way of living. Making preservation of the culture the top priority, the ACCP, local merchants, and local community decided to open the floating market only at weekends. This is to ensure better management of waste and the environment, as well as balancing tradition, local lifestyles, and agricultural activities needed to create and maintain a self-sustaining community. This is in line with the study of Tand et al. that found that local communities in ASEAN countries rely on effective natural management [132] while balancing between economic and social values for sustainable growth [133].

" ... the ACCP initiated the use of natural and environmentally friendly packaging. ... We received good cooperation with various shops in our area ... Tourists are also happy with eco-friendly packaging. I hope to create a good environment for future generations".

Manager

6. Refined Sustainable Social Enterprise Model

Given the phenomenological paradigm of research we adopted, our findings have revealed some significant insights into the sustainable social enterprise phenomenon, which helps to enhance our understanding about sustainable social enterprise. First, it is evident that a shared social vision has driven the practices at the ACCP since many of the interviewees have pointed out the role of the social vision and its associated values in guiding their work. In fact, the social vision has emerged as a core code from our analysis. Secondly, the findings also indicate that it is indeed the leadership that is fundamentally pivotal to the success of the ACCP's operation. The leadership practice is a prerequisite to the resilience development, sharing, and stakeholder focus practices. Among the three subsequent practices, our findings reveal that the stakeholder focus practice appears to influence the practices of resilience development and sharing.

The role of the shared social vision and its associated values, as fundamental elements of organizational culture, and leadership in ensuring organizational sustainability has been endorsed by the corporate sustainability literature. Among others, Baumgartner (2009) [116] has suggested that organizational culture and leadership are preconditions for the development of a sustainable corporation. The theory of corporate sustainability [70] has similarly pointed out that a shared organizational vision and leadership practices are critical to ascertaining corporate sustainability. In terms of the stakeholder focus practice, the literature on sustainable leadership (e.g., Avery and Bergsteiner, 2011 [69]) also endorses our conclusion drawn from the findings that the stakeholder focus practice drives the other practices of resilience development and sharing. According to the sustainable leadership model by Avery and Bergsteiner (2011) [69], the stakeholder approach is a foundation

practice leading to high-level practices, key drivers, and performance outcomes. The various roles of social vision, and the leadership and stakeholder focus practices, are also endorsed by the sustainability vision theory [134] that asserts that a sustainability vision must be one containing imagery about satisfying a wide range of stakeholders.

Therefore, based upon the present study's findings and the original model by Ketpra-pakorn and Kantabutra (2019) [8], the refined model of sustainable social enterprise, as our significant contribution to the field, is derived as shown in Figure 4.
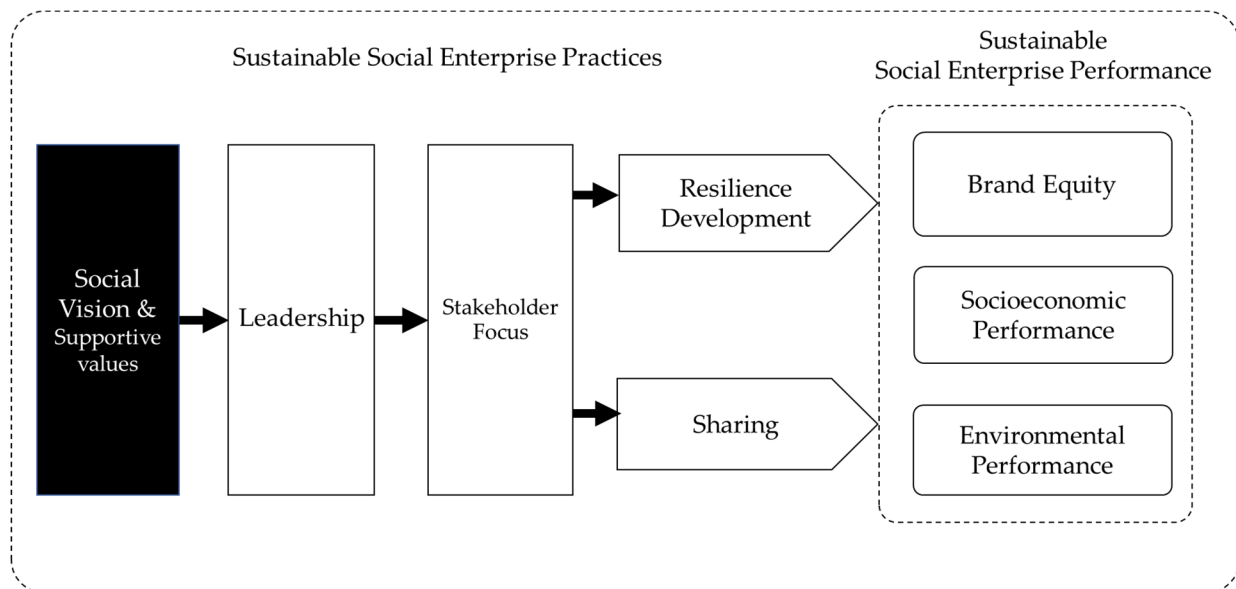
Figure 4. Refined Sustainable Social Enterprise Model.

According to the refined model, a sustainable social enterprise starts with a social vision. It is this social vision that guides the practice of leadership and its espoused practices of stakeholder focus, resilience development and sharing. We postulate that it is these sustainable social enterprise practices in this order that bring about brand equity, socioeconomic performance, and environmental performance.

Since social entrepreneurship is the process through which social entrepreneurs develop social enterprises [27] and a hallmark of social enterprise is entrepreneurship or innovation [135], our refined model here is essentially the process of social entrepreneurship.

7. Limitations and Future Research Directions

Clearly, the present study is not without limitations. Although the case study contributes to improving our understanding about the sustainable social enterprise phenomenon, it is difficult to generalize the findings from one case study to other settings. Future research may conduct a quantitative study in a large variety of settings to confirm the causal relationships between the leadership, resilience development, sharing, and stakeholder focus practices and the brand equity, socioeconomic, and environmental performance, the findings of which will help researchers and practitioners to learn about the possible universal approach to develop a sustainable social enterprise.

In addition, given that the case of the ACCP is a community enterprise with no systematic approach to measure its sustainability performance, we only have some interview data to support our conclusions about brand equity, socioeconomic, and environmental performance. In conducting a similar study in the future, statistical data must be collected to support future conclusions.

8. Theoretical Contributions and Implications

Given that theory building is "the purposeful process or recurring cycle by which coherent descriptions, explanations, and representations of observed or experienced phenomena are generated, verified, and refined" [136], effective theory building should bring about two types of knowledge [137]: (a) the knowledge that can explain and predict; (b) the knowledge that helps to enhance our understanding about what something means and how it works. Our refined sustainable social enterprise model offers some ideas about both outcome and process knowledge. Essentially, it provides some insights about social enterprise components leading to sustainability and how the components interact to bring about sustainable social enterprise performance outputs and outcomes. Both scholars and practitioners can adopt/adapt this model to guide their future theory building.

In building theory on sustainable social enterprise, theorists can challenge the model or progress with it to advance the current body of theoretical knowledge in this specific area. As the theory continues to be refined, researchers will have a whole theory to understand, explain, and predict events, actions, and/or surrounding circumstances concerning the sustainable social enterprise phenomenon.

9. Managerial Implications

This present study offers some important practical implications for social entrepreneurs who want to develop a sustainable social enterprise, shown step by step in Figure 5 below.
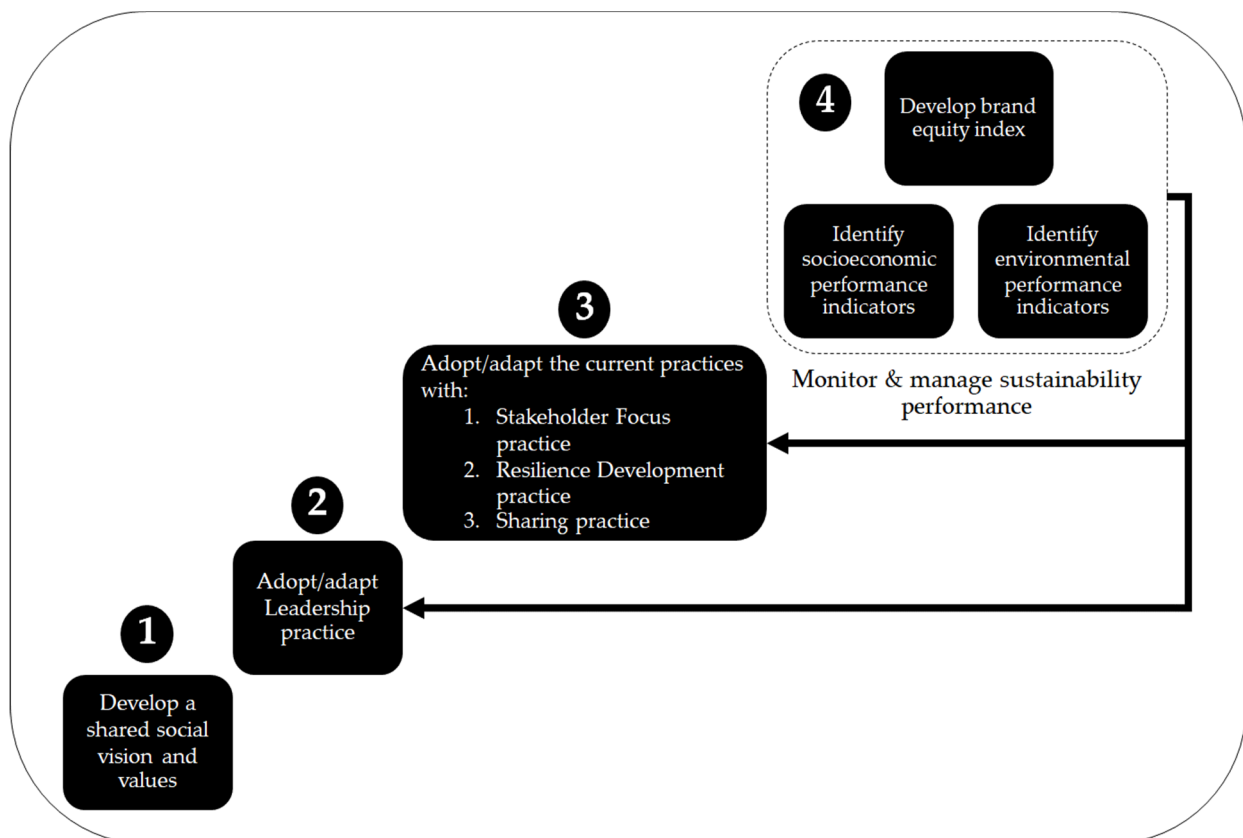
Figure 5. Sustainable Social Enterprise Development process.

Social entrepreneurs who want to ensure sustainability of their enterprise should start by developing a social vision. A social vision should be developed in a collaborative way involving organizational members and stakeholders while the focus of the vision should be on satisfying a whole range of stakeholders. To realize the vision, organizational values are needed to guide organizational decision making while members work toward the

vision. Some suggested values derived from the present study are social responsibility, environmental responsibility, and innovation. Social entrepreneurs may adopt these values.

After the social vision and its associated values are identified, social entrepreneurs need to develop business practices. For those entrepreneurs who have started their social venture, they can adapt the leadership, stakeholder focus, resilience development, and sharing practices to their own operational context. For those who are going to start a social venture, they can adopt the four practices. Among the four practices, they should start to adopt or adapt the leadership practice first, followed by the stakeholder focus, resilience development, and sharing practices, in this order.

Finally, social entrepreneurs should set up a sustainability performance system by identifying socioeconomic and environmental performance indicators, and developing a brand equity index. They should continue to monitor and manage these sustainability performance indicators and index, while possibly adjusting the practices along the way to ensure the prospect of social enterprise sustainability. To strengthen the entire system, once meeting or exceeding the target indicators and/or index scores, the social entrepreneurs should communicate each individual achievement among organizational members [14,134].

10. Conclusions

Given the scant knowledge on sustainable social enterprise in the literature, the present study's objective is to explore a sustainable social enterprise model in Thailand. Adopting the case study approach, we use a social enterprise, the development of which is informed by the sufficiency economy philosophy, as the case sample for our exploration. Informed by the identified sustainable social enterprise model, a series of open-ended, semi-structured interviews was conducted with 95 stakeholder informants, ranging from the management team, staff, community people, and visitors to customers. We adopt the working analytical framework to analyze the collected data. Findings indicate that the practices at the case sample are largely consistent with the model with a few differences that inform the development of our refined sustainable social enterprise model as the core contribution of the present study. Limitations, future research directions, theoretical contributions and implications, and managerial implications have also been discussed.

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Article

How Disclosure Types of Sustainability Performance Impact Consumers' Relationship Quality and Firm Reputation

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Abstract: Given that firms attempt to gain competitive advantages from corporate sustainability schemes, we employed an experiment to examine different types of sustainable performance disclosure—output, outcome and impact—that best promote the quality of relationships with consumers, relationships with the firm around satisfaction and trust, and perceived reputation. Derived from a student sample of 254 respondents from a business school in Thailand, the findings indicate that, among different levels of sustainability performance disclosure, consumers are more likely to perceive the satisfaction, trust, and reputation of the firm as higher if the firm demonstrates the impact (rather than output or outcome) of sustainable performance. Results are consistent across observed product and service categories. Implications of findings and directions for future studies are also discussed.

Keywords: sustainability performance; disclosure types; output, outcome and impact; stakeholder focus; signaling theory; trust; corporate reputation

1. Introduction

Corporate sustainability (CS hereafter) has become one of the most relevant research issues nowadays. Motives that lead firms to conform to CS vary from mandatory to voluntary [1,2]. Specifically, while some firms comply with sustainability practices due to the pressure of government policies or regulations to prevent the future costs of social and environmental corporate irresponsibility, a number of firms are willing to co-operate with sustainability schemes voluntarily, as they expect to gain long-term competitive advantages such as increasing stock value [3], obtaining proactive leadership [4], enhancing trust [5], serving customer demands and expectations [4], and gaining reputation [6–8].

Stakeholder focus is one of the key philosophies of CS [9]. It suggests that the needs of relevant stakeholders should be firstly met and then the needs of shareholders would be later accomplished [10]. Firms attempt to meet the demands of their stakeholders due to underlying reasons that they need to avoid the possible pressures from stakeholders, as well as create a better society. Stakeholders act as a source of expectation about desirable and undesirable performance of the firm. They also evaluate how well a firm has met expectations and/or how firms' actions have impacted the groups in the environment [11].

To promote sustainability performance, evidences revealed that firms communicate these issues to stakeholders in different ways. Specifically, some firms highlight immediate results such as a list of projects launched or a list of organizations donated to. This type of performance is categorized as "output" of the performance. Moreover, some firms promote consequences of sustainable activities such as evidences of skill enhancement of local labor, amount of energy saved, and amount of carbon emission reduced. This is called the "outcome" of the performance. Additionally, some firms focus on the output of the project that serve as long-term benefits to broad range of stakeholders in society such as returning an eco-system to nature, achieving a zero-waste goal, becoming a leader in the green industry. This is called the "impact" of the performance [12,13].

With a limited body of existing knowledge, further research is needed to investigate a linkage between sustainability performance disclosure communication and perceptions among stakeholders. Peloza et al. [14] (p. 74) support this point by stating that "there is often a major gap between stakeholder perception and firm performance". That is, corporate communications nowadays overlook the fact that different stakeholders pay attention to different messages and communication methods. What and how stakeholders perceive may or may not align with performance highlighted by the firm. Moreover, when presenting CS performance, past studies and firms usually present information such as a checklist of practices, dialogue responding to stakeholders needs, amount of funds that a firm has donated and sponsorship of a broad range of stakeholders [15–18], third-party ranking [14], overall competitive performance and market share [18,19], or self-evaluated corporate performance such as financial performance [9], interchangeably, without concern about the mix of the message categories between output, outcome, and impact. As a consequence, a more comprehensive understanding of the relationship between different types of sustainability performance disclosure communication and stakeholder's attitudes is needed.

The present study, therefore, proposes that a firm has to start from having sustainability embedded in their vision to be sustainable. Then, it has to pay attention to delivering the right sustainability performance messages to the right stakeholders. A stakeholder-perceived sustainability performance message could lead to a stronger relationship and, consequently, enhanced corporate reputation. Corporate reputation becomes increasingly important as a form of CS performance outcome [1,2] which is associated with the capacity to deliver public benefits [3]. Therefore, corporate leaders need to thoroughly understand how stakeholders evaluate messages offered by a firm and how they react to the firm in return.

This recent study aims to focus on consumers as a unit of analysis. Past studies have extensively examined the relationship between perceived firm performance, relationship quality, brand equity, and behavioral intention among consumers [4–7]. Thus, it is interesting to further examine whether different types of sustainability performance disclosure (output, outcome, and impact) could lead to different degrees of perceived relationship quality, and brand reputation.

Participants used in this study were business students from a university in Thailand. Thailand is an appropriate context to examine the effect of sustainability disclosures on consumers as, among its top 100 companies by revenue, the sustainability reporting rate increased from 84% in 2020 to 97% in 2022 [8]. Moreover, Thailand is ranked among the top 10 countries worldwide in various aspects, including sustainability information, in annual financial reports, reporting against stock exchange guidelines, seeking assurance on sustainability reporting, and having sustainability representation at a leadership level [8]. Moreover, the Securities and Exchange Commission, Thailand has amended the regulations for Thai listed companies to prepare "One report" to improve disclosure efficiency under the Environmental, Social and Governance (ESG) principles [9]. These evidences highlight the influence of sustainability disclosure practice in Thailand. Therefore, using Thai business students to evaluate the impact of sustainability information disclosed in the reports of Thai listed companies in this study is appropriate.

The objectives of this study are threefold. First, it aims to demonstrate that consumers could differentiate sustainability performance information into three types, output, outcome and impact. Second, it will demonstrate that consumers who perceive different types of sustainable performance disclosure will exhibit their satisfaction and trust towards the brand differently. Third, it will demonstrate that consumers who perceive different types of sustainable performance disclosure will exhibit their perceived corporate reputation differently.

Findings in this study contribute to the CS study that types of disclosure could affect stakeholder relationships differently. Further, it provides guidance for marketing and brand

communication to develop effective communication strategy in order to gain a positive response from consumers.

2. Literature Review

2.1. CS Performance

CS is the micro-level of the sustainable development concept [10]. Focusing on the corporate dimension, CS strategies are increasingly deployed by many advanced companies all over the world [8,11]. However, there is no consensus on the definition of CS. For instance, Rogers et al. [12] have defined CS as the ability of a firm to balance financial, social, and environmental performance outcomes, considered as the triple bottom line (TBL). Kantabutra and Avery [13] defined CS as the ability of a firm to deliver strong financial performance, endure economic and social crises, and maintain a market leadership over time. In addition, Avery and Bergsteiner [14] have further suggested that a sustainable firm is a firm performance that has the ability to enhance customer satisfaction, demonstrates solid financial and operational performance, focuses on creating long-term shareholder and stakeholder values, and has excellent brand and reputation.

Among sustainable development schemes, corporate social responsibility (CSR) is another micro-level of sustainable development that focuses on the social dimension [10]. However, recent research strongly suggested that the role of CSR should be extended further to corporate responsibility, as the firm must shift its responsibility from just social and environmental issues to broader operational processes and business strategies [15]. A business needs to meet its sustainable profitability goal as well as participate in community matters wherever it is operating [16] by adopting four main CSR theories: (1) Instrumental theory, in which a firm has to attain long-term profits and competitive advantages; (2) Political theory, in which a firm has to utilize business power in a responsible way; (3) integrative theory, in which a firm has to integrate social demand into the business operation; (4) Ethical theory, in which a firm has to contribute ethically correct things to society [17].

2.2. Consumers and Firms' Stakeholder Focus

Recent literature relating to the stakeholder focus indicates that a firm has to fulfill benefits to its wide range of stakeholders prior to its own, in order to achieve sustainability performance outcomes [1,3,18,19]. To support this point, Economy of Communion literature also encourages the business world nowadays to have sharing, fellowship, fraternity, and reciprocity behaviors [20]. When the firm delivers benefits to stakeholders, stakeholders will establish satisfaction, trust, commitment, and identification to the firm in return. Then, the reciprocal relationship between the firm and its stakeholders is developed [21]. As a consequence, stakeholders will gain benefits and generate wealth back to the firm [5,18,21,22].

Business and society are inter-reliant [16]. CSR activities that promote CS benefits to stakeholders could consequently enhance the relationship between stakeholders and a firm [23–25], protect the reputation of a good enterprise [17,26,27], and subsequently lead to perceived positive reputation and brand equity of the firm [28–30] among stakeholders. In contrast, companies might suffer from reputation damage if they are unable to deliver the expected CS outcomes [26]. Thus, business should promote long-term benefits for stakeholders in society as a whole [16].

However, different groups of stakeholders have different needs/wants which create conflicts of interest in some situations [31]. For instance, while customers pay more attention to the quality and performance of the product, investors may focus mainly on the cost reduction and return on investment. Therefore, a firm needs to thoroughly understand stakeholders' needs and offer or allocate benefits that stakeholders perceive as valuable and fair to them. That is, the stakeholder-focus concept needs to shift the processes of stakeholder-oriented practices to the stakeholder's point of view instead of sticking with the perspective from the firm [32].

However, studies nowadays tend to overlook the role of consumers in stakeholders' focus on CS. For instance, "While the adoption of social causes by organizations has often been based on the assumption that consumers will reward this behavior, it is unlikely that consumers will blindly accept social initiatives as sincere, and so may or may not reward the firm with positive attitudes and purchases" [33]. This further proves that sustainability performance could lead to a consumer relationship with the company, and contributions to reputation should be thoroughly examined [5,34].

2.3. Output, Outcome, and Impact as Sustainability Performance Disclosure Types

Output, outcome, and impact have long been represented as the performance measurement or practice indicator of the firm [35–37]. *Output* could be described as the immediate effects or results set down in writing, a management plan, a permit, a law, etc., at the end of the decision-making process [35–37].

Outcome is defined as direct changes in human perceptions or consequent actions of the output, considered as mid-range or intermediate effects [35–37].

Impact is defined as long-term benefits to the firm and overall society or changes in the environment, accumulated from intended and unintended effects of the outcome [35–37]. It could be exhibited as the status of a leader in the industry [36].

Research in performance measurement generally has some unclear boundaries between output, outcome, and impact. Specifically, some firms demonstrate the mix between sustainable outputs and outcomes, e.g., number of trees planted, amount of donations, numbers of CS initiatives [38], etc. More importantly, impact measures seem to be misled, as a number of firms claim impact performance simply from self-reporting activities [39], rather than being recognized by the overall society.

This recent research argues that, if the firm aims to improve the well-being of the surrounding community, the output that the firm should aim for is to initiate community development plans, launch a local staff recruitment program, sponsor local community events, and fund educational scholarships for local members. Additionally, the increased number of local staff hired and income per head, positive feedbacks from community event participants, the increased number of graduated workers in the community should be considered as sustainable outcomes from the practice. Additionally, the impact of sustainable practices should be reported in terms of the following: being recognized as the top company among the community, achieving some awards relating to community relations and human resource management.

2.4. Relationship Quality

Bhattacharya et al. [21] (p. 263) have defined relationship quality as "overall assessment of the strength of a relationship, conceptualized as a composite or multidimensional construct capturing the different but related facets of a relationship." A reciprocal relationship exists between a firm and its stakeholders [18]. When the firm delivers benefits to stakeholders, stakeholders then develop a relationship with the firm in return to gain benefits and to generate wealth to the firm [22]. This reciprocal approach is supported by the Economy of Communion literature. It has stated that it is possible for the business world nowadays to have sharing, fellowship, fraternity, and reciprocity behaviors [20]. Relationship quality can be categorized into four levels which are satisfaction, trust, commitment and identification, depending on types of benefits that stakeholders receive from the firm [23–25]. The relationship quality develops over time from the lower level (satisfaction) to a higher level (identification). Since this study focuses on consumers' response to performance communication messages, it observes the development up to the initial levels of relationship quality. Thus, only satisfaction and trust are adopted in this study as consequences of perceived CS performance communication.

First, satisfaction is the overall evaluation regarding a firm/organization from stakeholder experience [21]. In general, stakeholders evaluate their satisfaction by comparing overall experience gained from a firm with resources that they have to contribute in order

to have a relationship with the firm [21]. Satisfaction is salient when perceived performance of a product/service meets the expectation of an individual [40].

Secondly, trust is defined as a perception of confidence in reliability and integrity among business partners or persons who come to interact with a firm [21]. Trust can be expressed as a form of stakeholder expectation that an organization will achieve what they promise, including perceived benevolence and not acting opportunistically towards stakeholders.

2.5. Perceived Corporate Reputation

Corporate reputation is a key factor that describes the success of a firm as viewed by stakeholders. Corporate reputation is defined as the perceptual representation of a firm's action in the past and in the future, which reflects the overall appeal of the firm to all key parties when comparing to other rivals [41]. Corporate reputation responds to the notion that sustainability performance outcomes and effectiveness of stakeholder-oriented practices of a firm should be evaluated by not only the firm but also its stakeholders [2]. Studies in the past have found that stakeholders' perceived social performance of a firm is one of the most important determinants of corporate reputation [42,43]. Avery and Bergsteiner [14] suggest that CS be earned through achieving excellent brand and reputation. Similarly, some studies have found that corporate reputation and brand equity are outcomes of CSR [28] and good reputation could lead to persistent profitability and sustaining superior performance [15]. Moreover, benefits that a firm receives from cause-related activities are in the form of stronger brand positioning, increased brand favorability, increased sales volume, enhanced customer loyalty, and building a strong relationship with alliances and social institutions [44].

2.6. Sustainability Performance Disclosure Types as Signal of Relationship Quality and Reputation Evaluation

Consumers' evaluation of output, outcome, and impact could be explained by signaling theory. Signaling theory addresses the recipients' evaluation of products, services, or brands based on relevant information deficit between parties through signals in order to reduce information asymmetry [45–47].

Organizational performances are associated with quality of signals. Firm management attempts to deliver positive sustainability signals such as competitive strategy, strong financial performance, and firm's stability status to relevant stakeholders (including consumers) so that high sustainable performance could signal high-quality information, resulting in reducing information asymmetry to recipients [48]. Reactions towards sustainable reporting signals could be categorized into three types (1) nonfinancial result, (2) investment decisions, and (3) reaction towards stock market [49]. As stakeholder theory indicates that different stakeholders may have different needs/wants, the methods of measuring outcomes for different stakeholder groups are accordingly varied. For instance, investment and reaction towards the stock market can be effectively used to measure sustainable outcomes among investors, shareholders and even the company, which is considered an internal stakeholder [50]. Additionally, nonfinancial outcomes such as satisfaction, trust, and corporate reputation are suitable outcome measures for consumers [49].

Among sustainability signals, a number of studies have investigated the relationships between various sustainability signals and consumers' evaluation. For instance, Atkinson and Rosenthal [51] have found that eco-label is a signal to affirm the credibility of environmental claims. Baumgartner et al. [52] have found that positive signaling of corporate reputation disclosure has positively affected organizational performance, corporate reputation, and stakeholders' intention. Bae et al. [48] found that signals from corporate governance elements, such as characteristics of shareholders, have positively affected sustainability disclosure. Friske et al. [49] have found that voluntary sustainability reporting is positively related to firm value. It promotes signals of transparency and accountability of the firm among publics. In contrast, environmental disclosure revealed a negative signal of profitability output [53].

Recently, CSR studies focusing on consumers found that CSR and sustainability schemes could act as signals to enhance evaluations of both product and corporate brands, satisfaction, trust, loyalty, brand admiration and brand equity [54]. In evaluating the clues of satisfaction, trust, and reputation of the firm, potential consumers lack complete information about the sustainability performance. To resolve information asymmetries, consumers tend to find information from signalers that clearly communicate benefits or values that they would gain from experiencing products or services that linked to signals of high quality, positive corporate reputation, and image [54,55]. However, it is still unclear regarding the underlying and unobservable qualities of the firm that the CS signals should demonstrate [56]. In addition, perceived long-term reputation needs time to be developed. Over time, CS signaling process may not be effective if consumers, considered as receivers, are not aware of what to look for or are not looking for the CS signals [54,55].

Studies in the past have found that third-party signals such as reputation lists, rating, and corporate brand rankings (such as such as the "100 Best Corporate Citizens," "America's Greenest Companies," and "World Most Admired Companies") are considered as effective signals as they contain following properties: (1) authentic signal, (2) costly to imitate, (3) consistent and clear (4) informational cues that aid in diagnosing the brand [49,54,57].

In regard to using awards or rankings as a social responsibility indicator, marketing literature, i.e., Rossi and Rivetti [58], found that third-party labels did not influence consumers' perceptions and their willingness to buy or pay. Baier, Göttsche, Hellmann, and Schiemann [59] have supported that reference explicitness must be presented along with depth of assurance for sustainability reporting to gain higher credibility. This is because high reference explicitness solely is interpreted as a misleading or false signal among consumers. However, accounting and economic literature found positive results for effects of disclosing CSR awards of rankings on financial performance.

Prior studies examined the relationship between CSR awards and corporate financial performance of listed companies in Thailand [60] and Taiwan [61]. They both found a significant and positive relationship between CSR awards and corporate financial performance. Awards or rankings given by a third party were also used as an indicator for strong environmental management. Klassen and McLaughlin [62] found a significant positive stock return for the 500 largest publicly traded US corporations with strong environmental management, measuring by environmental performance awards. The effect of eco-friendly certificates and awards on consumers' perceived value were also investigated. Lee et al. [63] found that such certificates and awards positively impact customers' perceived value within the hotel industry, which resulted in increased customers' satisfaction, retention, and intention to pay a green premium. However, Rossi and Rivetti [58] found no significant relationship between third-party sustainable labels and receiver's corporate evaluation per se, but found a significant relationship between a self-declared sustainable claim and the receiver's corporate evaluation.

Therefore, mixed results were found. Specifically, marketing scholars reported a negative interaction, whereas finance scholars reported a positive interaction [57], suggesting that further studies should be thoroughly examining each direct signal and third-parties signal separately.

3. Conceptual Model and Hypotheses

Based on the literature review, the following conceptual model is derived (see Figure 1). This present research posits that, while output, outcome and impact altogether are key sustainable performance information for managers, company's auditors and investors, impact is the key signal for consumers that enhances satisfaction, trust, and corporate reputation.
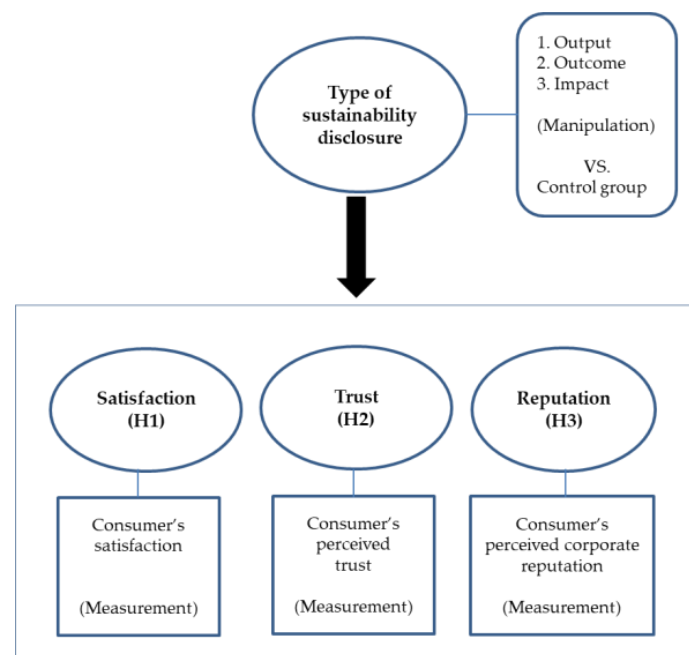
Figure 1. Conceptual model.

More precisely, we posit that, when evaluating the CS, consumers tend to acquire relevant information from trusted sources that clearly communicate direct benefits to them. Output and outcome signals are based on internal performance evaluation of the firm and are less associated with value exchanged with consumers. Impact, in contrast, is the trusted sources from third-party agents that provide comparative sustainability signals among competitors, in the form of ranking, and ratings. Thus, consumers could compare and associate the benefits of impact directly with their observed product and brand. Perception of positive impact will consequently influence a stronger relationship with the firm in the forms of brand satisfaction, brand trust, and perceived corporate reputations. Three hypotheses are also proposed as follows:

H1. *Among different levels of sustainability information disclosure, consumers are more likely to perceive the satisfaction of the firm as higher if the firm demonstrates impact (rather than output or outcome) of the sustainable performance report.*

H2. *Among different levels of sustainability information disclosure, consumers are more likely to perceive trust of the firm as higher if the firm demonstrates impact of the sustainable performance report.*

H3. *Among different levels of sustainability information disclosure, consumers are more likely to perceive the reputation of the firm as higher if the firm demonstrates impact of the sustainable performance report.*

4. Research Methodology

Quasi-experimental research was applied with university students, based on a $3 \times 1 + 1$ (control group) between-subjects design. The method used in this study was consistent with Baier et al. [59]. The independent variables (IVs) were comprised of three information types of sustainable performance reporting, which were output, outcome, and impact, across four product and service brands. Dependent variables (DVs) were comprised of satisfaction, trust, and corporate reputation.

This study, therefore, is divided into two phases: the preliminary study and the main study. The objective of the preliminary study is threefold. First, it aims to develop information types of sustainable performance stimuli. Second, it aims to select appropriate brands of product and service that suit the sample and context of study. Third, it aims to develop and pretest dependent measures that are suitable to a Thai context. The main

study was adapted from [35]. It aims to investigate the roles of different information types of sustainable performance reported (output, outcome, and impact) on consumers' satisfaction, trust, and perceived corporate reputation. Details of both phases will be discussed as follows.

4.1. Preliminary Study

4.1.1. Brand Selection

Four companies from different industries were chosen to examine the variations between high–low involvements of products and services. Specifically, the SCG construction materials company represents a high involvement–tangible product, SCB Bank represents a high involvement–intangible service, the Thai Union processed seafoods company represents a low involvement–tangible product, and True communication company represents a low involvement–intangible service. These four companies were selected because the samples equally have familiarity and access to use. These companies are also listed in the Thai Stock Market, with international recognition, and all of them provide all three sustainable information types in their annual or sustainable reports; thus, reducing the possibility of bias.

4.1.2. Sustainable Performance Stimuli

Experimental manipulation procedures were consistent with Baier et al. [59], Thakor and Lavack [64] and Winit et al. [65]. Based on a literature review [35–37], three information types of sustainable performance report were developed as experimental stimuli. A secondary information search was conducted through each company's public report such as the annual report, sustainability report, or public relations materials, deriving three types of information cues. Corporate-fact information was manipulated to achieve sustainable performance output, outcome, and impact information types. Sustainable performance information was provided in the form of a brand logo, corporate background (File S1 in supplementary), as well as a corporate-facts table consisting of sustainable performance evidences that relate to four key stakeholders—customers, employees, environment, and community.

More importantly, each corporate-fact table is manipulated to represent each type of sustainable information condition as follows (File S2). For the output condition, details in the table provided only what sustainable activities the firm has carried out for each group of stakeholders. Outcome condition provides the numerical/statistical result of what the firm has carried out in terms of sustainable activities. Impact condition provides the world and the regional sustainability-related rankings/ratings that the firm achieved. Lastly, the control condition provides only brand logo and corporate background with no corporate-fact presence. In addition, all other relevant product variables were kept constant across product/service categories as well as their financial performance.

Four versions of online questionnaire were applied, consisting of output, outcome, impact, and control versions. Each questionnaire version consisted of four brand scenarios in a single information type of sustainable performance report condition. Eight versions were developed, according to four information types, with two brand sequences for each to access ordering effects (Sequence 1, arranged as SCG, Thai Union, SCB, and True; and sequence 2, arranged as True, SCB, Thai Union, and SCG).

After exposure to corporate-fact information, each respondent was asked to complete a manipulation check by indicating their perception of sustainable performance information type (File S3). It was expected that respondents who were under the output condition would agree with the statement that "Information of firms above indicating the policy, plan, and activities of the organization without providing the consequence results" while respondents who were under the outcome condition would agree with the statement "Information of firms above indicating the policy, plan, and activities of the organization with statistics showing consequence results". In addition, respondents who were under the impact condition were expected to agree with the statement that "Information of firms

above indicating the policy, plan, and activities of the organization with awards, ranking, or certification showing long-term results".

4.1.3. Dependent Measures

Satisfaction towards brand consisted of three items using seven-point semantic differential scales from Winit and Kantabutra [34], He and Li [66]. Perceived brand trust consisted of five items using seven-point semantic differential scales from Winit and Kantabutra [34], Morgan and Hunt [67]. Perceived brand reputation measures from Winit and Kantabutra, and Hsu [28,34] were adopted, comprising five items (File S4).

Scales were translated into Thai by a translator who was fluent in Thai and English, and then back-translated by a bilingual expert to verify the correctness of the conceptual translation and to confirm that the scale items properly fit the Thai context. Minor corrections were made to enhance consistency with the original English version. Thai measures were then pretested to verify interpretation clarity and scale reliability.

4.1.4. Preliminary Study Results

Among 46 students, 36 correctly perceived manipulation conditions accounting for 78.26%. Respondents correctly perceived manipulation in each condition over 70%, suggesting that the manipulation was successful and could apply in the main study. Table 1 column I demonstrates the results of the manipulation check.

Table 1. Manipulation check.

Conditions	Manipulations	I: Preliminary Study Frequency	Percent	II: Main Study Frequency	Percent
Output	Fail	2	13.3	10	13.5
	Correct	13	86.7	64	86.5
	Total	15	100	74	100
Outcome	Fail	4	25	16	19.5
	Correct	12	75	66	80.5
	Total	16	100	82	100
Impact	Fail	4	26.7	25	27.78
	Correct	11	73.3	65	72.22
	Total	15	100	90	100
Control				59	

4.2. Main Study

In the main study, an online quasi-experiment was conducted to examine how consumers' satisfaction and trust vary across output, outcome, and impact conditions. Thus, these IVs were manipulated as 3×1 between subject design. Details of the main study are described below.

4.2.1. Samples

The samples employed for the main experiment were 310 students from a university in Chiang Mai, the second largest city of Thailand. Homogeneity characteristics of students support more precise predictions, resulting in a stronger test of a given scope of study or theory. The recruited business students were volunteers from various majors and stages of their program. Their ages were between 18 and 25 years old, representing young, urban and educated consumers which fit the general characteristics of opinion leaders. These students with similar age-range had similar brand familiarity, brand awareness, or chances to purchase or use services of all four companies; therefore, they were appropriate for achieving the study's objectives. Baier et al. [59] have suggested that a student sample is justified, in their study examining the relationship between sustainability reporting and consumer reactions. This is because a variable assessing the report, such as credibility, does not require participants to draw complex connections and students in business are a proxy

for reasonably informed non-professional investors; thus, equivalent to consumers. More importantly, Verlegh and Steenkamp [68] reported no differences in the magnitude between studies employing student samples and those utilizing consumer samples.

4.2.2. Data Collection and Data Analysis Methods

Data collection occurred in the classroom setting. With prior permission from the lecturer for the class period, participants were recruited for volunteers who were willing to fill out the online survey questionnaire through their mobile or computer devices, which took 15 to 20 min to complete. The researcher and the lecturer informed participants that this was to be purely on a voluntary basis and was not mandatory and would have no impact whatsoever on their course grade. The participants were also allowed to withdraw from the survey at any time during and after the administration of the questionnaire. Additionally, participants who completed the questionnaire received a 200 Baht (7 USD) gift card as a token of appreciation for their time.

All documents, consisting of (1) a letter of consent, (2) a letter of instruction, and (3) the questionnaire, were then distributed to the respondents via QR codes. At least one researcher (or research assistant) attended each session to facilitate and monitor the survey. He/she was trained and briefed thoroughly so that he/she could answer all questions raised by participants (if necessary). All participants received the same instructions for each treatment. They were also asked to read and provide informed consent before completing the questionnaire. They were informed that, as consumers, they would be asked to provide opinions on the performance of four large companies. They were then instructed to begin reading the case materials and complete the questionnaire. The case materials provided a brief company background information along with the company's key stakeholders and CSR performance. Once the participant completed the questionnaire, they were asked to submit the questionnaire, complete the debriefing, and leave the online session. Data collected were automatically stored in the researcher's Google drive (in a password-encrypted computer).

Amos was employed for tests of dimensionality of measures. Analysis of variance (ANOVA) was employed for examining the differences of satisfaction, trust, and corporate reputation across four manipulation conditions. Specifically, H1, H2, and H3 were supported if the mean of satisfaction, trust, and perceived corporate reputation scores in the impact condition were statistically higher than in the control condition, across different product and service categories.

5. Results

5.1. Manipulation Check

Among 305 students, 254 (83.28%) correctly perceived manipulation conditions. Respondents correctly perceived manipulation in each condition over 70%, suggesting that the manipulation was successful and could be applied in the main study. Table 1 column II describes the results of the manipulation check.

Three dependent variables (satisfaction, trust, and reputation) revealed a good fit across four firms. Cronbach's alpha of all constructs was higher than 0.80, suggesting that each variable is appropriate for further analysis [69,70]. More details about Cronbach's alpha and fit indices are provided in Table S1, File S5.

Table 2 reports satisfaction, trust, and perceived brand reputation means for the three groups regarding information types of sustainable performance (output, outcome and impact) and the control group. As expected, for all companies, respondents in an impact-information-type group report more satisfaction, trust and perceived brand reputation than ones in the other three groups (output, outcome and control).

Table 2. Mean satisfaction, trust, and reputation; descriptive.

Firm	Conditions	n	Constructs					
			I: Satisfaction		II: Trust		III: Reputation	
			Mean	SD	Mean	SD	Mean	SD
SCG	Output	64	4.9271	1.05153	4.8625	1.12511	5.8219	0.97337
	Outcome	66	5.0101	1.04099	5.0273	1.11928	5.8242	0.84089
	Impact	65	5.3077	0.92854	5.4123	0.99930	6.1938	0.73312
	Control	59	4.6893	0.87945	4.8814	0.90905	5.7864	0.83366
	Total	254	4.9908	0.99864	5.0504	1.06232	5.9094	0.86082
TU	Output	64	4.2396	0.75496	4.1656	0.88916	4.7031	0.91547
	Outcome	66	4.4848	0.85171	4.5394	0.96968	4.9848	0.93566
	Impact	65	4.5385	0.90847	4.7538	0.99735	5.2123	0.99679
	Control	59	4.0508	0.76015	4.0237	0.77378	4.5559	0.85183
	Total	254	4.3360	0.84087	4.3803	0.95284	4.8724	0.95650
SCB	Output	64	4.8281	1.24296	4.8219	1.36399	5.3219	1.13787
	Outcome	66	4.9545	1.00066	4.9545	1.21569	5.5182	1.02100
	Impact	65	5.2769	1.09856	5.3354	1.01311	5.8062	0.84777
	Control	59	4.5706	1.31605	4.5729	1.39727	5.1898	1.17175
	Total	254	4.9160	1.18657	4.9299	1.27486	5.4661	1.06784
TRUE	Output	64	4.1042	1.31049	3.9125	1.33660	4.9271	1.05153
	Outcome	66	4.3283	1.18321	4.1697	1.27810	5.0101	1.04099
	Impact	65	4.5282	0.92963	4.5231	1.15850	5.3077	0.92854
	Control	59	3.9661	1.10847	3.9119	1.18861	4.6893	0.87945
	Total	254	4.2388	1.15462	4.1354	1.26138	4.9908	0.99864

5.2. Results

The mean difference test for all dependent measures (satisfaction, trust, and perceived brand reputation) between the four groups was tested using ANOVA. The results for all companies are presented in Table 3, in which column I is for satisfaction, column II is for trust, and column III is for perceived brand reputation. Results for all companies are statistically significant for all dependent measures. These suggest that, for all companies, respondents' satisfaction, trust, and perceived brand reputation are contingent upon information types of sustainable performance.

Table 3. ANOVA results for mean difference test.

|	Column I: Satisfaction				Column II: Trust				Column III: Brand Reputation			
	Sum of Squares	df	Mean Square	F (Sig.)	Sum of Squares	df	Mean Square	F (Sig.)	Sum of Squares	df	Mean Square	F (Sig.)
SCG												
Between groups	12.176	3	4.059	4.225	12.494	3	4.165	3.814	7.120	3	2.373	3.290
Within groups	240.136	250	0.961	(0.006)	273.021	250	1.092	(0.011)	180.357	250	0.721	(0.021)
Total	252.132	253			285.515	253			187.477	253		
TU												
Between groups	9.519	3	3.173	4.225	21.191	3	7.064	8.469	16.087	3	5.362	6.224
Within groups	169.368	250	.667	(0.006)	208.510	250	0.834	(0.000)	215.380	250	0.862	(0.000)
Total	178.887	253			229.702	253			231.467	253		
SCB												
Between groups	16.097	3	5.366	3.944	18.994	3	6.331	4.036	13.530	3	4.510	4.101
Within groups	340.111	250	1.360	(0.009)	392.198	250	1.569	(0.008)	274.959	250	1.100	(0.007)
Total	356.208	253			411.193	253			288.489	253		
TRUE												
Between groups	11.520	3	3.840	2.947	15.975	3	5.325	3.444	15.850	3	5.283	4.752
Within groups	325.768	250	1.303	(0.033)	386.566	250	1.546	(0.017)	277.945	250	1.112	(0.003)
Total	337.288	253			402.541	253			293.795	253		

Table 4, columns I, II and III, present the results of a post-hoc Tukey HSD test for satisfaction, trust, and perceived brand reputation, respectively. H1 states that, among

different levels of sustainability information disclosure, consumers are more likely to perceive the satisfaction of the firm as higher if the firm demonstrates impact (rather than output or outcome) of the sustainable performance report. Table 4, column I and Figure 2 exhibit the results of a mean difference test for satisfaction between the four groups. The results suggest that, for all companies, the satisfaction mean of the impact-information-type group is statistically higher than that of the control group and this result is consistent across companies (for SCG, sig. = 0.003; for TU, sig. = 0.006; for SCB, sig. = 0.005; for TRUE, sig. = 0.033).

Table 4. ANOVA showing the mean difference in satisfaction, trust, and perceived brand reputation between the four groups of information type.

| Conditions		I: Satisfaction				II: Trust				III: Brand Reputation			
		Mean Difference		SE	Sig.	Mean Difference		SE	Sig.	Mean Difference		SE	Sig.
SCG													
Output	Outcome	−0.08302		0.17194	0.963	−0.16477		0.18333	0.805	−0.00237		0.14901	1.000
	Impact	−0.38061		0.17259	0.125	−0.54981		0.18402	0.015	−0.37197		0.14957	0.064
	Control	0.23782		0.17689	0.536	−0.01886		0.18861	1.000	0.03543		0.15330	0.996
Outcome	Output	0.08302		0.17194	0.963	0.16477		0.18333	0.805	0.00237		0.14901	1.000
	Impact	−0.29759		0.17126	0.306	−0.38503		0.18261	0.153	−0.36960		0.14842	0.064
	Control	0.32084		0.17560	0.263	0.14592		0.18723	0.864	0.03780		0.15218	0.995
Impact	Output	0.38061		0.17259	0.125	0.54981		0.18402	0.016	0.37197		0.14957	0.064
	Outcome	0.29759		0.17126	0.306	0.38503		0.18261	0.153	0.36960		0.14842	0.064
	Control	0.61843	*	0.17623	0.003	0.53095	*	0.18791	0.026	0.40741	*	0.15273	0.040
Control	Output	−0.23782		0.17689	0.536	0.01886		0.18861	1.000	−0.03543		0.15330	0.996
	Outcome	−0.32084		0.17560	0.263	−0.14592		0.18723	0.864	0.03780		0.15218	0.995
	Impact	−0.61843	*	0.17623	0.003	−0.53095	*	0.18791	0.026	−0.40741	*	0.15273	0.040
TU													
Output	Outcome	−0.24527		0.14440	0.327	−0.37377		0.16022	0.093	−0.28172		0.16283	0.310
	Impact	−0.29888		0.14494	0.169	−0.58822	*	0.16082	0.002	−0.50918	*	0.16345	0.011
	Control	0.18874		0.14855	0.583	0.14190		0.16483	0.825	0.14719		0.16752	0.816
Outcome	Output	0.24527		0.14440	0.327	0.37377		0.16022	0.093	0.28172		0.16283	0.310
	Impact	−0.05361		0.14383	0.982	−0.21445		0.15959	0.536	−0.22746		0.16220	0.499
	Control	0.43400	*	0.14747	0.019	0.51567	*	0.16363	0.010	0.42892		0.16630	0.051
Impact	Output	0.29888		0.14494	0.169	0.58822	*	0.16082	0.002	0.50918	*	0.16345	0.011
	Outcome	0.05361		0.14383	0.982	0.21445		0.15959	0.536	0.22746		0.16220	0.499
	Control	0.48761	*	0.14800	0.006	0.73012	*	0.16422	0.000	0.65638	*	0.16690	0.001
Control	Output	−0.18874		0.14855	0.583	−0.14190		0.16483	0.825	−0.14719		0.16752	0.816
	Outcome	−0.43400	*	0.14747	0.019	−0.51567	*	0.16363	0.010	−0.42892		0.16630	0.051
	Impact	−0.48761	*	0.14800	0.006	−0.73012	*	0.16422	0.000	−0.65638	*	0.16690	0.001
SCB													
Output	Outcome	−0.12642		0.20462	0.926	−0.13267		0.21973	0.931	−0.19631		0.18398	0.710
	Impact	−0.44880		0.20539	0.130	−0.51351		0.22056	0.094	−0.48428	*	0.18468	0.046
	Control	0.25750		0.21051	0.613	0.24899		0.22606	0.689	0.13204		0.18928	0.898
Outcome	Output	0.12642		0.20462	0.926	0.13267		0.21973	0.931	0.19631		0.18398	0.710
	Impact	−0.32238		0.20382	0.391	−0.38084		0.21887	0.305	−0.28797		0.18326	0.397
	Control	0.38392		0.20898	0.258	0.38166		0.22441	0.325	0.32835		0.18790	0.301
Impact	Output	0.44880		0.20539	0.130	0.51351		0.22056	0.094	0.48428	*	0.18468	0.046
	Outcome	0.32238		0.20382	0.391	0.38084		0.21887	0.305	0.28797		0.18326	0.397
	Control	0.70630	*	0.20973	0.005	0.76250	*	0.22522	0.005	0.61632	*	0.18858	0.007
Control	Output	−0.25750		0.21051	0.613	−0.24899		0.22606	0.689	−0.13204		0.18928	0.898
	Outcome	−0.38392		0.20898	0.258	−0.38166		0.22441	0.325	−0.32835		0.18790	0.301
	Impact	−0.70630	*	0.20973	0.005	−0.76250	*	0.22522	0.005	−0.61632	*	0.18858	0.007
TRUE													
Output	Outcome	−0.22412		0.20026	0.678	−0.25720		0.21815	0.240	−0.39441		0.18498	0.146
	Impact	−0.42404		0.20102	0.153	−0.61058	*	0.21897	0.006	−0.57101	*	0.18568	0.012
	Control	0.13806		0.20603	0.908	0.00064		0.22443	0.998	0.00302		0.19030	1.000
Outcome	Output	0.22412		0.20026	0.678	0.25720		0.21815	0.240	0.39441		0.18498	0.146
	Impact	−0.19992		0.19948	0.748	−0.35338		0.21729	0.105	−0.17660		0.18425	0.773
	Control	0.36218		0.20452	0.290	0.25783	*	0.22279	0.248	0.39743		0.18891	0.155
Impact	Output	0.42404		0.20102	0.153	0.61058	*	0.21897	0.006	0.57101	*	0.18568	0.012
	Outcome	0.19992		0.19948	0.748	0.35338		0.21729	0.105	0.17660		0.18425	0.773
	Control	0.56210	*	0.20526	0.033	0.61121	*	0.22360	0.007	0.57403	*	0.18960	0.014
Control	Output	−0.13806		0.20603	0.908	−0.00064		0.22443	0.998	−0.00302		0.19030	1.000
	Outcome	−0.36218		0.20452	0.290	−0.25783		0.22279	0.248	−0.39743		0.18891	0.155
	Impact	−0.56210	*	0.20526	0.033	−0.61121	*	0.22360	0.007	−0.57403	*	0.18960	0.014

* Significant difference between variables.
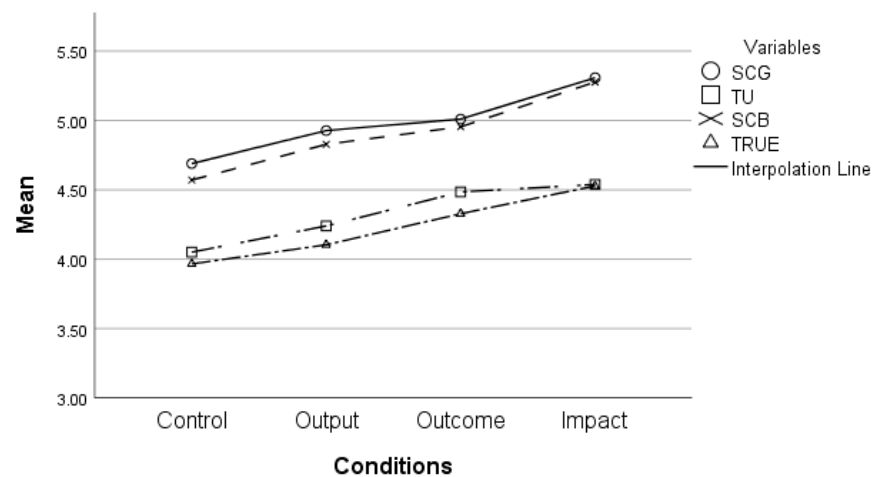
Figure 2. Mean of satisfaction variable across four conditions and product/service categories.

In contrast, mixed results were found among the output, outcome, and control groups. There is no difference in the satisfaction means among the output, outcome, and control groups, among SCG, SCB, and True. Although the satisfaction mean of the outcome group of TU is significantly higher than that of the control group (sig. = 0.019), the satisfaction mean of the impact group of TU is still the highest. Therefore, H1 is supported. These results suggest that, overall, the output and outcome information types do not affect respondents' satisfaction differently from only corporate-fact information (control). Respondents' satisfaction is significantly higher for the impact-information-type.

H2 states that, among different levels of sustainability information disclosure, consumers are more likely to perceive trust of the firm as higher if the firm demonstrates the impact of the sustainable performance report. Based on the results in Table 4, column II and Figure 3, the trust mean of the impact-information-type group is found to be statistically higher than that of the control group for all companies (for SCG, sig. = 0.026; for TU, sig. = 0.000; for SCB, sig. = 0.005; for TRUE, sig. = 0.034). Moreover, the trust mean of the impact is also statistically higher than that of the output group. These results are consistent with that of satisfaction. Similar to the mix results regarding satisfaction in column I, there is no difference in the trust means among output, outcome, and control groups for SCG, SCB, and True. Although the trust mean of the outcome group of TU is significantly higher than the control group (sig. = 0.01), the trust mean of the impact group of TU is still the highest. Therefore, H2 is supported.
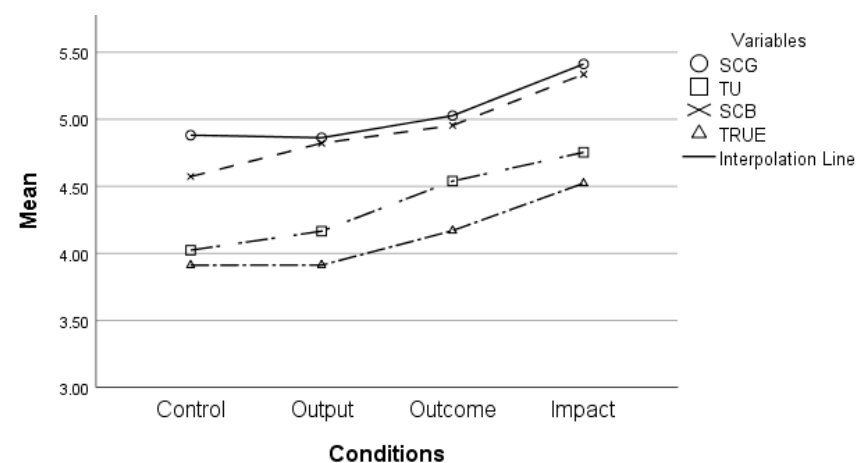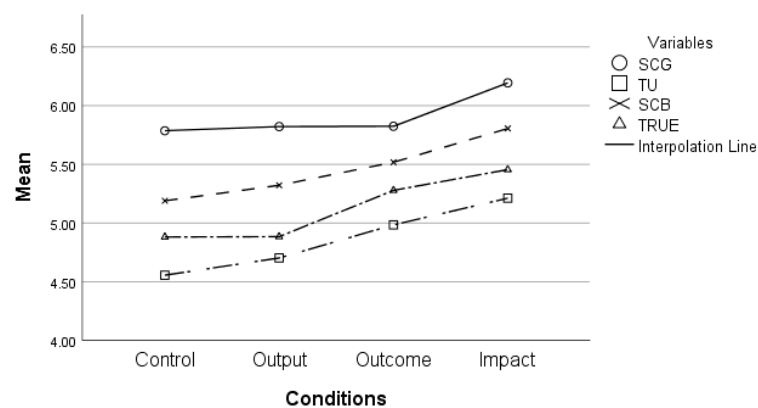

Figure 3. Mean of trust variable across four conditions and product/service categories.

H3 states that, among different levels of sustainability information disclosure, consumers are more likely to perceive the reputation of the firm as higher if the firm demon-

strates impact of the sustainable performance report. The results of the mean difference test for perceived brand reputation are shown in Table 4, column III and Figure 4. Consistent with the results in column I and column II regarding satisfaction and trust, respectively, the reputation mean of the impact information type group is significantly higher than that of the control group for all companies (for SCG, sig. = 0.008; for TU, sig. = 0.000; for SCB, sig. = 0.001; for TRUE, sig. = 0.003). As expected, the results concerning the mean difference among the output, outcome and control groups are mixed. Most of the means among output, outcome and control groups for all companies are not statistically different. The reputation mean of the output group is found to be significantly lower than that of the impact-information-type group for TU (sig. = 0.011), SCB (sig. = 0.046) and TRUE (sig. = 0.012). Therefore, H3 is supported.

Figure 4. Mean of perceived reputation variable across four conditions and product/service categories.

6. Discussions

Based on sustainability performance literature in the past [35,37], this experimental study clearly points out that sustainability performance disclosure can be categorized into three types, namely output, outcome, and impact. More importantly, the result in this study successfully demonstrates that when students, considered as representative of consumers, are exposed to different types of sustainability performance disclosure, they indicate satisfaction, trust, and perceived corporate reputation differently, due to their different needs [31,33].

From consumers' point of view, impact is the most effective type of disclosure as it leads to the highest satisfaction, trust, and perceived corporate reputation, supporting H1, H2, and H3. In contrast, consumers indicate indifference when exposed to other forms of sustainability performance such as output and outcome, comparing to none of the information exposed (controlled group). Results revealed consistency across product and service industries.

Findings of this study could be explained by the signaling theory [45,47]. While findings in Baier et al. [59] are in contrast to their hypotheses, results in the current study could be explained by Baier et al.'s [59] framework. It extends the signaling theory research in CS disclosure [48,52] by further suggesting that consumers perceive impact information such as the status of being a leader in the industry, described by outstanding score/rankings given by a third-party organization, as the most effective signal for evaluating high performance of the firm, under limited time, knowledge, and resources provided. Third-party rankings and ratings of impact are considered as assured information because this information is judged by experienced or professional organizations. They contain an authentic signal, costly to imitate, consistent and clear, and provide useful informational evaluating cues as suggested by [49,54,57]. These impact properties manipulated in the study also reflect incremental time and effort of the firm to develop and maintain depth of assurance from third-party organizations and reference explicitness; thus, supporting suggestions made by Baier et al. [59]. In doing so, a firm will gain stronger corporate reputation which is positively related to firm value [49]. The result also provides insight into the

study of Friske [49] that, among consumers, nonfinancial results such as satisfaction, trust, and corporate reputation are effective criteria for evaluating sustainable performance of the firm.

7. Conclusions

In conclusion, this study sheds light on the relationship between different types of sustainability performance communication and consumers' satisfaction, trust, and perceived corporate reputations. In term of theoretical implications, this study fills the signaling research gap suggested by [61]. Results from the manipulation procedure revealed important unobserved CS signals, namely output, outcome, and impact. Findings in this study comprehensively bridge the gap between consumer perception and firm performance raised by [14], as they suggest that "impact" is the most effective way to communicate a firm's performance to consumers.

In terms of practical implications, the results also recommend a change in the communication norm of the past, that the firms mix the message categories between output, outcome, and impact when targeting consumers. Specifically, instead of spending their budget on a broad range of sustainable performance messages, a firm should omit unnecessary message types and focus on "impact", as sustainable performance content that consumers perceive value in and that aligns with performance highlighted by the firm. In doing this, the firm could reduce the overwhelming nature of signal information, use their communication budget more effectively, and gain the value of an effective sustainable performance signal.

While Wichianrak et al. [53] found a negative relationship between the signals of environmental disclosure and firm profitability, consumers in this study evaluated sustainability performance as an inclusive signal. Future research should thoroughly examine consumers' evaluations by separating signals into environmental, societal, and profitability aspects to gain insight into which dimensions of the core sustainability concept are the most important from the consumer's point of view.

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Article

Three-Pillar Sustainability and Brand Image: A Qualitative Investigation in Thailand's Household Durables Industry

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Abstract: Many companies nowadays implement sustainable practices internally, and build brand images that communicate sustainability. However, there are different degrees of 'sustainability'. This study examines the extent to which full three-pillar sustainability (environmental, social, economic) translates into a sustainable brand image among consumers in Thailand. Nine major companies producing household durables were scored based on their website information, using the Dow Jones Sustainability Index to identify those having high-, mid-, and low-level sustainability implementation. In-depth interviews were conducted with three managers in one company at each level, and three consumers who mainly buy household durables from each company were also interviewed. Manager interviews confirmed that the level of sustainability implementation evident on the website is fairly accurate. Consumers roughly translate this into brand image reflecting the degree of the company's sustainability, but the mapping is not exact. Stronger communications about the company's sustainability seem able to improve consumer perceptions somewhat. Consumers are quite aware of three-pillar sustainability, but often do not explicitly consider all three pillars in their product decisions. However, the long-term trend seems to be toward merging the separate market segments into a comprehensive, three-pillar sustainability-oriented segment.

Keywords: sustainability; brand image; corporate image; sustainable production; corporate culture; corporate social responsibility; green marketing; Thailand

1. Introduction

Sustainability has become a critical issue in the modern world. A great many companies now implement sustainable practices internally, and externally aim to build a brand image that communicates sustainability. To date, however, progress toward incorporating the full concept of sustainability is somewhat lacking in the literature, particularly in marketing. Sustainability is built around three pillars, namely social, environmental, and economic elements [1,2]. Scholarly research on brand image rarely addresses more than one pillar at a time. There is little work on whether most companies actually fully implement all three pillars internally, or whether this translates into three-pillar brand images externally, and even some sustainability indices may lack full coverage. This qualitative study examines representative companies in Thailand's household durables industry to assess the extent to which their internal operations and external brand image are consistent with the S&P Corporate Sustainability Assessment (originally the Dow Jones Sustainability Index, DJSI), one of the few indices which do cover full three-pillar sustainability [3,4].

This is an important issue because focus on only some sustainability elements may not fully capture the benefits of sustainability, either in terms of broader impact from the company's internal operations, or in building an attractive brand image externally for increasingly demanding customers. The United Nations has laid out seventeen sustainable

development goals [5] which most three-pillar discussions cite. Although originally a separate schema, Dalampira and Nastis [6] demonstrate that these UN SDGs and the three pillars schema are essentially equivalent. "The 17 SDGs are integrated—that is, they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability" [7]. Action on individual sustainability elements or an individual pillar is certainly necessary, but not sufficient for reaching sustainability goals.

Most discussions of 'sustainability' in marketing focus on either green or corporate social responsibility (CSR) issues. For example, although they mention that cleaner production can consider economic, social, and environmental benefits of an organization's activities, de Oliveira Santos et al. [8] nevertheless focus on the environmental impacts of service production. CSR discussions also sometimes mention three-pillar sustainability, but do not really address all three, often focusing on the CSR regarding the environmental pillar (e.g., [9]) or the social aspects of CSR's stakeholder interests, such as in HR policy (e.g., [10]). Similarly, research on consumer response is somewhat fragmented. Armstrong et al. [11], for example, report positive perceptions of product–service systems for clothing to reduce pressure on the environment, although there is also some skepticism that companies actually do everything they claim. Ferrell et al. [12] demonstrate that consumers respond positively to strong CSR and corporate ethics.

Such work is important, but assessing all three pillars together is also essential. Discussing the context of financial services, for example, Ajour El Zein et al. explicitly conclude that more research is needed on "managerial implications on a practical level with an integrated model that takes into account the social, environmental and economic performance for the creation of sustainability-oriented brand value" [13] (p. 13). The interconnections noted above [7] can sometimes be mutually conflicting, and it may be necessary to strike a balance among them for optimal results (e.g., [14,15]). It is useful to ask whether the literature reflects a situation where companies are not yet thinking about full three-pillar sustainability, or whether current research is somewhat lagging behind company practice. Thus, the research questions examined here are as follows:

RQ1: How do companies implement sustainability in their internal operations? Do they address the full set of the three-pillar issues (as measured in the DJSI)? Can we identify different degrees of sustainability implementation?

RQ2: Can we assess this from publicly available information (websites), or do we need to get inside? (i.e., does public communication match what companies really do internally?)

RQ3: How do consumers perceive these companies? Do they think in terms of the three pillars, or do they perceive sustainability as one or maybe two pillars? Does this translate into a strong brand image of the companies' products?

There is not much empirical academic work examining how a full three-pillar conceptualization works in organizations, especially as it translates into brand image, and here, a qualitative approach was adopted. Qualitative research is most appropriate in the early stages of exploring most complex topics [16,17]. The assessment started with content analysis of corporate websites, and was followed up with in-depth interviews among corporate managers and consumers. The context of the investigation is Thailand, where there is a unique Thai sustainability framework called Sufficiency Economy Philosophy (SEP) [18,19]. SEP is essentially a version of Buddhist economics [20] that has been officially promoted for several decades [21]. Of course, it is not universally applied, and can be somewhat rudimentary even when it is. Nevertheless, some degree of sustainability consciousness has diffused widely in industry and among the general public, making Thailand a good place to examine these issues outside of Western contexts where they more commonly receive attention.

Literature Review

Sustainability is among the greatest challenges for companies in the modern world. Examining how to achieve sustainability, however, requires looking well beyond the

company itself, and understanding interconnections between internal and external factors. To the United Nations, "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." [22] (Chapter 2 intro). That inability of future generations to meet their own needs could clearly bring major problems for everyone in the long term. The original UN definition, however, is somewhat vague, and there has been considerable work to define what this means. Current definitions provide more detail, either in terms of the UN's 17 Sustainable Development Goals [5,7] or the three-pillar framework [1,2], which are essentially quite similar [6].

The three-pillar concept is most often applied at the macro scale. There are frameworks to address these issues at the micro level, although mostly approached from an internal operations perspective, rather than marketing. The triple bottom line (3BL) is one of the most common, and often used as a management tool at a firm level [23]. The idea behind 3BL is that a firm's success should not be evaluated purely by the financial bottom line, but also by its social and environmental performances. One recent review [24] of research on sustainability issues in current industry trends (Industry 4.0), for example, indicates that much current discussion is about 3BL, which is comprised of (1) social sustainability, with emphases on social development and human capital; (2) environmental sustainability, which focuses on resource management that leaves the smallest carbon footprint; and (3) economic sustainability, which entails company profitability and liquidity. These three components are similar to the three-pillar concept, although the economic pillar in 3BL is somewhat oriented toward internal company economics, specifically toward profitability. Half or more of recent publications on Industry 4.0 in recent sustainability literature [24,25] are still conceptual rather than empirical investigations. Coverage is mostly internal operations, although both of these reviews briefly note the need for more work connecting internal operations and customers. Ultimately, though, there is no conflict between internal operations, customer orientation, and macro-scale sustainability, if individual business units operate with careful implementation.

The sustainability issues in Industry 4.0 discussion are not new. Society has been putting ever more emphasis on concern for the future of people and the environment, and businesses have thereby been challenged to integrate health, social, environmental, and safety concerns into their operations management. For some time now, this has focused substantial attention on sustainable operations systems [26], which in turn produce sustainable products and services. Sustainable products are items that provide social, environmental, and economic benefits concurrently. They are becoming a new standard in the market among customers. Much research shows that sustainable products and services are believed by consumers to be socially and environmentally responsible, which contributes significantly to customer satisfaction, purchase intention, and brand equity [11,27–30]. A strong brand image among consumers who value sustainability plays a key role in all this, although research that demonstrates it usually focuses mainly on green (e.g., [31,32]) or CSR [33] issues, rather than the three pillars together.

Probably the best way to support the sustainability message to the public is simply to integrate sustainability concepts into business practices and organizational culture. Corporate Social Responsibility (CSR) activities, when consumers are aware of them, normally convey such a message [34]. This can enhance the company's reputation and creditability in the rapidly expanding segments which care about such issues [35,36]. The use of CSR varies among organizations. Passive reactions to CSR issues can fail to get much impact, but when CSR is implemented proactively it can contribute substantially to brand and corporate image [37–40].

These brand and corporate image issues are one of the most common market reasons for a company to implement sustainability practices. (Companies can genuinely believe in sustainability, of course, but even so, they would likely want some market advantage from it.) Although a sustainable brand image can only attract customers who value sustainability (e.g., [41–44]), these market segments are rapidly expanding [45]. Companies aiming for

a long-term presence in the market need sustainability strategies to remain aligned with market trends [46]. Generally, stronger integration of sustainability in operations, products, and organizational culture, fosters a stronger sustainable brand image.

For example, green quality is often built in to attract consumers who are environmentally concerned [47,48]. Likewise, a social brand image is created to attract people who value socially responsible behavior [49]. A number of studies examine such green and social brand images and their relationship with other marketing components [50–53]. These studies, however, focus on one pillar at a time.

Thus, despite many studies on consumer perceptions of a specific pillar of sustainability, very few address full three-pillar sustainability. A recent bibliometric search of marketing journals in Scopus indicates that over three-fourths of articles published 2018–2021 cover only one pillar, usually green or social. Only about two percent examine all three pillars, and these proportions have changed very little compared to the period 2000–2017 (Figure 1; [54]).
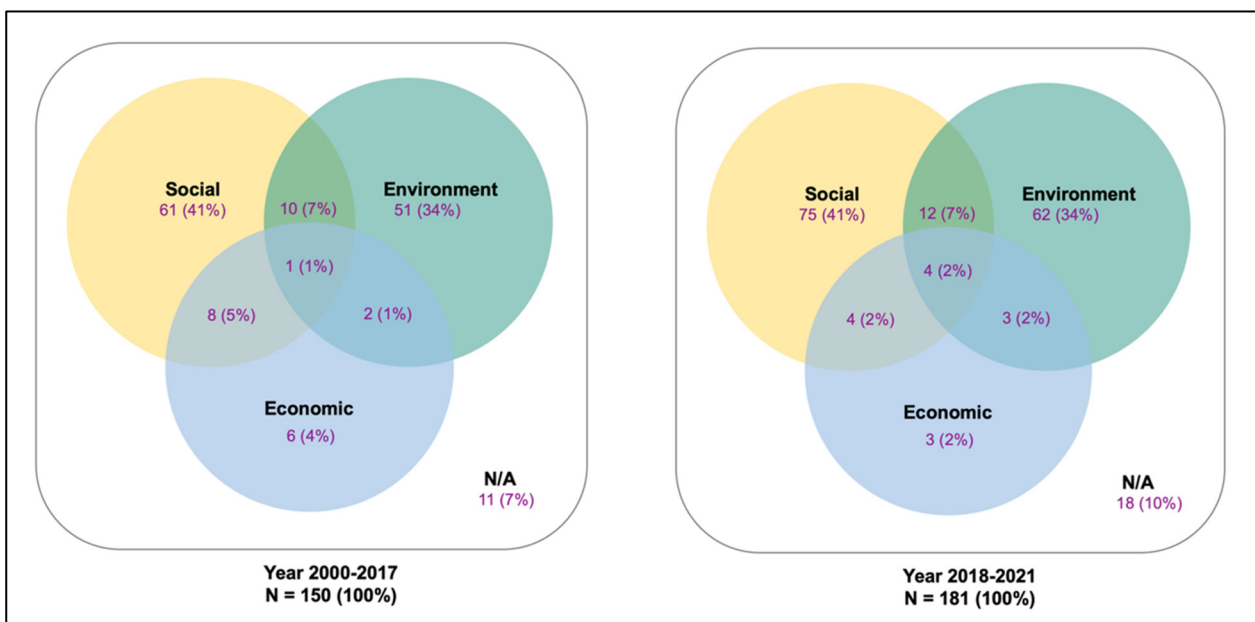
Figure 1. Sustainable branding research in SCOPUS marketing journals, 2000–2021. Source: authors.

Green practice leads to a green brand image, which is attractive primarily to green customers (e.g., [28,30–32,55]). Likewise, CSR and social marketing create a social brand image that attracts people who value social contribution and responsibility (e.g., [12,33]). There is evidence that some consumers are willing to pay a premium for the brands and products that possess green and/or social attributes that they value [56,57]. However, sustainability segments are growing rapidly, and they are merging as consumers become more knowledgeable about comprehensive sustainability and the interconnections among pillars. A one-pillar brand image may have worked so far, but long term, a stronger three-pillar brand image is likely to become essential. Some observers have already begun to point out that research on the simultaneous contribution of all three sustainability pillars to brand image is needed [13].

2. Materials and Methods

Because there is not much work examining how a full three-pillar conceptualization works in an organization, an exploratory approach was adopted, starting with content analysis of corporate websites, and followed up with in-depth interviews [16,17]. Household durables companies that sell consumer brands were chosen because the industry is fairly strong in Thailand [58], and these are high-involvement products. Managers may consider

sustainability issues with any kind of product, but here we aim to connect internal elements with external consumer perceptions. Consumers tend to build their preference and purchase intention with regard to these high-involvement products by actively gathering and assessing information [59,60]. Such high-involvement products are often considered more suitable when the researcher wants to examine more detailed thinking about how sustainability affects consumer perspectives (e.g., [61,62]).

2.1. Choosing Companies

The following five screening criteria were used to identify companies for initial assessment and potential inclusion in the qualitative interviews. (1) They must be local Thai organizations, so that their policies are determined locally, not set by corporate headquarters somewhere outside Thailand. (2) They are large-sized companies (annual revenue ≥ THB 500 million) registered with the Thailand Department of Business Development. Most such companies have a corporate website with information that can be assessed. Large companies' products are visible in the market, and there is a large base of consumers familiar with the brands. (3) The firms produce and sell household durables, such as home furnishings, homebuilding supplies, household appliances, and housewares. (4) The companies had to have a large presence in B2C (business-to-customers) markets, so that we could assess the impact of sustainability issues on products consumers actually buy, not just general impressions of products about which consumers rarely make choices. (5) They must integrate sustainability into their business policies and have been consistently executing policies such as CSR activities, and/or offering green or social products. They did not need to be leaders in this; we wanted variation in sustainability levels among the selected companies so that we could assess whether/how much consumers noticed different degrees of sustainable operations. However, we did not aim to assess companies that are not doing anything about sustainability at all.

An initial online search was performed by using the keywords referring to household durables and sustainability issues in both English and Thai languages. Keywords included terms both for products (such as household durables, furniture, sanitary products, home decorations) and for sustainability (such as sustainability, green, environmentally friendly, social, CSR, circular economy). Nine local Thai companies met the criteria stated above. They were double-checked in databases of the Department of Business Development, the Ministry of Commerce, and the Stock Exchange of Thailand to be sure they qualified as large companies. Five of them are public companies listed on the Stock Exchange of Thailand (SET), and the others are privately held.

The SET list, in particular, demonstrates that the listed companies ranked 1, 2, 3, 5, and 6 among the nine top listed companies (by revenue) in the industry. The other four companies do not include sustainability issues on their websites, so were judged not to be particularly proactive in implementing aspects of the three pillars. One was mostly business-to-business (B2B), so would not fit our target anyway. Companies below the top nine would not normally be considered 'big' in Thai practice. (Numbers 8 and 9 were borderline in terms of whether most observers would consider them 'big'). The revenues of the four privately held companies were determined from the other lists, and compared to the top SET companies; they fit within the range of 'big' companies we targeted. It should be noted that a few other big companies do sell consumer durables, but this is a small part of their overall product line. We did not want to confuse the discussion of sustainability in the industry with aspects that might have been implemented because of the characteristics of a different industry.

The chosen corporations were then scored according to their level of sustainability integration and execution. The scoring criteria were adopted from the DJSI. A number of sustainability indices are available, but this one is widely used and incorporates elements from all three pillars of sustainability, including economic, environmental, and social dimensions. Each industry has its own criteria [3,4]; the 2021 criteria for household durables (DHP) were used here. The DJSI 2021 scoring criteria [3] for household durables are divided

into three dimensions, including (1) governance and economic dimension (weight = 50), (2) environmental dimension (weight = 22), and social dimension (weight = 28). Each dimension has a number of sub-topics to specifically indicate how well a company implements sustainability in a range of different tasks. It should be noted that the 2022 weights for DJIS have now been adjusted to be somewhat more equal across the three dimensions. However, as noted below, we originally checked whether weighting the three dimensions equally (which is now closer to the 2022 weights) would change the assessment of the companies. It changed the raw scores very little, and did not change company rankings at all.

The initial assessment started with the corporate websites of these nine companies, with the main focus on the annual report and any sustainability report the company might have. Each company was scored according to the DJSI criteria and weights. The score for each item ranges from 0 to 3, where

0 = the topic is not mentioned in the documentation;

1 = the topic is mentioned but there is no evidence of implementation;

2 = the topic is mentioned and there is evidence of implementation;

3 = the topic is mentioned, there is evidence of implementation, and evidence of a successful result.

Table 1 presents the results of this scoring for each pillar and the overall rank. The DJSI assigns different weights to each pillar, roughly based on how many indicators they have in the schema, but calculations using equal weights for each pillar give essentially the same score, and exactly the same ordering. The website/documents assessment yielded companies with a range of sustainability scores, with good dispersion. Essentially, RQ1 can be answered positively. At least as indicated by their published information, companies do implement sustainability across the range of pillars, but how thorough this is depends on the company, and somewhat on the specific pillar. There is a wide range of sustainability implementations. This initial assessment made it possible to identify approachable companies with high, middle, and low scores within the range.

Table 1. Sustainability scores assessed according to 2021 DJSI criteria and weights.

Company	Econ	Environ	Social	W-Econ	W-Environ	W-Social	W-Sum	Rank	Equal Weights	Rank
C1	**100.0**	**95.5**	**85.7**	**50.0**	**21.0**	**24.0**	**95.01**	**1**	**93.73**	**1**
C8	84.0	95.5	100.0	42.0	21.0	28.0	91.01	2	93.17	2
C3	76.0	81.8	92.9	38.0	18.0	26.0	82.01	3	83.57	3
C7	**58.7**	**90.9**	**81.0**	**29.4**	**20.0**	**22.7**	**72.03**	**4**	**76.87**	**4**
C6	58.0	95.5	71.4	29.0	21.0	20.0	70.00	5	74.97	5
C5	**52.0**	**45.5**	**65.5**	**26.0**	**10.0**	**18.3**	**54.35**	**6**	**54.33**	**6**
C4	64.0	31.8	50.0	32.0	7.0	14.0	53.00	7	48.60	7
C2	46.7	54.5	39.3	23.4	12.0	11.0	46.34	8	46.83	8
C9	54.0	47.0	32.1	27.0	10.3	9.0	46.33	9	44.37	9
weights	0.50	0.22	0.28							

Notes: w- indicates weighted scores. **Bold** companies are ones in the follow-up interview process.

2.2. Choosing Respondents

In-depth interviews were carried out in one company at each sustainability level—high, middle, and low (relative to scores among the companies examined). Given that the nine companies represent most of the target 'big' companies in the industry, there was no particular reason to worry much about which company to choose at each level. Thus, the three specific companies were chosen because the first author of the article, who has worked in this industry, has good connections inside them. In general, personal connections are often needed in international business research and such access is an important criterion in judgment sampling [17] (p. 52). Connections are essential to most research in Thailand's

relationship-oriented culture (e.g., [63]). "With its strong traditions of business secrecy . . . working through connections and introductions is frequently the only way to gain good access at any level of companies in Asia" [64] (p. 69).

Within each company, three managers were interviewed to cover a range of functions within the organization (Table 2), focusing on particular individuals who specialize in the topics or work in the field related to the issues [65,66]. This, of course, follows the standard practice for exploratory qualitative work: "In qualitative sampling, purposefully select participants who can best help you understand the central phenomenon that you are exploring" [67] (p. 77). The initial contact in each company was asked to direct us to managers who have substantial authority in the key functions most involved in sustainability issues; we wanted managers who have decision-making authority on implementing important aspects of sustainability. It is worth noting that research in Thailand indicates that managers in different functions, even within the same company, may have different priorities and differing opinions about what is important. However, they tend to be consistent in reporting what their organization actually does [68].

Table 2. Companies' sustainability levels, manager and customer respondents.

Company's Sustainability Level	Manager Respondent	Manager Job Function	Customer Respondent	Customer Rating of Company's Sustainability Level
Company1 High	M1	Product development	C1	Medium
	M2	General management	C2	Medium
	M3	Sustainability unit	C3	High
Comany7 Medium	M4	Product development	C4	High
	M5	Business development	C5	High
	M6	Environmental unit	C6	High
Company5 Low	M7	Sales and marketing	C7	Medium
	M8	Product development	C8	Low
	M9	Customer relations	C9	Low

Respondents were also asked to rate and briefly explain their companies' practices related to the 2021 DJSI scoring criteria. A semi-structured format was used, with all interviews using the same list of topics corresponding to the three-pillars issues covered in the literature. However, the flow of discussion followed what the respondents felt was most relevant, so the topics were not covered in the same order, or sometimes not in the same detail. The questions were open-ended, with probing when needed to encourage respondents to elaborate on their answers [16,17,67]. Each interview lasted approximately 40–60 min, and notes were taken, as well as a digital record. Responses were categorized into themes and sub-themes, and compared across respondents, including noting how extensive responses were at the different levels of company and how well they reflected the DJSI assessment [17,67].

The consumer sample needed respondents who were customers of the companies interviewed. It is not difficult to find consumer durables customers in general, but finding knowledgeable customers who buy from a specific company is slightly more difficult in industries with more than a few dominant players. The customer side included nine customer respondents, three who mainly bought products from each of the interviewed companies (Table 2). Snowball sampling was used, which works well for reaching participants who are somewhat hard to find [69,70]. The initial respondents—the seeds—were selected through the researchers' personal networks to ensure that they were knowledgeable, able to give required information, and willing to participate [71], i.e., again relying on purposeful sampling [67]. The need to accommodate Thailand's relationship-oriented culture [63] is also a factor in consumer research. Sadler et al. [72] note that snowball is useful for adapting sampling to specific cultural conditions, while Van Meter [73] demonstrates that carefully implemented snowball sampling can be quite representative.

Qualitative methodologists frequently cite sample sizes of from 3 to 10 as adequate in this sort of qualitative phenomenological study (e.g., [67] (p. 77)). The key issue is saturation—the point at which one gains little new information from additional interviews. The few researchers who have empirically assessed saturation found that nearly all of the key issues can be uncovered with as few as six interviews [74,75], although one may need more to get into substantial detail. Hardly anything new comes up, however, after about 12 to 14 interviews [74,75]. In our case, there was some difference among respondents representing the three companies in terms of how much detail they could discuss, particularly if a company was not doing much on a particular sustainability pillar. However, there was not much difference in the issues respondents brought up. Our focus on what the company does, rather than what the manager considers important [68], also facilitates saturation somewhat. Similarly, the general issues were not much different among consumers, although there was a range of focus, from mainly one or another of the pillars to all three.

3. Results

Operations management was among the business functions that started addressing sustainability issues quite early. The initial focus was somewhat oriented toward the environmental pillar, although other aspects of sustainability did gain attention even in early discussions [26]. More recent discussions explicitly include a three-pillar approach. "We define sustainable OM as the pursuit of social, economic and environmental objectives—the triple bottom line (TBL)—within operations of a specific firm and operational linkages that extend beyond the firm to include the supply chain and communities" [76] (p. 1). As noted above, however, this has not necessarily translated into the literature examining the impact of sustainability issues on brand image.

3.1. Operations in the Manager Interviews

The manager respondents in these interviews all implied that sustainable products cannot be created without operations management attention to sustainability. "Sustainable products are the products of sustainable operations" (M2). Understanding of exactly what this means varies according to the companies' sustainability scores. The environmental pillar was prominent in all the companies' discussions. Even in the high-score company, the discussion often starts with environmental concerns. "Sustainable operations here involve waste management, resource management, and pollution management" (M1).

Thinking about the environmental pillar, however, seems to have different levels of sophistication in different companies. In the low-scored company, the answers were often rather vague and focused on repeating a common standard that the respondents know the company follows. "In our factory we have to comply with several green standards such as ISO and E1" (M8). Thinking on this pillar has more depth in some companies, and is often explicitly tied to other pillars. M3, from the high-score company, discussed policies connecting waste to economic value and CSR.

"The main concept is that we need to transform the waste as much as possible. . . . The first implementation is called waste to value, where we modify our waste and donate it to whom who can make use of it. The second implementation is called waste to CSR, where we give and teach local community how to create value from this waste" (M3).

Circular economy concepts were very prominent in the high-score company. "Every practice is created based on the concept of circular economy, where we can pass the value of our products to the others" (M3). Applications of the circular economy (as opposed to conceptualizations) are not very thoroughly researched (e.g., [77,78]), but our qualitative interviews suggest that many Thai companies are familiar with and working on such issues. The circular economy implicitly ties environmental issues into the other sustainability pillars. M1 explicitly noted that one aspect of sustainability is "supporting the circular economy". M3 also explicitly extends waste issues to their impact on the communities where operations take place. "Sustainable operations is to produce zero waste from the operations. This waste needs to contribute to other parties and is harmless to

local communities" (M3). Pollution is also explicitly linked to the other pillars; "we need to concern about the pollution occurred during the production and its effect to the local community" (M1).

A factory may recycle its own waste to use as a raw material for other products: "the waste itself needs to be able to be reused or recycled. For example, the thread left from textile production will be transformed to other products" (M4). M3, quoted above, talked about teaching the local community how to create value from factory waste. Another respondent in the medium-scored company indicated that the company itself figures out how to use the waste from other companies. They work with food processing companies, for example, and their consumer durables factory "renewed the energy from burning macadamia peels and use it in the ceramic factory instead of choosing LPG" (M5). However, none of the low-scored company managers mentioned the circular economy concept.

The products resulting from operations were also discussed as "sustainable" by many managers. Many respondents focused on two factors for green products, which are materials and product performance. They suggested that green products should be made of eco-friendly or recycled material, which leaves the smallest footprint on the environment. "We use recycled/reused material for our products" (M3). Sustainable products in high- and mid-score companies can also extend their life cycle by passing on their value to the next owner.

"A sustainable product is one which can be reborn (recycled, reused). This product shall carry its value to the next owner, although the value can be decreased" (M1).

"I think sustainable products are the ones that can be reborn. They can continuously be used and circulated. In other words, they are immortal" (M4).

By contrast, managers in the low-score company often seem to perceive green products as simply a matter of using proper materials. "Most of sustainability integration is used for product development such as eco-friendly materials. We have various products that incorporate sustainability" (M7). One of their sustainable products is furniture made from substitutes for stone and wood. This is good for the environment because they "do not need to harm the rock mountain and natural resources" (M7).

The examples above, particularly in the high-score company, illustrate that when discussion gets into more detail, all three pillars become evident. For example, in listing issues relevant to implementing these several aspects of sustainable operations, M1 included "social concern, especially for local people", "genuine and long-term CSR initiatives". Managers in the mid-score company similarly recognize more than a single pillar: "sustainable products should not only satisfy the designer and end users, but also the environment and society" (M5). Such thinking, however, was not as evident in the low-scored company. There, the topic of continuing value to users mostly came back to greenness. "Our company integrated sustainability into the operations by developing several products made of green material" (M8). Sometimes safety was also noted: "sustainable products are the ones that are harmless to the environment and users" (M7).

"Harmless", or non-harm, is a prominent theme in most Buddhist societies (e.g., [79]), and fundamental in companies that take sustainability seriously. "We need to be concerned about the pollution which can occur during production and its effect to the local community" (M1). Economic thinking among most Buddhist reform movements in Thailand, however, goes well beyond non-harm, to "pro-active right livelihood", contributing to society [20,80]. This, of course, is essentially the top level of the corporate social responsibility (CSR) pyramid popularized by Carroll [81]. At this top level, "corporate social responsibility therefore builds on the basic economic and legal contracts between corporations and society, and tries to go beyond these to further the common good" [82] (p. 13). This would seem to be inherent in strongly sustainability-oriented companies, and was prominent in the high-score company here. It tends to create more sophisticated CSR thinking that focuses on long-term goals.

One respondent, for example, stated that genuine CSR should not just benefit the company and cannot be a one-time thing, but rather must benefit mainly society. She

said, "real CSR activities refer to the ones which also contribute to society, not only for our company's sake. We are responsible for helping them to achieve their long-term goals. To me, just donating money cannot be considered real CSR" (M3).

One of the activities M3 has engaged in is to educate local people to transform the waste from her factory into raw material. These products can then be sold back to the company. This way, mutual benefit between the community and company was created.

Finally, continuous improvement is prominent in the high-score company, whereas it was not mentioned by respondents working in the low-score firm. The high-score firm managers generally cited a wider range of things that they do, but were nevertheless concerned that they need to do more, and that there are still issues that must be addressed.

"We have green products, but not totally sustainable. We integrate the concept in the design and use recycled/reused material. But we have not yet made them be able to pass the value to the others well. … Because we have not yet successfully offered comprehensively sustainable products, we focus a lot on our after-sale service because we want our customers to rectify the broken products instead of buying the new ones" (M3).

3.2. Policy and Corporate Culture

The literature reveals that top management leadership is crucial in initiating and executing sustainability in an organization [83,84]. All respondents agreed that the most effective way to initiate policies is to derive them from the CEOs and management's vision. When a CEO or top managers initiate a policy and act seriously, everything can be executed with less effort. For instance, "most policies came out from the CEO, who focuses mainly on sustainability and environment" (M6). "It is a top-down policy, everyone needs to follow. In my opinion, this is the most effective way to implement the concept of sustainability in an organization and integrate it in the operations" (M1). Of course, several things are needed for this to actually work well.

First, top management needs to truly understand the issues, and communicate them effectively. M3, from the high-scored company, explained that the policies given to her from the top managers were very concise and easy to understand. She explained two policies in some detail: (1) "waste to value" and (2) "waste to CSR". The "waste to value" policy, for example, is when a company aims to transform its waste into a raw material for new products either for themselves or other companies. Effective communication from top management is essential to convey the message throughout the organization. Some respondents believed that part of effective communication is that policies can be executed effectively by incorporating sustainability concepts into key performance indicators (KPIs). M5 from the company with medium sustainability level stated, "this is also implemented seriously through KPIs for every department". Such KPI policies were mentioned in both the high- and medium-scored companies, but not the low-scored one.

Second, top management involvement does not mean top management diktat. Bottom-up policy initiation is also common in companies with higher sustainability scores. Most employees have a mutual understanding of sustainability and its goals, and their input is welcomed. Such involvement from various levels of the company can be explicitly institutionalized into specific departments or committees, which often bring cross-functional expertise together. For example, "the parent company has formed a sustainability development board, which recruits its members from multiple business units" (M2). There may also be more specific teams, for example, an environmental unit. M3 in the high-scored company cited an example of this: "the Environmental Unit proposed [those] ideas for management's consideration". The medium-scored company also has an environmental unit that mainly focuses on environmental matters in the company. M3 also noted that "the latest policy theme is circular economy. They have this committee communicating everything about circular economy and try to execute things through various activities" (M3).

Policy initiation and communication in the low-scored company is a little bit different. The top management is involved, and respondent M8 mentioned that "our top managers have joined and mentioned about sustainability in the meeting and training, mostly about

the products, so that we can explain our customers". This was mostly telling employees what to say in describing products, not so much about getting employee input. M8 explicitly said "All policies are top-down, which is effective". The company with low sustainability concern lacks any particular unit working solely on sustainability: "no, we don't have one" (M7). This makes it more difficult to get input from employees at all levels.

Another possible way to initiate sustainable operations is to integrate it directly into the business model. This way, the daily business routine will automatically turn to sustainable operations and will be naturally communicated to employees without much additional effort. One respondent in the mid-level company said, "we hired locals and taught them various skills" (M5).

"The business model itself is very socially concerned. The goal of the organization is to create a job for the locals, as well as to educate and train them to be skilled workers. Therefore, the policies about social attributes are not only a top-down policies, but also an integration to our daily business routine" (M4).

The business goal of helping society by providing good jobs is not unusual in Thailand, and, for example, is common among owners and managers in Thailand's Buddhist reform movements (e.g., [80,85]). It is also prominent elsewhere among strongly spiritually-oriented small business owners [86]. The desire to serve other stakeholders, both within and outside the company, is characteristic of the servant leadership style in a wide range of contexts [87]. The leader fosters the organizational environment, "the culture that people in the organization have the same vision of sustainability and practice with such goals in mind" (M2).

The results from the company interviews indicate substantial variation in how well sustainability is integrated into the organizational culture. Organizational culture is the collective shared assumptions and behaviors in organizations (e.g., [88,89]), and as many of the quotes indicate, companies which score high on sustainability demonstrate strong shared understanding and behaviors specifically regarding sustainability issues. What they talk about usually broadly addresses sustainability issues, and is mostly directly related to how they structure operations. Sustainability and its components, such as CSR, are not separate, somewhat unrelated activities.

To a manager from the low-scored company, however, sustainable corporate culture is mainly making sure everyone is aware of the need to "focus on the impact of our product to the environment" (M7). In addition to understanding sustainability to mainly mean 'green'; they do have CSR activities, but these seem to be somewhat of a separate issue from operations. It may refer to helping the community in some way, including renovating a school in a rural area, planting trees, and various forms of donation. "Our company has several CSR activities which we can choose whether to participate, such as forest planting and donation activities" (M9). These activities are mostly optional, one-time activities. It is difficult to get long-term impact, either in terms of building corporate culture oriented toward three-pillar sustainability, or actually achieving long-term impact benefitting the local communities.

Overall, then, internal manager interviews clearly indicated that these companies implement sustainability to different degrees, as was initially implied by their scores on the DJSI assessed from website material (Table 1). After the interviews, DJSI was scored for each company again, this time based on interview content. Occasionally, an issue covered in DJSI indicators did not seem to be implemented quite as thoroughly as the website indicated. On other issues, the interviews suggested somewhat more than was evident from the website. However, scores on individual indicators were not radically different, and any raising or lowering of the score tended to roughly even out. The overall scores were not substantially different, and the slight changes were far too small to change the rankings on sustainability implementation (Table 3). RQ2 above can be answered positively—i.e., information publicly available on websites does seem to be sufficient to assess how extensively companies are implementing three-pillar sustainability.

Table 3. Comparing DJSI with re-scoring after interviews.

	Based on Website		From Interviews	
Company	**Weighted Sum**	**Equal Weights**	**Weighted Sum**	**Equal Weights**
C1 (high)	95.01	93.73	91.66	92.03
C7 (mid)	72.03	76.87	70.11	74.37
C5 (low)	54.35	54.33	54.35	54.33

3.3. Brand Image in the Consumer View

Good performance on any pillar can contribute to a favorable brand image among those consumers who value some aspect of sustainability [11,12,28,30,32,33]. However, to the extent that consumers perceive different degrees of sustainability discussed above, brand image should show some differentiation. Table 2 indicates the three respondents interviewed from each company. As already noted, the respondents did roughly follow the rankings based on websites and internal company interviews, although it is not a perfect mapping. There seems to be an important role for marketing and corporate communications in conveying the company's sustainability efforts.

The literature has occasionally demonstrated the need for good communications as well as actual internal implementation, so that consumers are aware of company efforts [90–92]. This issue was not a primary theme in our research, but the interviews contained hints of it consistent with the imperfect mapping from internal sustainability to brand image. In particular, the medium-scored company's marketing communications have highlighted their local social engagement for several decades. "I have also seen from TV that they help the locals since I was a child. So it is natural for me to assume that this brand is highly ethical and sustainable" (C4). This seems to have solidified consumer perceptions of sustainability related to the social pillar. The marketing communications of the high-scored company, which actually has stronger sustainability implementation, do point out sustainability issues, but tend to focus more on the products.

The product focus is somewhat effective at communicating sustainability. Consumer thinking about sustainability issues mostly seems to start with the product. It often focuses initially on the environmental pillar, although many (not all) consumers go well beyond only green issues. Most build their green brand image through the product attributes; for example, products made from recycled materials or products that consume fewer natural resources compared to competitors. One respondent who buys products from the top-scored company said, "I think of them as a green brand because their products consume much less water compared to other options available" (C3). Sometimes knowledge comes from media communications, "I have seen them (CSR activities) from social media and TV, but mostly social media" (C2).

Sometimes first impressions come through word-of-mouth; the respondent who buys products from the mid-ranked company and said she has seen its social involvement on TV since childhood, and implied that she partly built the green component of brand image by listening to her father, "My Dad told me that they are concerned about the environment" (C4). This initial focus on product greenness also helps the brand image of the low-scored company, which, according to the discussion above, mostly views sustainability as greenness, and offers some green products. One respondent who buys products made by the low-score company said:

"I wouldn't say they are a green brand, but yes, they do have a bit of green image to me. I think I built that green brand image through their products. I spent a lot of time in their showroom, and I found many of their products are made of eco-friendly materials" (C7).

Customers of the high- and medium-scored companies, however, go well beyond just thinking about the environmental pillar. As with the green pillar, they also build their social brand image around products, as well as the brand story and CSR initiatives. Some customers may build a social brand image when they know their money will go to help the local community, such as "The product itself is made by local tribes with local materials'

(C2). Many know the wider brand story. Of course, the story has been communicated that it is the social brand since the beginning" (C6). Awareness of CSR initiatives also contributes. "I saw they have done a lot of CSR activities, so it seems natural to me that their brand is related to social image" (C2).

For some respondents, the environmental and social pillars are intimately connected—they extrapolate that green must be socially responsible, or they may reason in the opposite direction: "I have seen them helping the local community and the environment so I assumed that their brand is green" (C6). Such recognition of interconnections among the pillars is especially important for respondents who value the economic brand image, which is less likely to be directly attached to the brand's products. For example, consumers might think that the brand has a sustainable economic image because the products are made by local people. "It is very obvious that they are a local brand that stimulates the economy in many ways" (C3). Some consumers explicitly consider all three pillars together, having created a three-pillar image from their experience with all angles of knowledge about and interaction with the brand.

"I have known this brand since I was a kid, and I saw them on TV doing a lot of activities that are good for local society, implying that they also help stimulating local economy. I also bought their green products. So I consider this brand sustainable". (C4).

A social (and sometimes economic) brand image, however, was only cited as important by customers who purchase the brands with high and medium sustainability scores. The low-scored company, which mainly views sustainability as the green pillar, tends to get similarly-minded customers who focus mostly on green brand image.

Brand image essentially connects the company's internal efforts toward sustainability to perceived advantages for customers. The respondents were all concerned about product quality to at least some degree, and strongly sustainability-oriented customers tend to link sustainability to product quality. They feel that a sustainable brand is likely to offer good quality products because the brand's and company's intentions are good. For example, one respondent who purchased from the high-scored company said that,

"Because they are concerned about sustainability, it implies that the product quality should be good. They care to invest in sustainability, so they are likely to invest in the product development as well" (C3).

On the other hand, customers who buy products from the low-scored brand do not necessarily see this linkage between sustainability and quality. "I think sustainability has nothing to do with product quality" (C8). These customers, however, are similarly concerned with product and service quality, even if they do not connect quality to the company's sustainability efforts. For example, "I think when I contacted their after-sales service or communicated with the salesperson, I can feel that they are quite ethical and care about customer" (C8).

Beyond actual product quality, a sustainable brand image itself can contribute to satisfaction among sustainability-oriented customers [37,93,94]. Many respondents referred to moral and emotional fulfillment, consistent with some literature demonstrating the emotional component of, e.g., green brand image [55]. (Note that genuine greenness is perceived positively, but greenwash has a negative impact on brand image [95]). Even customers of the low-scored company feel that purchasing sustainable brands somehow contributes to society. For example, respondent C7, who is mainly focused on green in thinking about sustainability, and does not see strong implications for product quality, nevertheless finds emotional value in buying the company's green products. "I feel like I can contribute to world sustainability by buying such a brand; it makes me feel like I am a good person". Similarly, C9 said, "I feel less guilty when spending a lot of money to consume things" and "I feel good to help the planet". Respondent C6, who views sustainability more broadly than just green, cites sustainable brand image as an important factor in satisfaction. "[It] depends on products. If it is special, not a basic need, it [sustainable brand image] is necessary because we buy satisfaction, and sustainability is one of my satisfactions".

Research indicates that sustainability is among the relevant purchase criteria for many consumers, although not always the most important (e.g., [96]). In our interviews, sustainable brand image, especially aspects related to emotional fulfillment, was frequently cited as a driver of purchase intention for those who value sustainability at medium and high levels. It contributes to some extent even for customers of the low-scored company. Sustainability "helps me make a purchase decision and I can pay even more to buy those brands" (C2). Respondent C5 mentioned that, "If the product is not cheap, I would consider it a splurge, so fulfilling my emotional needs is necessary". For customers who value sustainability somewhat less, such as C8, only green image matters because she primarily focuses on the green pillar. She said, "green image of the brand might lead to purchase decision, the others are optional".

The willingness to pay more, just noted, was common in the interviews. This is consistent with other research demonstrating that sustainability-oriented consumers are willing to pay more for products with a strong sustainability image, provided they are also perceived as high quality (e.g., [56]). All respondents are willing to pay a premium if the brand is associated with sustainability; how big a premium depends on the importance of sustainability to them. Even customer C9, who has relatively low sustainability concerns, and buys products from the low-scored company, is still willing to pay up to 10 percent more for sustainable products (mostly green in this perception). For respondents who value sustainability highly, the premium can be substantial, up to 50 percent more compared to unsustainable brands. Customer C6, for example, was quite explicit about the decision criteria and willingness-to-pay:

"When I purchase such a product, I weight product [characteristics] at 30 percent and 70 percent for the brand. I can actually go up to 50 percent more [in price] for sustainable brands if I can afford it".

How much sustainability do customers expect? These respondents all believe that sustainability is a required practice, and the discussion has already noted several times that even customers of the low-scored company expect some, usually greenness. Eight out of nine respondents implied that integrating all three pillars is preferable, but not mandatory. Most are willing to accept that one or two pillars is enough. For example, C8 said "Not completely necessary for three things. Only one makes me feel good and can be considered sustainable". However, one respondent with high sustainability awareness thinks it is important for a company to have three pillars for its brands to be considered sustainable. "To me, I think a brand needs to have all three pillars to be a sustainable brand" (C6). Many tend to view one or two pillars at present as an intermediate stage in moving toward more sustainability. Customer C3, who has high sustainability consciousness, explicitly suggested that one pillar at a time will naturally progress toward three-pillar sustainability eventually:

"Not really, I think only one is enough. Of course, it is good to incorporate three, but it is much more possible if each company is responsible for one pillar. Eventually, they will combine into three pillars in the larger scale anyway".

The final two quotes here, from C6 and C3, suggest the long-term trend. At the current stage of market evolution, nearly all of the respondents would like to see all three sustainability pillars, but most are willing to accept only one or two. C6 however, already wants three-pillar sustainability, and C3 believes that the individual pillars will eventually merge to include all three. Many companies already implement three-pillar sustainability, and once they are somewhat better at communicating that to the market, the majority of sustainability-oriented customers are likely to move toward C6's desire for a brand image including all three.

4. Discussion and Conclusions

A summary of the RQ that guided this work illustrates a key theme here: there is a need to focus more on three-pillar sustainability in scholarly research on sustainable brand image. This is similar to what several observers have recommended recently [13]. Much

research in marketing examines only a single sustainability pillar [54]. Our research enriches the discussion by demonstrating that many companies are implementing full three-pillar sustainability, but that they do so to different degrees. The companies with higher levels of sustainability, measured by DJSI criteria, tend to integrate all three pillars into their practice and develop a sustainable culture internally. For big companies at least, their degree of sustainability implementation can be roughly determined from public information on their websites (RQ1). There is a range of such implementations. Lower-scored companies are involved in sustainability, but not as extensively, and not comprehensively across all pillars. Nevertheless, if they are concerned with the issue, there seems to be some effort to cover the three pillars.

Internal discussion with managers confirms the relative degree of sustainability implementation (RQ2). It also uncovers additional detail, not least of which is that, in practice, companies with lower scores tend to focus on one or two pillars, particularly on green or CSR attributes (such as green with C3). The interviews demonstrated this, although the DJSI scores on individual pillars may not be entirely useful for distinguishing when a company focuses more on one or another pillar. The substantial interconnection between pillars can mean that a company focusing on green, for example, is likely to have some action on others, which would be reflected in what the website reports. They could still gain some points in a content analysis on indicators representing the other pillars.

Thus, information to assess the degree of sustainability implementation can be derived from publicly available information, such as websites and news. It may be somewhat tedious to carefully map all the information to the DJSI criteria, but it is not excessively difficult. The in-depth interviews here demonstrate that such publicly available information reflects internal operations fairly well in a general sense. As a research issue, then, content analysis of such information is sufficient for getting a reasonable overview of how well companies implement sustainability, which confirmed RQ2. Of course, inside interviews would still be needed for understanding various implementation details, as well as the corporate culture behind how companies operate in sustainable modes, and whether they have any particular focus on specific pillars.

The most important issue in this study is about how internal sustainability efforts directly relate to a favorable brand image among the companies' customers, which was RQ3. Generally, companies implementing sustainability more strongly have a stronger sustainability brand image. While not a perfect mapping, consumer perceptions of sustainable brands roughly match the companies' sustainability efforts. The slight discrepancy between DJSI scores and consumer perceptions is easy to explain by how well corporate communications are able to convey knowledge of sustainability initiatives. Consumers perceive sustainability efforts through the companies' products and CSR initiatives which are communicated publicly. They tend to build sustainable brand image from their own experience with the products, and from marketing and PR activities they see in various types of media.

Consumers are aware of three-pillar concepts, and prefer to see them implemented by the companies whose products they buy, although most are willing to accept that at the moment, the companies might not yet be doing all three. Previous literature has already (somewhat infrequently) suggested that even with a focus on, for example, green, consumers may well be concerned with aspects of the other pillars [13,97,98]. This is implied in the interconnectedness of the pillars [7], and a few consumers in our study already feel that three pillars are necessary for true sustainability. Many companies are already implementing the three pillars into their business practices and policies. Once they communicate this more effectively, consumers will not need to accept brand images that do not clearly deliver all three. Some recent work has already discussed how to implement three-pillar sustainability into product design [99], and a number of studies have confirmed the importance of communicating about various sustainability issues [90–92].

These brand image results reflect the current partial fragmentation of sustainability segments into individual pillars for many consumers. They tend to perceive companies to

be strong on environmentalism, or on CSR. (The economic pillar was not as strong in this study). This fragmentation, however, is likely to dissipate. Nearly all of the respondents here were aware of three-pillar sustainability and see interconnections among the pillars. A few already consider comprehensive sustainability rather than an individual pillar in their brand choice, and more expect the segments to gradually merge in the future. These issues all have implications both for research on conceptualizing how sustainability implementation works in the market, and for managerial practice.

4.1. Conceptual Implications

The first observation is that empirical research on sustainability as related to brand image has largely focused on a single pillar, usually the environmental or social one. Many companies, however, seem well aware of the need for three-pillar sustainability, and are implementing it. Industry, then, is somewhat ahead of academic research in sustainability thinking and action, if not necessarily in conceptualizing how this comprehensive sustainability works in the market. Conceptual discussions are available, but there is a shortage of empirical work to build an understanding of the more comprehensive view of sustainability beyond individual pillars [13]. For most large companies, the first step in filling this gap is relatively simple, since publicly available information seems sufficient to give a basic overview of what they do. Research can examine how well the degree of sustainability implementation correlates with brand image. Of course, many things contribute to the image, but sustainability should be one of the major factors in segments that value sustainability.

Here, the second key observation is that, just like companies, consumers are also aware of three-pillar sustainability. Some evidence has suggested that many consumers think of a single pillar, often the environmental one (e.g., [100]). Our data indicates that consumers do think of all three, even if many do not yet factor them all into their perceptions of brand image or product choice (which depends substantially on brand image). Some already do, but in general, we can still see specific pillar segments, such as consumers who value greenness or strong CSR. However, nearly all the respondents here already see the interconnections among the pillars. Many feel that the integration of the separate pillars into a more comprehensive whole is the long-term trend. An extension of the research just noted needs to examine how well three pillars are factored into companies' product design and marketing communications.

4.2. Managerial Implications

Sustainability is a strong component of a favorable brand image to many consumers. Until now, the preference among these sustainability-oriented consumers for 'sustainable brands' has largely focused on one pillar, usually either environmental or social. In other words, sustainability market segments were initially small and fragmented. It is well known now that they are growing, but in addition, the different pillar segments are beginning to merge. In the long run, companies will not be able to claim that they are sustainable by focusing mostly on the green, contributing to social development, or helping build local economies. 'Sustainable' to consumers is beginning to become a comprehensive three-pillar concept.

Figure 2 illustrates what is going on in the market. The three pillars started as small separate market niches. Companies could focus on one or the other, and do well in it (with actual good performance on the pillar), but did not necessarily have to worry about the other pillars. Many companies, however, are now aware of the long-term trend. The segments are growing, and they are merging. Eventually, a comprehensive sustainability segment will become the mainstream segment.
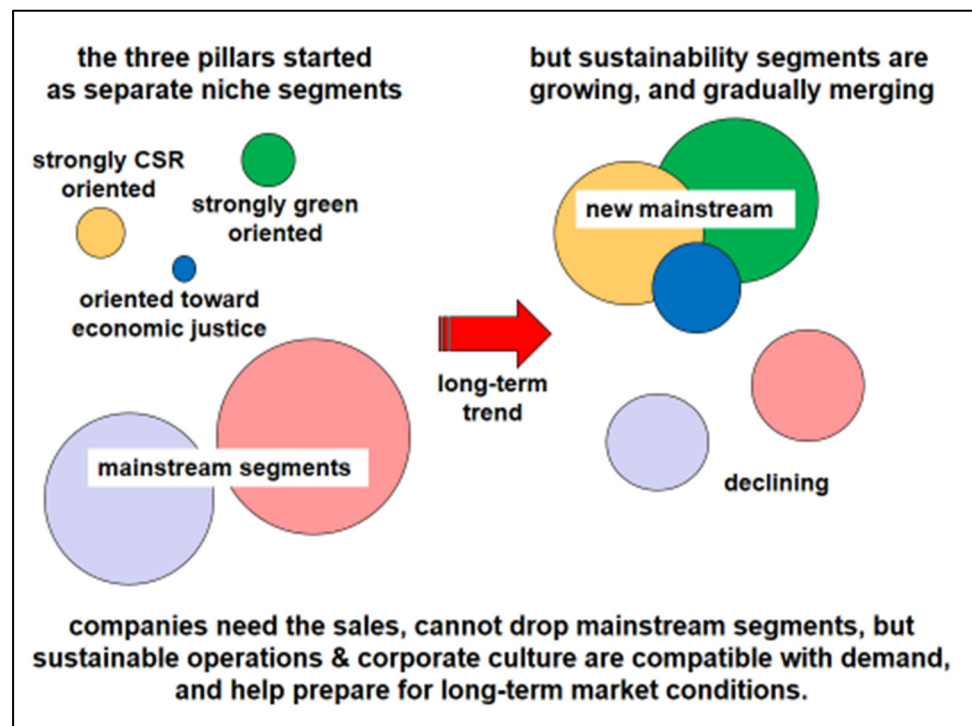
Figure 2. Evolution of sustainability segments. Source: authors.

Early in this process, the mainstream segments were not necessarily concerned with (any pillar of) sustainability. Some literature suggests that these consumers are not always willing to pay for green, or social (e.g., [101]). Most respondents in our interviews are willing to pay a premium because sustainable product characteristics and sustainable company operations have value to them. Some segments of the market, of course, remain not very sustainability-oriented, but there is little conflict except at the low end among strongly price-oriented consumers. Companies known for sustainability now are gaining the perception that they are concerned about high product quality. Consumers who value quality may not care about the greenness of the product or its social inclusiveness, but they may be willing to pay for the quality. Sustainability does not harm brand image in mainstream segments, even if it may not help it.

4.3. Conclusions, Limitations, and Future Research

One obvious limitation of this study is that it only examined large Thai companies which mainly sell household durables. As noted, some big companies do sell these products, but are not in the sample because the product category is a small part of their overall operations. They are likely to show similar patterns, but future research would need to confirm that companies in other industries approach sustainability similarly (or not). Further, some companies that are mainly in this product category do not yet do much about sustainability and were not examined here. Anecdotal evidence (from the authors' occasional executive seminars) suggests that they still mainly focus on the big mainstream segments in Figure 2, and have not assessed the long-term trends very thoroughly. Likely, they will need to catch up on their sustainability image eventually or be trapped in declining segments that may not support their current sales volume. Future research on how easy or difficult it is to play catch-up on these issues is needed.

In addition, some findings may not be applicable to small-scale companies. Public information for large companies is widely available on their websites and social media, and many consumers are aware of their brands. Small companies usually do not have very extensive websites or social media sites, so the content analysis used here to score companies on the DJSI might not work. It is also unknown whether the much more limited

workforce would allow implementation of comprehensive sustainability anyway, rather than requiring more focus on individual pillars. Most small companies would also have a smaller base of consumers who know the brand.

We did not explore marketing communications in much detail, but it was clear that the large companies have at least some, and often have been using it for many years. There were already indications that communications can have some impact on how aware consumers are of internal sustainability efforts. Future research needs to examine how marketing communications can support full three-pillar sustainability. In addition, small companies usually have much smaller communications budgets, so future research also needs to examine how small companies can use such communications if they opt for more comprehensive sustainability.

Finally, these findings might not represent other types of products well, especially for low-involvement goods where consumers do not think very much about the products. Consumer durables here are relatively high-involvement, where consumers think somewhat carefully about their product choices. This level of conscious assessment of product characteristics is rarely present for low-involvement products (e.g., [102,103]). Possible future research should investigate the impact of marketing communications on sustainable brand image in such low-involvement cases.

Clearly small-sample qualitative studies cannot demonstrate a phenomenon in general. However, this study does demonstrate that the assertions in the three RQ hold in this context. Companies are engaged in three-pillar sustainability, there are different levels of implementation, consumers use sustainability in constructing their brand image, and the market is moving toward a full three-pillar understanding of sustainability. In Siggeldow's [104] terminology, this qualitative research demonstrates that these three RQ are 'plausible'. Thus, the research points out paths that need to be explored as orientation toward sustainability continues to grow among companies and in markets.

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Article

Enhancing the Prospect of Corporate Sustainability via Brand Equity: A Stakeholder Model

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Abstract: Given that brand equity is increasingly recognized as a measure of corporate sustainability, in the present study, we examine the relationships among stakeholder benefits, stakeholder trust and brand equity. Derived from a sample of 433 stakeholders from 115 companies in Thailand, the findings indicate that functional benefits improve brand equity indirectly and directly via stakeholder trust and psychological benefits. On the other hand, psychological benefits improve brand equity indirectly and directly via stakeholder trust. Psychological benefits create more direct, positive effects on brand equity than functional benefits. The effects of functional benefits on brand equity are enhanced through psychological benefits. Directions for future studies and practical implications are also discussed.

Keywords: sustainability; brand equity; sufficiency economy; sustainability performance; stakeholders; trust

1. Introduction

Since the popular Triple Bottom Line (TBL) concept [1] is considered as a sustainability output [2] and spending on the society and environment alone does not guarantee sustainable corporate success, brand equity has been increasingly recognized as an alternative measure for corporate sustainability in the literature [3,4]. Since brand equity is usually determined by a range of stakeholders [5–7] that are pivotal to long-term, sustainable corporate success [4], it is considered as more effective in measuring sustainable corporate success. As a matter of fact, business organizations deliver the Triple Bottom Line outputs in the social, environmental and economic spheres to satisfy an entire range of stakeholders, which eventually leads to enhancing their corporate brand equity and thus sustainability. Indeed, long-term, sustainable success is dependent on how successfully stakeholder requirements are fulfilled [8].

Although scholars recognize the important role of stakeholders in developing brand equity, the causal relationship between the benefits the stakeholders receive and brand equity is relatively unknown [9], given that previous sustainability studies generally address antecedents of brand equity as CSR and green value [10–13] and relationship quality such as satisfaction, commitment, identification and trust [9,10,14–16].

In terms of theoretical contribution, (a) while the theory of corporate sustainability [4] recognizes the association between stakeholders and brand equity and (b) the theory of organizational resilience [17] recognizes the critical role of stakeholders in ensuring organizational resilience, both theories do not address stakeholder trust, a critical factor found in the corporate sustainability literature, e.g., [3,18]; the present study extends the theories by attempting to examine the relatively unknown relationships among stakeholder benefits, trust and brand equity. We used the following research questions to guide the development of our model for testing.

1. What are stakeholder-relevant factors that lead to improving brand equity?
2. How are these factors related?
3. Do the factors create an impact differently among different groups of stakeholders?

Corporate sustainability at the SME level has become more relevant nowadays [19] as the SME sector is one of the key economic drivers at both national and international levels [20]. The Thai SMEs in the present study are ideal samples to examine relationships among stakeholder benefits, stakeholder trust and brand equity, as a significant number of them officially adopted a corporate sustainability concept [21], known as the Sufficiency Economy Philosophy (SEP hereafter). SMEs that adopt the SEP concept are responsible for delivering public benefits to a broad range of stakeholders, including customers and employees. More importantly, sufficient evidence has indicated that they delivered competitive performance outcomes [21–25].

The SME samples in the present study were selected from a list of SMEs that received SEP awards or participated in a national SEP business competition, comprising 115 companies across the country. They came from various sectors, ranging from food, construction and hospitality.

Based on our literature review, we begin with a background on corporate sustainability, stakeholders, stakeholder benefits, stakeholder trust and brand equity, followed by a structural model and hypotheses. We then explain the methodology used to test the hypotheses and discuss the results. Managerial implications, conclusions, limitations and directions for future studies are also discussed.

2. Literature Review

Corporate sustainability starts with a sustainability vision or a central mental picture of a desired future for the organization [4,26]. A sustainability vision contains stakeholder satisfaction imagery, as the more imagery about satisfying stakeholders contained in a corporate vision, the more enhanced the corporate sustainability prospect [26], endorsed by a prior study [27]. More precisely, a shared sustainability vision, as the starting point of the corporate sustainability process, leads to improving brand equity [4]. Therefore, stakeholders essentially play a fundamental role in ensuring corporate sustainability from the start. In the literature review below, background literature on corporate sustainability, stakeholders, stakeholder benefits, stakeholder trust and brand equity are discussed.

2.1. Corporate Sustainability

Corporate sustainability (CS hereafter) has been differently defined. Initially, CS mainly referred to a balance of financial, social and environmental performance outputs of a firm [28]. CS then extended its scope to cover organizational capacity to deliver strong performance, endure difficult times and maintain a market leadership, creating long-term values for stakeholders [29,30]. These values can be both financial and non-financial values such as share price [31], relationship quality, reputation and trust [31–33]. Empirically, CS studies have discovered a strong relationship between sustainable business practices and sustainability performance outcomes such as organizational capacity to maintain a market leadership and enhance brand equity [24,34,35]. However, to obtain these sustainable performance outcomes, a firm is required to firstly provide benefits to fulfill the needs of relevant stakeholders. Indeed, necessary requirements of the firm cannot be fulfilled unless the requirements of relevant stakeholders are fulfilled [36], emphasizing the importance of a stakeholder-focused philosophy in running a sustainable firm.

In the present study, we define CS according to the theory of corporate sustainability [4] (p. 3) as "the leadership and management approach that a corporation adopts so that it can profitably grow and at the same time deliver social, environmental and economic outputs".

2.2. Stakeholders

As part of the society, any business should advocate a better future for the society via its practices [37]. Such a corporate mentality benefits stakeholders in the society, and thus

improves the prospect of corporate sustainability. Satisfied stakeholders will strengthen and defend the reputation of the business [38,39].

Stakeholders are pivotal to ensuring long-term, sustainable success [4,40]. Endorsing this view, the theory of corporate sustainability [4] postulates that businesses adopting sustainability practices are sustainable. These sustainability-oriented practices are resilience development, perseverance, moderation, geosocial development and sharing, all of which emphasize the balanced demand among a whole range of stakeholders by fulfilling their various needs.

The important role of stakeholders is also underlined by the theory of organizational resilience [17]. To be resilient, the theory asserts that organizational members who share the stakeholder satisfaction imagery perform a stakeholder-focused practice to fulfill stakeholders' needs. Such a fulfilment leads to, among other things, a long-term stakeholder relationship. It is this trusted relationship that enables the organization to have organizational adaptive and buffering capacities to continue to deliver competitive sustainability performance even in a time of great disruption [17].

Stakeholders are anyone who is directly or indirectly influenced and/or will be influenced by a business' operation [40]. They include the society, the environment, competitors and future generations. Endorsed by the stakeholder theory [40], such a notion provides thoughts and practices for the business to survive and thrive in the long run, despite great difficulty [41]. Stakeholders' influence dictates corporate responses because the influence shows the potentially cooperating or threatening power of each individual stakeholder, sharing mutual interests. The stakeholder-focused sustainability practices offer benefits to firms in different ways such as increasing stock value [42], obtaining proactive leadership [43], gaining reputation [31,32,34], enhancing trust [44] and serving customer demands and expectations [43]. As a result of the stakeholder-focused sustainability practices, stakeholders can receive different types of benefits, which are discussed next.

In addition, prior research has found that customers and employees are key stakeholders who could strengthen brand equity [45] in forms of employee-based brand equity [9] and customer-based brand equity [46], respectively. Consequently, the present study focuses on employees and customers as key stakeholders.

2.3. Stakeholder Benefits

Embracing a stakeholder-focused approach, firms understand stakeholders' needs and deliver benefits in response to their needs accordingly [47]. The consequence is corporate reputation and brand equity. Regarded as functional and emotional benefits, corporate brand is central to sustainable enterprises [48].

In practice, the attainment of corporate objectives can impact or be impacted by stakeholders [40]. To be sustainable, the firm should respond to the stakeholder demand so that potential negative pressures from a wide range of stakeholders can be avoided, and to create a better society [36,49]. More importantly, different aspects of sustainable business practices impact or are impacted by a different group of stakeholders in various ways, as each group of stakeholders demands different things. For instance, to gain a positive reputation, a firm needs to deliver reliable products with a stylish design to customers, whereas it has to offer a reliable contract to suppliers. A firm also needs to demonstrate a reliable financial report to its loaner or shareholders.

Obviously, stakeholder benefits play crucial roles in creating a relationship between a firm and its stakeholders. A firm should first deliver benefits to its stakeholders in order to gain benefits from them in return [33,50]. Thus, to achieve advantages from brand equity, a firm needs to firstly provide benefits to customers and employees, considered as main contributors to brand equity. More specifically, the literature in the past has found that perceived different types of benefits could lead to trust, which consequently leads to brand reputation and brand equity [33,47].

Benefits from corporate social responsibility practices can be categorized into various forms: non-monetary vs. monetary benefits; intangible vs. tangible benefits; hedonic vs. utilitarian benefits; or intrinsic vs. extrinsic benefits [51,52].

To simplify the concept of benefits for discussion, two main groups of benefits are discussed: functional and psychological benefits [33]. The relationship between the two types of benefits leads consumers and employees to have different levels of trust and brand equity [10,53,54]. Functional or utilitarian benefits are extrinsic and tangible benefits relating directly to products and services. They include, among other things, monetary benefits, welfare and facilities. On the other hand, psychological benefits are intangible or intrinsic benefits, referred to as happiness or well-being, that are considered as sustainability performance outcomes [21].

Psychological benefits can be divided into two levels: hedonic and eudaimonic. Hedonic benefits are concerned with a state of mind that describes feelings towards a life situation of an individual [55]. They can be positive or negative mood stages, dependent on whether the individual is satisfied or dissatisfied with his/her life [55]. On the other hand, eudaimonic benefits are concerned with the highest self-realized state of mind [55]. Deeply, such benefits are concerned with individual values that explain an eventual need of individual human being, ranging from self-esteem needs [33] to self-actualization needs of individuals [55].

According to Bhattacharya et al. [33], stakeholders perceive the corporate social responsibility value only when they perceive tangible functional benefits that consequently lead to psychological benefits. Similarly, Vargo et al. [52] found that a high level of satisfaction toward a firm will be achieved when customers are able to control utilitarian (known as functional) benefits that are supported by psychological benefits.

The empirical literature in the past has suggested that brand equity is developed from both functional and experiential components [56]. The functional components represent more objective, utilitarian, intrinsic and tangible aspects of the brand that satisfy consumers' functional needs. Experiential components, on the other hand, represent more psychological, sensory pleasure, cognitive stimulation and social needs aspects of the brand [57]. Past studies also found that recognition benefits have a direct effect on brand equity [58].

Accordingly, we define functional and psychological benefits in the present study as the degree to which a chosen firm is perceived by a stakeholder to have offered him or her the following benefits: functional benefits and two levels of psychological benefits.

Although strong evidence has indicated that brand equity is developed from perceived trust of relevant stakeholders [6,14], few studies have thoroughly identified the antecedents of trust that could lead the firm to gain brand equity from a range of stakeholders. We thus introduce stakeholder trust in the next section.

2.4. Stakeholder Trust

Stakeholder trust plays a fundamental role in ensuring corporate sustainability [4] and resilience [17]. Developing the stakeholder trust signifies a new paradigm of corporate sustainability that challenges leaders and managers to direct their attention toward something more than just stakeholder satisfaction [18]. Stakeholder trust is indeed a primary driver for sustainable business excellence.

Trust takes time to establish with several interactions [18]. It represents relationship quality among participating entities. It encompasses internal relationships within an organization and external relationships with stakeholders [59]. In essence, organizational trustworthiness means a virtue or a set of virtues held by organization members, indicating its worthiness to be trusted [2]. In practice, these virtues are manifested in sustainable enterprises in the form of organizational values [4].

In the corporate sustainability literature, stakeholder trust is a key driver for sustainability performance [3]. A high level of trust among stakeholders via building long-term relationship and goodwill leads to innovation, staff engagement and quality, which leads to improving long-term stakeholder and shareholder values, customer satisfaction, financial

performance, brand and reputation [3]. Sustainable corporations nurture trust among stakeholders as they work together to enhance the prospect of sustainability for all [60].

A lack of trust among stakeholders also adversely affects corporations directly and indirectly [18]. The direct impact may come in a variety of forms. Within the organization, lack of trust among sequential manufacturing units may pressure the firm to maintain large in-process stocks to absorb manufacturing failures, increasing about 50% of the total manufacturing costs [61]. In reference to suppliers, the firm may be under pressure to spend to retain sufficient buffer supplies for crude materials and run its own support functions, which restricts its flexibility and increases its costs.

Indirect impacts can come from stakeholders such as shareholders, customers and employees who do not trust in management's reports, which reduces customer loyalty and shareholders' willingness to invest, and raises skepticism among workers who are anxious about their jobs. Thus, their creativity and innovation are limited. Such lack of trust ruins the collective intelligence that supports future survival and results in wealth, finally decreasing the prospect of sustainability even further.

On the other hand, stakeholder trust, if well managed, creates positive impacts on corporate performance. Trust is one of the key components of relationship quality [33]. To build and nurture stakeholder trust, management must always strive to build quality relationships [18]. A firm's trusted relationships with stakeholders potentially support the firm to be more competitive in its industry [62]. Moreover, such a trusted relationship also serves as a critical precursor of stakeholder value. Recently, more and more scholars, e.g., [63], are becoming more attentive to the critical function of stakeholders as brand value co-creators. According to scholars [64,65], brand value is developed collectively via interactions among the firm, all stakeholders and its brands. Indeed, the firm's corporate brand is shaped by stakeholder relations [66].

In the present study, we define trust as a view of faith in trustworthiness and integrity between exchange partners [33,67]. Trust can be articulated in terms of stakeholder hope that a firm will accomplish what it pledges, including perceived positive outcomes, safety, altruism and not acting opportunistically towards stakeholders [33,67,68]. Trust is likely to be more subjective beliefs than hard facts [68].

2.5. Brand Equity

Organizational brand is a consequence of a sustainability vision and fundamental to corporate sustainability [4], particularly when competing on tangible benefits is no longer sufficient in today's fierce market. More specifically, brand equity is increasingly considered as an outcome of corporate sustainability, as it reflects corporate reputation and power in the competitive market and impacts customer perceptions and behaviors, and financial performance [69,70].

In the sustainable enterprise literature, corporate responsibility and moral obligation for a broad range of stakeholders have been emphasized [3,71,72]. It is assumed that the moral responsibility and commitment lead to a high level of stakeholder satisfaction, strong brand integrity and reputation and solid financial performance, in the process improving long-term value for a whole range of stakeholders. This is the reason sustainable enterprises give priority to multiple stakeholders by trying to maintain a long-term, trusted relationship with them via recognizing their needs and concerns [72,73]. This strong bond is built upon mutual trust, respect and sincerity to avoid social crises and improve the society [72].

Aaker [7] explains that brand equity increases a firm's value in many ways. Hsu [10] suggests that a value a brand name incrementally adds to a product determines brand equity, defined as a combination of brand liabilities and assets, related to the brand name and symbol [7]. It can add up to or deduct from the value delivered by a service or a product. Essentially, corporate reputation perceptually shows the firm's past actions and those in the future. In the end, it is the overall appeal of the firm as related to stakeholders in relation to its competing counterparts [74]. Finally, some scholars [11,75] have indicated that it is a brand's total value that determines brand equity, the model of which comprises

brand name awareness, brand loyalty, brand quality and brand associations, quality and other commercial brand assets [76].

Previous studies revealed that antecedents to brand equity of sustainable firm include satisfaction and trust [10,77], brand credibility and brand involvement [16], perceived brand quality [12], corporate social responsibility [10,11,78], green brand image [6], green brand satisfaction [14] and brand experience [79]. More recent studies found that consumers perceive corporate activities, in the for-profit and non-profit sectors, through interactions with both social and traditional media of integrated marketing communication campaigns, which in turn leads to perceived brand trust and brand equity [80–82].

Brand equity is defined in the present study as "incremental utility or total value added to a core product by virtue of its brand name" [10]. In addition, brand equity is evaluated by perceptions of individual stakeholders regarding the value of the brand [83]. Thus, brand equity is evaluated by a firm's stakeholders in the present study.

3. Conceptual Model and Hypotheses

Based on the literature review above, the following conceptual model is derived (see Figure 1). We posit that to gain brand equity, a firm needs to deliver both functional and psychological benefits as values to its stakeholders via its corporate sustainability practices. In our case, we use customers and employees as the two core groups of stakeholders. Once customers and employees perceive the values, they enhance the brand equity of the firm. The benefits they receive also develop trust, which as a result improves brand equity.
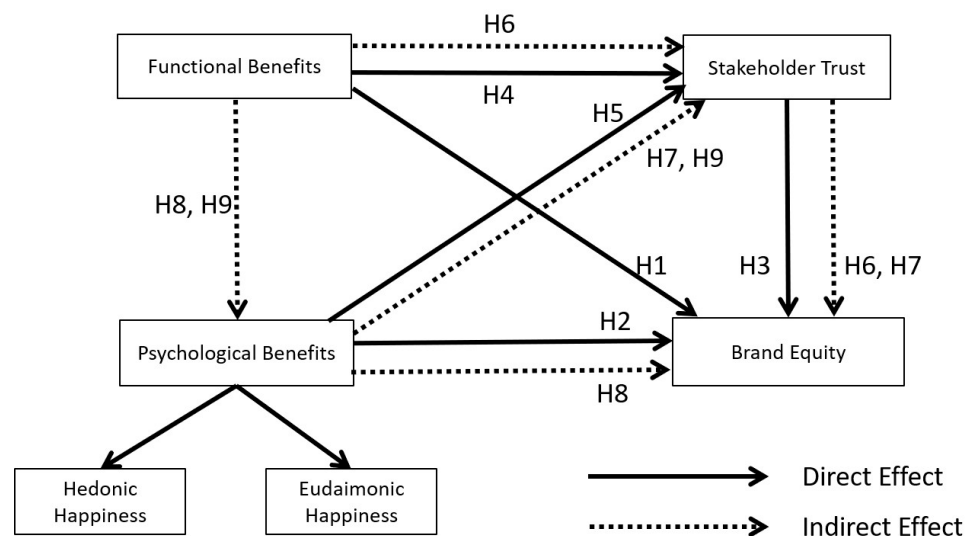
Figure 1. Conceptual model.

More precisely, we hypothesize that functional benefits directly and indirectly improve stakeholder trust. As the same time, functional benefits also improve brand equity directly and psychological benefits indirectly. In addition, we hypothesize that psychological benefits improve stakeholder trust and brand equity directly and indirectly. Finally, stakeholder trust improves brand equity directly and indirectly. Therefore, the following hypotheses are formed accordingly.

Hypothesis 1 (H1). *Functional benefits improve brand equity.*

Hypothesis 2 (H2). *Psychological benefits improve brand equity.*

Hypothesis 3 (H3). *Stakeholder trust improves brand equity.*

Hypothesis 4 (H4). *Functional benefits improve stakeholder trust.*

Hypothesis 5 (H5). *Psychological benefits improve stakeholder trust.*

Hypothesis 6 (H6). *Stakeholder trust mediates the relationship between functional benefits and brand equity.*

Hypothesis 7 (H7). *Stakeholder trust mediates the relationship between psychological benefits and brand equity.*

Hypothesis 8 (H8). *Psychological benefits mediate the relationship between functional benefits and brand equity.*

Hypothesis 9 (H9). *Psychological benefits mediate the relationship between functional benefits and stakeholder trust.*

Hypothesis 10 (H10). *There are different effects from functional benefits, psychological benefits and stakeholder trust on brand equity between stakeholder groups.*

This conceptual model informs our questionnaire development for customers and employees as core stakeholders. Please note that we adopt perceptions of respondents in measuring all domain variables in the present study, following previous similar studies, e.g., [27].

After data collection, we examine the construct validity and reliability of the model. In the following section, we describe how we collected and analyzed the data to determine examine the construct validity and reliability. We also explain how we derived the structural model.

4. Research Methodology

The Research Methodology section is divided into four subsections (see Figure 2). First, the Methodology Approach subsection justifies the methodology used in the study. Second, the Sampling subsection discusses how the SMEs and samples were selected, followed by the Measurement subsection. Then, the Data Collection subsection discusses the data collection procedure.
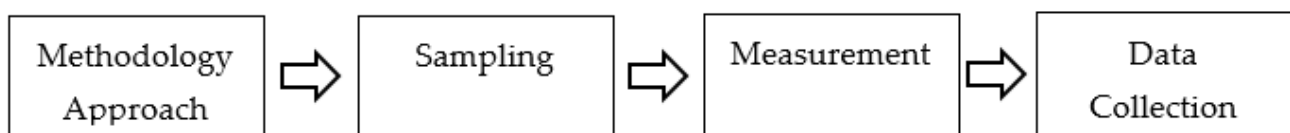
Figure 2. Explanatory image of research methodology.

4.1. Methodology Approach

In this section, we discuss the methodology developed to answer the following research questions as discussed earlier: (1) What are stakeholder-relevant factors that lead to improving brand equity? (2) How are these factors related? (3) Do the factors create an impact differently among different groups of stakeholders?

The positivistic research paradigm is adopted since it can produce illustrative, causal relationships between relevant variables and brand equity [84], which is impossible under the phenomenological research paradigm. The objective of the positivistic paradigm is to detach and regulate the influence of all variables so that only the observed ones are investigated [85]. In our case, we want to determine if functional and psychological benefits and stakeholder trust predict the improved prospect of brand equity. Our goal is therefore to design and assemble proof to support our postulated causal inference. Thus, quantitative research methods are adopted, focusing on objective measurements through statistical analysis [84], the details of which are described below.

4.2. Sampling

Samples of this study are customer and employee stakeholders of 115 SMEs across Thailand, listed as candidates in the Thai national sustainable business competition and/or received Thailand sustainability awards. Third-party research assistant agencies were used to facilitate the questionnaire dissemination. In the end, 214 customer and 219 employee stakeholders were achieved. Details regarding data collection and geographical distribution of respondents across Thailand are presented in the Data Collection subsection.

4.3. Measurement

We adopted the functional benefits scale, a seven-point semantic differential scale [86] with five measured items. We also adopted the psychological benefits scale [87] that comprises four measured items of the eudaimonic happiness scale and five measured items of the hedonic happiness scale. We next adopted five measured items of stakeholder trust scale [67]. Finally, we adopted four measured items of brand equity [10], using a seven-point Likert scale from strongly disagree (1) to strongly agree (7). More details about these scales are provided in Table A1, Appendix A.

An independent, bilingual translator translated all scales in English into Thai. As the present study is interdisciplinary, three bilingual specialists in social science, organization management and marketing were then asked to review the translated scale items to ensure that the measured items fit the cultural context and to validate the conceptual translation [88].

We then proceed with a pilot test. We tested the Thai scales by asking 80 graduate students to assess the scale clarity and readability. We adjusted the questionnaire items accordingly to ensure face validity.

4.4. Data Collection

A questionnaire survey was conducted with a convenient sampling method by third-party research assistant agencies. Questionnaires were randomly distributed to customer and employee stakeholders of 115 SMEs across Thailand listed as candidates in Thai national sustainable business competition and/or received Thailand sustainability awards. Table 1 describes the geographical distribution of the stakeholder respondents.

Table 1. Geographical distribution of respondents.

Geographical Distribution of Respondents	Customers	Employees	All
Bangkok (Capital City)	48 (22.4%)	78 (35.6%)	126 (29.1%)
Central Thailand	54 (25.2%)	79 (36.1%)	133 (30.7%)
Northern	59 (27.6%)	54 (24.7%)	113 (26.1%)
Eastern	14 (6.5%)	7 (3.2%)	21 (4.8%)
Northeastern	18 (8.4%)	1 (0.5%)	19 (4.4%)
Southern	21 (9.8%)	0 (0%)	21 (4.8%)
Total	214 (49%)	219 (51%)	433 (100.0%)

In answering the questionnaire, we adopted the self-reporting approach since we wanted the stakeholder respondents to report their retrospective perceptions of the companies [89]. To ensure that respondents are eligible for completing the survey, a set of screening questions was used to ask whether (1) respondents had a relationship with one of the listed 115 SMEs, and (2) respondents indicated one of the relationship types (customer/employee). To reduce social desirability bias, highly critical to self-reports in the present study, we took the following steps. With these steps, respondents were unlikely to answer questions in a way that is viewed favorably by others [90].

First, a respondent was informed that his/her responses were to be kept strictly secret. Then, the respondent was asked if he/she was willing to participate in the study. If he/she was willing, he/she would be asked to fill in the questionnaire.

To ascertain that all respondents view their chosen firm as a sustainable business, they were asked to which extent they agreed that their chosen firm operated according to the philosophy of Sufficiency Economy, a Thai sustainable development philosophy [2]. The mean score for this validation item is 5.1732. Given that the mean score is significantly greater than four mid-points (t 433 = 19.233, *p* = 0.000), we can conclude that the respondents viewed their selected firm as a sustainable business. To retain the anonymity of the respondents, names of the companies were excluded from the data coding stage of the study.

We also used procedural methods to minimize the risk of common method variance [91] or the systematic error variance shared among variables measured with and introduced as a function of the same method and/or source [92], since we may receive biased findings from a study such as ours that adopts raters as data sources [93]. In adopting the procedural methods, a likelihood of respondents to rate the same across items is avoided.

Adopting such methods, we first notified all respondents that the unnamed and confidential responses were warranted. Additionally, they were informed that there were no correct or incorrect answers to these questions. Even though the midpoints of the scales were displayed, the pilot test results indicated that the respondents would be unlikely to choose the midpoints across the answers. Finally, we did not adopt bipolar numerical values.

5. Data Analysis and Results

Since our structural model is complicated with multi layers, the Structural Equation Modeling (SEM) method is suitable for analyzing the aggregated data [94]. AMOS was used to examine both direct and indirect effects of the model. In general, a SEM modeling is composed of two stages [94]. First, we used the Structural Model to measure the overall fit of the model. Second, we used Confirmatory Factor Analysis (CFA) or the Measurement Model to determine how measured variables altogether represent the domain constructs.

To determine a suitable sample size, scholars still argue in the literature with no universally agreed method to determine an appropriate sample size. Therefore, several criteria were applied to make a decision on a minimum sample size for the present analysis.

Our unit of study is at a company level. As discussed earlier, our sample size containing 433 stakeholder participants from sustainable companies meets the subsequent criteria. First, the widely recognized rule of thumb is that the acceptable minimum size for an SEM analysis is 100 samples [94–96]. Second, the "10-times rule" [97], the most widely adopted approach, is where the sample size is 10 times larger than latent variables in a model. Since our study has four latent variables, only 50 participants are needed as the sample size. Finally, the minimum sample size ought to be at least five times greater than the number of measured items [98]. Since the present study has 23 measured items, 115 are required as the minimum sample size. Thus, our sample size of 433 participants meets all of these criteria. We present our analysis results below.

Most stakeholder respondents have more than one year of experience with the firm (see Table 2). Moreover, over 20% of the respondents had experience with the firm for over 10 years. These are indications that their perceptions toward the firm are reliable.

Table 2. Relationship period with the firm.

Relationship Period with the Firm	Customers	Employees	All
Less than 1 Year	25.7%	11.5%	18.5%
1–3 Years	31.3%	25.2%	28.2%
4–6 Years	17.8%	20.2%	19.0%
7–9 Years	7.0%	17.9%	12.5%
10 Years and Over	18.2%	25.2%	21.8%
Total	100.0	100.0	100.0

The Confirmatory Factor Analysis (CFA) results reveal an acceptable overall fit of the model (X2 = 448.368, X2/DF = 2.115, SRMR = 0.048, RMSEA = 0.051, CFI = 0.977, NFI = 0.958,

TLI = 0.973 and PGFI = 0.705). Composite reliability (CR) values of all factors are above 0.70. Average variance extracted (AVE) values are greater than maximum shared squared variance (MSV) or average squared shared variance (ASV), indicating that discriminant validity is achieved [94]. AVEs are greater than 0.50 and lower than CR, indicating that convergent validity is achieved [94]. Cronbach's alpha values of all factors are also greater than 0.90 (see Appendix B, Table A2).

Next, SEM was adopted to examine the hypotheses. The SEM results (Table 3 and Figure 3) revealed that the model overall has a good fit, with X2 = 454.515, X2/DF = 2.124, SRMR = 0.054, RMSEA = 0.051, CFI = 0.977, NFI = 0.957, TLI = 0.973 and PGFI = 0.711.

Table 3. Hypotheses testing results.

Observed Relationships	Estimate	Standardized Regression Weights	S.E.	CR	p-Value	Decision
BEQ ← FB	0.268	0.29	0.051	5.213	***	Supported H1
BEQ ← PB	0.46	0.372	0.083	5.56	***	Supported H2
BEQ ← T	0.237	0.285	0.039	6.028	***	Supported H3
PB ← FB	0.538	0.722	0.05	10.774	***	
T ← FB	0.214	0.192	0.078	2.747	0.006	Supported H4
T ← PB	0.772	0.518	0.112	6.883	***	Supported H5
Hed ← PB	1	0.67				
Eud ← PB	1.352	0.973	0.105	12.865	***	

BEQ = brand equity, T = trust, FB = functional benefit, PB = psychological benefits, Hed = hedonic, Eud = eudaimonic, *** *p* < 0.001.
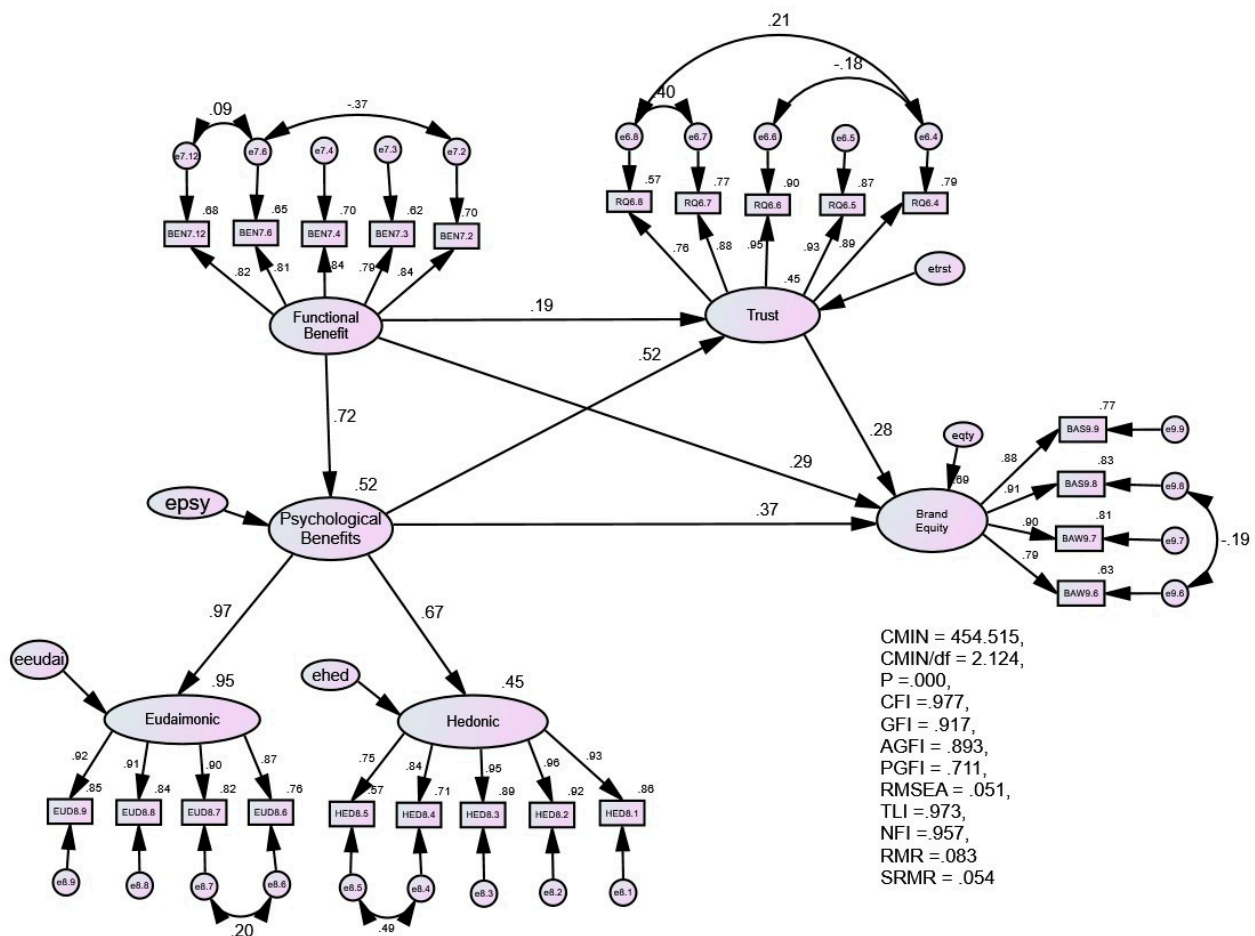

Figure 3. Resulting structural model expressing relationships among functional and psychological benefits, trust and brand equity.

The findings endorse H1, given the following critical values: functional benefits enhance brand equity significantly ($\beta = 0.29$, $p < 0.001$). The findings also endorse H2; psychological benefits enhance brand equity significantly ($\beta = 0.372$, $p < 0.001$). H3 is also endorsed as stakeholder trust enhances brand equity significantly ($\beta = 0.285$, $p < 0.001$). Psychological and functional benefits also enhance stakeholder trust significantly, endorsing H4 ($\beta = 0.192$, $p < 0.001$) and H5 ($\beta = 0.518$, $p < 0.001$), in that order.

From significant direct effects found in H1, H2 and H4, we further examine the mediating roles of stakeholder trust and psychological benefits using the procedures suggested by Preacher and Hayes [99] and Hayes and Preacher [100]. Bootstrapping with 2000 resampling with a 95% confidence interval was employed.

The results (in Table 4) revealed the mediation effects of stakeholder trust on functional benefits–brand equity relationship (standardized estimate = 0.055; $p < 0.05$) and psychological benefits–brand equity relationship (standardized estimate = 0.147; $p < 0.001$), with none of the confidence intervals containing a value of zero, supporting H6 and H7, respectively. The results also revealed the mediation effects of psychological benefits on functional benefit–brand equity relationship (standardized estimate = 0.269; $p < 0.001$) and functional benefit–stakeholder–trust relationship (standardized estimate = 0.374; $p < 0.01$), with none of the confidence intervals containing a value of zero, supporting H8 and H9, respectively.

Table 4. Mediating effect.

Observed Indirect Path	Unstandardized Estimate	Lower	Upper	*p*-Value	Standardized Estimate	Decision
BEQ ← T ← FB	0.051	0.013	0.111	0.018	0.055 *	Supported H6
BEQ ← T ← PB	0.183	0.115	0.267	0.001	0.147 ***	Supported H7
BEQ ← PB ← FB	0.248	0.174	0.352	0.001	0.269 ***	Supported H8
T ← PB ← FB	0.415	0.296	0.561	0.001	0.374 **	Supported H9

BEQ = brand equity, T = trust, FB = functional benefit, PB = psychological benefits, *** $p < 0.001$, ** $p < 0.010$, * $p < 0.050$.

Additionally, a multigroup analysis was conducted to examine the difference between customer stakeholders ($n = 214$) and employee stakeholders ($n = 219$). The results indicated a group difference at the model level (CMIN 54.580, $p < 0.01$). However, when separately examining each path of the relationships, the significant difference between customer stakeholders and employee stakeholders was only found in the impact of functional benefits on brand equity. Specifically, with the same direction, the positive impact of functional benefits on brand equity is stronger among employee stakeholders than customer stakeholders (employee stakeholder F.319 vs. customer stakeholder F.310, $p < 0.01$). Thus, we conclude that, except for the impact of functional benefits on brand equity, there is no difference in the findings between customer stakeholders and employee stakeholders. Therefore, H10 is supported.

6. Discussion of the Findings

Overall, the findings endorse the corporate sustainability theory [4] in that socially responsible business practices lead to improved brand equity via positive emotions among stakeholders. The theoretical assertion [4] that corporate sustainability practices deliver benefits to stakeholders via the Triple Bottom Line outputs is also endorsed by the findings. The findings also endorse the theory of corporate sustainability [4] that proposes brand equity as a corporate sustainability performance indicator. Theoretically, the findings on stakeholder trust in the present study extend the theory of corporate sustainability by pointing out the role of stakeholder trust in ensuring corporate sustainability. The findings on stakeholder trust also endorse the theory of organizational resilience [17] that promotes long-term stakeholder relationships that bring about organizational resilience. Stakeholder trust should be added as a fundamental component of the theories of corporate sustainability and organizational resilience. Clearly, the overall findings from the present study indeed highlight the emotional aspects of stakeholders.

Additionally, Ketprapakorn [101] has reviewed the literature on corporate sustainability associated with Asia. He derived two Asian frameworks on sustainable organization management and sustainable supply chain management. While both frameworks highlighted the importance of keeping stakeholders satisfied, they did not include stakeholder trust. Therefore, the findings from the present study can enhance the two Asian frameworks.

More specifically, the findings support the notion that practices of sustainable firms could create functional benefit and psychological benefits among key stakeholders, namely customers and employees. Once receiving functional benefits (H1) and psychological benefits (H2), stakeholders develop stronger brand equity towards the giving firms. That is, functional and psychological benefits of sustainable firms could act as functional and experiential components in creating brand equity [56–58].

Functional and psychological benefits also lead to stronger stakeholder trust (H4 and H5), as suggested by [33,44]. When key stakeholders experience different types of positive benefits from the sustainable firm over time, they develop stronger trust. When a sustainable firm gains higher trust from its stakeholders, it means that a stronger relationship between the two parties is developed [33,47], which consequently leads to stronger brand equity (H3) [6,14,33,47]. This specific finding on stakeholder trust also supports the sustainable leadership approach [3] that identifies stakeholder trust as a higher-level practice. According to the sustainable leadership approach [3], a high level of stakeholder trust is created through relationships and goodwill with stakeholders, also endorsed by the findings.

Additionally, the findings also reveal that stakeholder trust mediates the relationship between both functional (H6) and emotional (H7) benefits and brand equity. Indeed, these findings confirm the role of trust as (1) a consequence of brand experiences [102] and emotional brand attachment [103] as well as (2) a key driver for sustainability performance and brand equity [3,14,33,47]. Drawing from these findings, sustainable firms that attempt to promote stakeholder trust by providing functional as well as psychological benefits to key stakeholders gain not only direct but also indirect advantages of stronger brand equity through trust.

More importantly, the findings reveal the roles of psychological benefits in stakeholder trust and brand equity, as suggested by Hsu [10] and Wang [54]. Psychological benefits mediate the impacts of functional benefit on brand equity (H8) and trust (H9). The findings are consistent with Bhattacharya et al. and Vargo et al. [33,52], who have advised that stakeholders perceive value of the firm only when they perceive tangible functional benefits that consequently lead to psychological benefits. In other words, any type of functional benefit that indirectly impacts psychological benefits, positively impacts stakeholder trust and brand equity.

The impact of benefits from sustainable firms on stakeholder trust and brand equity are consistent across the two groups of stakeholders, namely customers and employees (H10). In other words, there is no difference in terms of the impact on customers and employees. More precisely, sustainable firms adopting the socially responsible business practices bring about customer-based brand equity [46] and employee-based brand equity [9]. The findings here specifically endorse the resource-based theory [104], asserting that the relationships with multiple stakeholders drive overall brand equity of the firm. In addition, the discovered relationships between customer and employee stakeholders and brand equity endorse the dynamic capabilities theory [105] in that stakeholder relationships, bringing about a corporate ability to integrate, develop and reconfigure external and internal competences in responding to the constantly changing environment, give rise to brand equity. Both the resource-based and the dynamic capabilities theories can be enhanced by incorporating stakeholder trust in them.

Finally, while the stakeholder theory [106], as a dominant theory in the corporate sustainability field, stresses the ethical, interconnected relationships between a firm and its wide range of stakeholders, it does not specifically address the emotional relationship between stakeholder trust and brand equity. Thus, the findings from the present study can contribute to refining the stakeholder theory.

7. Managerial Implications

First and foremost, a firm should use brand equity as an indicator of corporate sustainability, as it is measured by stakeholders, and long-term, sustainable success is associated with how successfully stakeholder requirements are fulfilled [4,8]. Brand equity as a lead indicator can be used to complement the Triple Bottom Line outputs, considered as a lag indicator or an indicator of the past.

To enhance brand equity, the firm should follow the geosocial development approach and balance the demand among customers and employees, as suggested by Kantabutra and Ketprapakorn [4]. The firm should provide functional benefits such as reasonable price strategy, appropriate functions of the product and facilities of the service that meet customers' needs, while providing sufficient monetary benefits, welfare and facilities to employees. The firm should also communicate functional benefits via both traditional and social media of integrated marketing communication campaigns to effectively reach customers, considered as one of the key audiences [80–82]. This could be a standard approach of developing brand equity among customers and employees.

More importantly, the firm should deliver psychological benefits to both key stakeholders. These psychological benefits should allow customers and employees to have a sense of enjoyment, pleasure, fun and relaxation. Moreover, these psychological benefits should allow the customers and employees to take it easy, develop a skill, learn or gain insight into something, use the best in themselves, do what they believe in and pursue excellence or their personal ideas. The firm should nurture positive feelings while customers experience the product/service [55] and lead them to have a stronger relationship with the firm by providing a sense of engagement and self-esteem [33]. In terms of employees, the firm needs to promote job satisfaction along with career development that promotes self-esteem and self-actualization among employees through sustainable leadership practices [33,55].

More precisely, to enhance trust and brand equity, the firm should promote functional benefits that lead to psychological benefits among relevant stakeholders, as opposed to promoting them all, given that functional benefits leading to psychological benefits are found effective in creating stakeholder trust and thus brand equity. Practically, the firm should ensure that functional benefits such as working conditions, remuneration and welfare could lead employees to have happiness at work and gain a sense of self-esteem. In addition, the firm should offer attractive functions of products and services that exceed customers' needs in order to achieve a higher level of satisfaction and a sense of brand engagement.

8. Conclusions, Limitations and Future Research Directions

The present study has provided the answers to our three research questions. First, the findings indicate that the stakeholder-relevant factors of functional and psychological benefits and stakeholder trust lead to improved brand equity. Second, the findings indicate that these factors have direct and indirect causal relationships with brand equity. Functional benefits enhance brand equity indirectly and directly via stakeholder trust and psychological benefits. On the other hand, psychological benefits enhance brand equity indirectly and directly via stakeholder trust. Psychological benefits create more direct positive effects on brand equity than functional benefits. The effects of functional benefits on brand equity are enhanced via psychological benefits. Finally, these factors do not create an impact differently among different groups of stakeholders.

The present study, like other studies, is not without limitations. First, future research should use a greater variety of stakeholders in their studies. Suggested key stakeholders to include are surrounding communities, suppliers and college students. Moreover, since the majority of the sample in this study are SMEs, future research should consider including larger and muti-national corporations in samples.

Since brand equity is considered by scholars as a corporate sustainability measure, it will be interesting for future research to examine the casual relationship between brand

equity and corporate sustainability, the findings of which may help to identify a more effective indicator than the Triple Bottom Line outputs.

In terms of theory building, scholars can refine the theory of corporate sustainability [4] by including stakeholder trust as a component before arriving at brand equity. Similarly, scholars can also refine the theory of organizational resilience [17] by including stakeholder trust before arriving to long-term stakeholder relationship. Finally, the stakeholder theory [106] can also be refined by incorporating stakeholder trust and brand equity. With these refinements, scholars can continue to test the three theories with larger sample sizes from different industrial and organizational settings to enhance their external validity.

Appendix A

Table A1. Scales and measured items.

No.	Scale	Measured Items
1.	Functional benefits scale (Voss et al., 2003)	Practical vs. Impractical Necessary vs. Unnecessary Functional vs. Not functional Helpful vs. Unhelpful Effective vs. Ineffective
2.	Hedonic happiness scale (Huta and Ryan, 2010)	Enjoyment Pleasure Fun Relaxation Take it easy
3.	Eudaimonic happiness scale (Huta and Ryan, 2010)	Pursuing excellence or a personal ideal Using the best in yourself Develop a skill, learn or gain insight into something Doing what you believe in
4.	Stakeholder trust scale (Morgan and Hunt, 1994)	The company is perfectly honest and truthful The company can be trusted completely The company is always faithful The company is someone that I have great confidence in The company has high integrity
5.	Brand equity scale (Hsu, 2012)	I can recognize this company among other competitors I am aware of this company Some characteristics of this company come to my mind quickly I can quickly recall the symbol or logo of this company

Appendix B

Table A2. Confirmatory factor analysis results.

	CR	AVE	MSV	ASV	Cronbach α	CMIN	CMIN/df	P	CFI	TLI	NFI	RMSEA	SRMR	RMR	PGFI	GFI	AGFI
Functional Benefit	0.911	0.671	0.520	0.385	0.907	5.088	1.696	0.165	0.998	0.995	0.996	0.040	0.011	0.018	0.199	0.995	0.976
Hedonic	0.949	0.788	0.425	0.283	0.951	5.769	1.442	0.217	0.999	0.998	0.998	0.032	0.006	0.009	0.265	0.995	0.981
Eudaimonic	0.946	0.815	0.560	0.471	0.949	0.405	0.405	0.524	1.000	1.000	1.000	0.000	0.002	0.002	0.100	1.000	0.995
Trust	0.945	0.776	0.707	0.359	0.949	0.462	0.231	0.794	1.000	1.000	1.000	0.000	0.002	0.003	0.133	1.000	0.997
Brand Equity	0.927	0.760	0.560	0.456	0.923	0.003	0.003	0.955	1.000	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000
Overall						448.368	2.115	0.000	0.977	0.973	0.958	0.051	0.048	0.077	0.705	0.918	0.893

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Review

Sustainable Supply Chain Management in a Circular Economy: A Bibliometric Review

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Abstract: Since the mid-2010s, the circular economy has emerged as a key conceptual lever in corporate efforts to achieve greater environmental sustainability. Corporations have increasingly drawn upon the circular economy perspective in efforts to rethink sustainable supply chain management practices. This new corporate approach to sustainable supply chain management is evident in an emerging literature that has yet to be fully documented. In this systematic review of research, bibliometric methods were applied to a database of 709 Scopus-indexed documents. Author co-citation analysis identified four schools of thought comprising the intellectual structure of this literature: Sustainable Production and Environmental Management, Sustainable Supply Chain Management, Reverse Supply Chain Management, and Circular Economy. Synthesis of these themes suggests that the adoption of a circular economy perspective is transforming sustainable supply chain management in two important ways. First, this perspective reorients supply chain management away from a narrow focus on efficiency and waste reduction and towards a new paradigm of redesign, reuse, and product transformation. Second, adoption of the circular economy highlights and leverages reverse cycles in the supply chain. Thus, circular economy business models enable supply chain management to enhance corporate contributions to sustainable production and consumption. Drawing upon this framing of supply chain management within a circular economy, the review proposes a new framework for accelerating corporate sustainability.

Keywords: bibliometric review; circular economy; sustainable supply chain; supply chain; corporate sustainability

1. Introduction

A recent meta-analytic review of sustainability management research identified supply chain management as the most influential corporate management strategy used to address economic, social, environmental, and economic sustainability [1,2]. Sustainable supply chain management relies on co-operation among diverse actors in the supply chain working together to achieve effective management of materials, data, and financial resource flows [3]. Both research and practice in sustainable supply chain management have made impressive gains over the past 25 years [4]. This has resulted in the development of a well-documented knowledge base concerning both the nature and effects of different supply chain management models and strategies (e.g., [5–8]).

In recent years, however, growing acceptance of the "circular economy" concept has begun to transform conceptualizations of "sustainable supply chain management" [9]. The circular economy concept posits connections between the four economic roles that the environment plays in corporate sustainability: providing amenity value, serving as a resource base, functioning as a source of economic activities, and acting as a life-support system [10].

Geissdoerfer and colleagues (2017) [11] defined the circular economy as, "a regenerative system in which resource input and waste, emission, and energy leakage are minimized by slowing, closing, and narrowing material and energy loops. Through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling" (p. 759).

Integration of a circular economy perspective implies a need for sustainable supply chain management (S-SCM) to place greater emphasis on product transformation and reverse loops in the supply chain [11]. With an aim for waste and pollution elimination, material circularity, and natural regeneration under the circular economy concept, Industry 4.0 technologies have been studied as the enablers for sustainable operations and sustainable supply chain management [12–14]. The adoption of advanced technologies such as additive manufacturing, big data, artificial intelligence, and blockchain for supply chain reconfiguration enhance flexibility in responding to demand, as well as facilitating planning and forecasting, and optimization [15–17]. Thus, we assert that conjoint application of these sustainability concepts offers potential for up-scaling corporate contributions to environmental sustainability [7,9,14].

Indeed, this conceptual reframing of sustainable supply chain management through a circular economy lens has been a catalyst for the emergence of a new literature. To date, two published reviews of research have examined the links between S-SCM and circular economy [7,18]. These integrative reviews were, however, based on relatively small document databases (i.e., <80), and focused on identifying critical factors that impact supply chain management in a circular economy context. The current review was designed to build on these reviews by employing a bibliometric review method for the purpose of analyzing the evolving conceptual landscape of published research on this topic. More specifically, this review assesses the conceptual and practical value added by analyzing sustainable supply chain management within the context of a circular economy. The research questions (RQs) guiding the review were as follows.

1. How does the distribution of documents across time, geographies, and subject areas offer insights into the production of knowledge on sustainable supply chain management in a circular economy?
2. What do the top-cited documents reveal about key topics, conceptual themes, and interdisciplinary collaboration in the literature on sustainable supply chain management in a circular economy?
3. What is the intellectual structure of the published knowledge base on sustainable supply chain management in a circular economy?

The review examined 709 Scopus-indexed documents on sustainable supply chain management in a circular economy. Descriptive statistics, document citation analysis, and author co-citation analysis were used to analyze bibliographic data associated with the document database. These analyses were designed first to document the literature and second to analyze its intellectual or conceptual structure.

This review seeks to contribute to both research and practice concerning supply chain management in a circular economy, with particular attention to the COVID-19 era. The review presents the theoretical background on supply chain management and circular economy in Section 2, research methods used in the review in Section 3, results related to the research questions in Section 4, interpretation of the findings in Section 5, and conclusions in Section 6.

2. Theoretical Background

Over the last three decades, supply chain management has become a key management discipline within the broader literature on managing for sustainability [1–3]. Sustainable supply chain management (S-SCM) addresses external pressures and incentives set by different stakeholder groups (e.g., government regulators, environmental and social movements, community members, and consumers) with respect to the production and consumption activities of companies and societies [3]. In this review, we adopted Seuring and Müller's (2008) definition of sustainable supply chain management as, "the management

of material, information, and capital flows as well as co-operation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account" (p. 1700).

The pressing need for sustainable consumption and production requires systems change with actions from all sectors—governments, financial institutions, and businesses—and geographies [19]. The circular economy concept has recently gained increased priority from policymakers, as evidenced by the European Circular Economy Action Plan and the Circular Economy Promotion Law of the People's Republic of China [20,21]. Moreover, since 2017, the conjoint application of supply chain management and the circular economy has gained interest from scholars in several disciplines [22].

Endorsement of the 2030 Agenda for Sustainable Development by the United Nations in 2015, with 17 Sustainable Development Goals (UN SDGs) at its center, has driven the exponential growth in S-SCM publications [3,5,6,23]. From a business perspective, S-SCM and circular economy practices such as recycling have been identified as key strategies for achieving corporate sustainability [24–28]. By developing standards governing relationships with suppliers and service providers within the supply chain, firms are able to have a positive impact on a wide range of environmental and social issues including gas emissions, water management, waste management and reduction, skill enhancement, and workplace safety [29–33]. Furthermore, enabled by reverse logistics, circular economy practices such as reuse and end-of-life recovery can be employed to facilitate responsible consumption [34–36].

The increasing adoption of a sustainability perspective towards supply chain management has involved the integration of various environmental management concepts [37]. In this review, we examine four related conceptualizations of supply chain management that have evolved over the past 15 years: green, sustainable, closed loop, and circular supply chain management for analysis and comparison (see Table 1).

Each of these conceptualizations of supply chain management has distinctive features when considered from the perspective of a circular economy (see Table 2). For example, the integration of forward and reverse supply chains is the focus of green supply chain management [38]. Both closed-loop and circular supply chain management emphasize value creation and maximization through product recovery and waste reduction [39,40]. Sustainable supply chain management is distinguished from the other conceptualizations through its explicit incorporation of stakeholder theory [3]. Among the four approaches, only sustainable supply chain management and circular supply chain management explicitly aim to impact all three elements of the triple bottom line.

Nimsai et al.'s (2020) review of research found exponential growth in publications on S-SCM since 2010 [23]. However, the Nimsai et al. (2020) review was concluded prior to the onset of the COVID-19 pandemic which challenged organizations to rethink their management strategies not only during the pandemic, but also in the post-pandemic era [41,42]. Thus, the global pandemic can be viewed as a new demarcation in the evolution of corporate sustainability strategies. This suggests the relevance of examining changes in sustainable supply strategies during this period of global economic disruption and highlights the need for identifying innovative approaches to existing management practices.

A review of research conducted by Türkeli and colleagues [43] found that the circular economy concept has been associated with related concepts such as industrial ecology [44], green and bio-economies [45], and sustainability [11]. The reverse supply chain, which emphasizes recovery of after-use products is at the interconnection of the circular economy and supply chain management concepts [9,46,47]. Value recovery at the end-of-product life can be performed by either original producers or other parties for the purposes of reuse, refurbishment, and recycling. This conceptual integration of supply chain management with the circular economy concept frames the review of research conducted in this article.

Table 1. Four definitions of supply chain management.

Author(s)	Definitions
Srivastava, 2007 [38]	*Green Supply Chain Management:* "Integrating environmental thinking into supply-chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers as well as end-of-life management of the product after its useful life" (p. 54).
Seuring and Müller, 2008 [3]	*Sustainable Supply Chain Management:* "The management of material, information and capital flows as well as cooperation among companies along the supply chain while integrating goals from all three dimensions of sustainable development, i.e., economic, environmental and social, which are derived from customer and stakeholder requirements" (p. 1700).
Guide Jr and Van Wassenhove, 2009 [40]	*Closed-loop Supply Chain Management*: "The design, control, and operation of a system to maximize value creation over the entire life cycle of a product with dynamic recovery of value from different types and volumes of returns over time" (p. 10).
Batista, Bourlakis, Smart and Maull, 2018 [39]	*Circular Supply Chain Management:* "The coordinated forward and reverse supply chains via purposeful business ecosystem integration for value creation from products/services, by-products and useful waste flows through prolonged life cycles that improve the economic, social and environmental sustainability of organizations" (p. 446).

Table 2. Comparison of four conceptions of supply chain management in circular economy context.

Concept	Distinctive Features	Expected Outcomes
Green Supply Chain Management	Integration of forward and reverse supply chain	Environmental focus
Sustainable Supply Chain Management	Customer and stakeholder engagement	Holistic triple bottom line
Closed-loop Supply Chain Management	Value creation maximization throughout product life cycle	Environmental and economic focus
Circular Supply Chain Management	Value creation through business ecosystem	Holistic triple bottom line

3. Research Method

In this review, bibliometric methods were employed to quantify and synthesize bibliographic data extracted from research documents on sustainable supply chain management in a circular economy. A strength of bibliometric reviews lies in their ability to synthesize patterns in knowledge production across a large body of documents [48]. Although previous bibliometric reviews have been published on sustainable supply chain management [4,23,49] and the circular economy [11,50], this method has not yet been applied to the conjoint literature on these complementary concepts.

3.1. Identification of Sources

Scopus was chosen as the document source rather than the Web of Science, based on its wider coverage of social science and management literature [48,51]. This research focused on peer-reviewed journal articles due to their more rigorous vetting of document quality.

The conceptual scope of the review was defined as "sustainable supply chain management in a circular economy" without regard to date of publication, sector, industry, or geography.

The preferred reporting items for systematic reviews and meta-analyses, or PRISMA [52], was used to guide the document search and selection process. An open-ended Scopus search was initiated in October 2021 by using the keywords "supply chain" and "circular economy" within article titles, abstracts, and keywords. The Scopus search resulted in an initial document list comprising 982 articles published from 2006 to October 2021 (see Figure 1). Application of Scopus filters limited documents to journal articles and reviews published in English, resulting in the exclusion of 245 documents. The authors then screened out additional articles that were either identified as duplicates or irrelevant. At the end of the selection process, the review database included 709 journal articles and reviews.
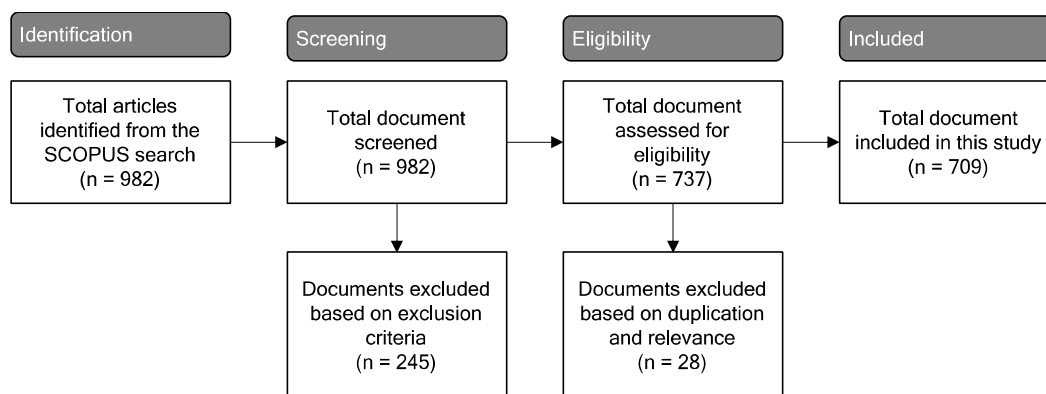
Figure 1. PRISMA diagram detailing the search and selection process.

3.2. Data Analysis

Metadata associated with the list of 709 documents were exported from Scopus to an Excel file for data analyses performed in Excel, Tableau, and VOSviewer [53]. Disambiguation of the meta-data was carried out to ensure accuracy in the bibliometric analyses [48]. For example, an author's name could be expressed as Jones, P. and Jones, P.R. in different articles. VOSviewer and Excel were used in tandem to create a thesaurus file that replaced multiple forms of an author's name with a single form (i.e., Jones, P. replaced by Jones, P.R.). A similar process was used to "disambiguate" document titles and keywords.

The first research question was analyzed using descriptive statistics. Scopus analytical tools were used to document the growth trajectory and the subject area distribution of the knowledge base. Tableau software was used to visually illustrate the geographical distribution of authors who published the 709 documents.

Document citation analysis and author co-citation analysis, performed with VOSviewer software version 1.6.8 [53], were used to address the second and third research questions. Document citation analysis was used to identify the most influential journal articles among the 709 documents in our Scopus-indexed database. Though not without limitations, citation analysis is the most widely used method of measuring scholarly impact [48]. In this review, citation analysis was used to determine the number of times each journal article had been cited by all other Scopus documents. Thus, we refer to this frequency metric as "Scopus citations".

Co-citation analysis is a complementary form of bibliometric analysis that was used to analyze the intellectual structure of the literature on S-SCM in a circular economy. Using VOSviewer, co-citation analysis was conducted in a three-step process [53]. In the first step, VOSviewer identified the frequency with which different authors had been cited in the reference lists of the 709 review documents [54]. Zupic and Čater (2015) noted that, "co-citation connects documents, authors, or journals according to the way the writers use them. This is a rigorous grouping principle repeatedly performed by subject-matter experts

who cited publications they deem valuable and/or interesting" (p. 431). Author co-citation analysis was applied in order to gain insight into the theoretical foundations of scholarship on S-SCM in a circular economy [48].

In the second step, VOSviewer tracked the frequency with which "pairs of authors had been cited" in the reference lists of the review documents. Each time that a pair of authors (e.g., Seuring and Sarkis) was found in the same reference list, VOSviewer assigned a "co-citation link" to them. Authors who are repeatedly cited together by other scholars are assumed to share an intellectual similarity [54]. Thus, VOS actually stands for "visualization of similarities".

In the third step, VOSviewer built an author co-citation matrix comprising data describing the links between pairs of authors [53,54]. Using this co-citation matrix, VOSviewer is able to generate a social network map, referred to in bibliometric analysis as a "science map" [53]. This review employed the author co-citation map (ACA) to visualize associations among authors in the literature on S-SCM in a circular economy. ACA maps are widely used to identify the "intellectual structure" of a discipline or line of inquiry [1,4,23,48].

4. Results

The presentation of results is organized in response to three research questions.

4.1. Growth Trend, Subject Areas, and Geographical Distribution of the Literature

The first documents that explicitly linked S-SCM and circular economy were published in 2006 [55,56]. However, 2018 marked the beginning of exponential growth in articles that address the conjoint topics (see Figure 2). One of the drivers explaining this pivot point is the adoption of sustainable development goals as part of the 2030 Agenda for Sustainable Development by United Nations member states in 2015 [19]. This agenda prioritized the circular economy and supply chain management as crucial means of achieving the 17 sustainable development goals.
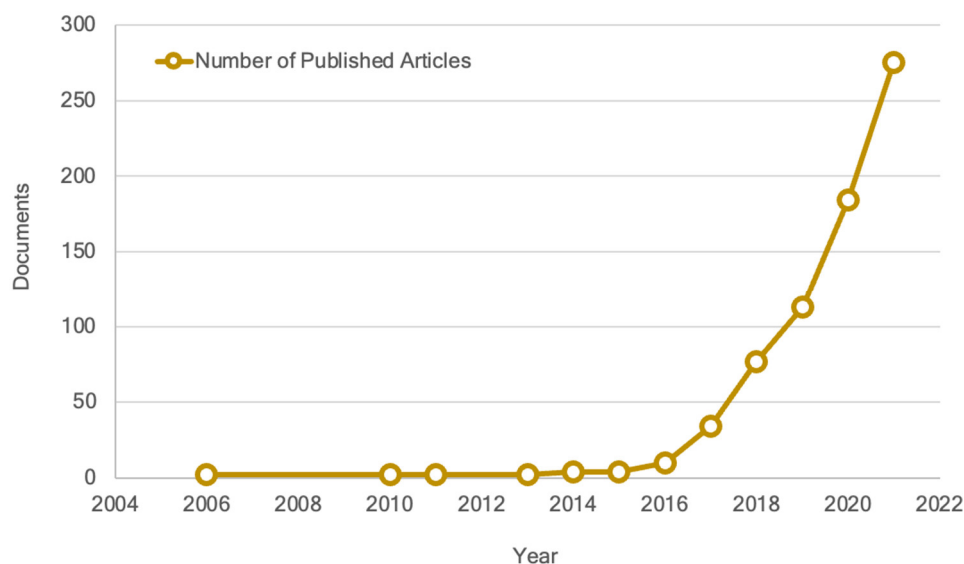
Figure 2. Growth trajectory of articles on sustainable supply chain management in a circular economy through October 2021 (*n* = 709).

Analysis of the subject domains encompassed in the 709 articles revealed a highly interdisciplinary knowledge base focusing on the dual concepts driving this review (see Figure 3). Notably, scholarship from environmental sciences, business, management and accounting, engineering, and energy accounts for more than two-thirds (68%) of the literature. This suggests potential for significant innovation through the cross-fertilization of theoretical perspectives and interdisciplinary solutions.
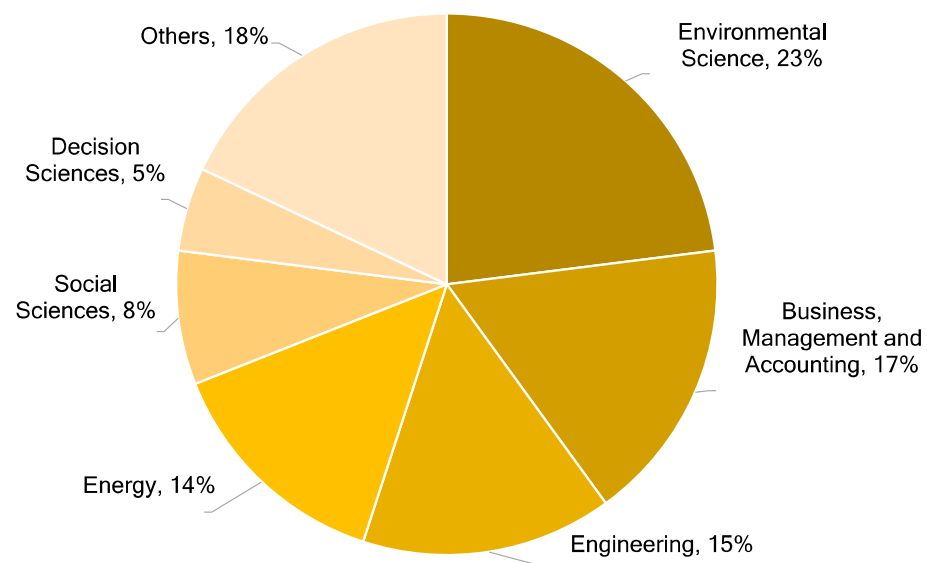
Figure 3. Subject area distribution of the literature on sustainable supply chain management in a circular economy (*n* = 709). Note. Subject areas (18) contributing less than 5% were grouped into "others".

The heat map in Figure 4 highlights concentrations of scholarship originating in particular countries/regions as well as the global reach of this literature. Scholars from the United Kingdom, Italy, United States, India, and China have made the largest contributions to this literature. More broadly, scholars from Europe and Asia have been particularly active contributors to this knowledge base. Indeed, the aggregated literature published by all European Union countries and the United Kingdom comprises slightly more than 50% of the database. This interest among European scholars may be explained by the European Commission's 2015 endorsement of circular economy-related actions as a priority mode of response to sustainability challenges [57]. Increasing interest from scholars in China is similarly policy-related, driven by the enforcement of China's Circular Economy Promotion Law which was established in 2009 [58].

4.2. High Impact Documents on Sustainable Supply Chain Management in a Circular Economy

The most highly cited documents in this knowledge base have focused on the conceptual integration of the core concepts (e.g., [50,59]), as well as on identifying relevant drivers, barriers, business models, practices, and strategies (e.g., [7,60]). We noted a pattern of interdisciplinary collaboration among the authors of 13 of the top-cited articles. This collaboration was evident in articles that drew upon management and production engineering [13], economics and marketing [22], and corporate sustainability, business, economics, and industrial design engineering [60]. Moreover, there has been a high level of collaboration not only among scholars from different geographic areas but also between developed and developing countries (e.g., [13,59–62]).

The top-cited articles evidence a balance towards empirical studies (11 articles), when compared with conceptual (4) and review (4) articles. This suggests room for more conceptual development and reviews of research in this literature. For example, Winkler (2011) [63] introduced the sustainable supply chain network (SSCN) concept by moving from isolated applications of waste management in the production process to a closed-loop production system in which interacting companies work together to create a network for collecting and conditioning waste to be reused as resources. Winkler (2011) [63] emphasized that companies within an SSCN should involve those outside the same industry who can benefit from waste and use it as materials, as well as those providing know-how, technologies, and services in collecting, conditioning, or exchanging waste material. As the proposed network is built within the circular economy context, the supply chain network is extended

to the end-of-life stage when products are recovered effectively from customers for reuse, remanufacture, or recycling [63].
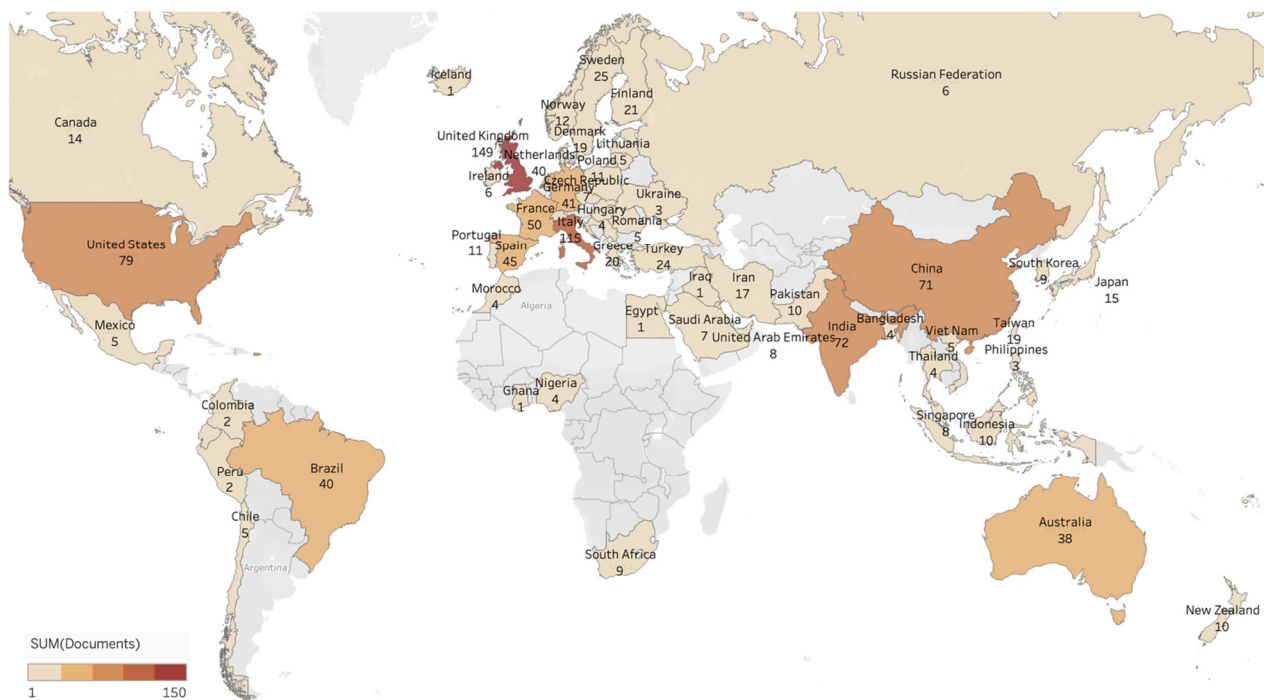
Figure 4. Geographical distribution of the literature on sustainable supply chain management in a circular economy, 2006–2021 (*n* = 709).

The review conducted by Lüdeke-Freund et al., (2019) [60] consolidated key ideas emerging from the literature. They proposed that a supply chain with reverse loops represents the backbone of the circular economy, and identified 26 business models that derive from the integrated concepts (see also [14,59]). These include, for example, a product-service system, take-back management, and waste handling and management [64,65].

Govindan and Hasanagic (2018) [7] identified 34 practices carried out by enterprises after adopting a circular economy perspective on supply chain management. For example, they highlighted the increased eco-efficiency in production that results from integrating 6R—reduction, reuse, recycling, recovery, redesign and remanufacture—into the production process [21,46,62,65]. They also identified efficiencies gained through corporate collaboration within industrial parks [66], as evidenced in China, Japan, India, the European Union, and the United States. This strategy leverages resource exchange in the form of by-products, materials, and energy [46], as well as the potential of shared recycling [21].

The review conducted by Kalmykova and colleagues (2018) [67] identified 45 circular economy strategies that can be applied by different actors in the value chain. These include material sourcing, design, manufacturing, distribution and sales, consumption and use, collection and disposal, recycling and recovery, remanufacturing, and circular inputs. Their analysis further highlighted the role played by community stakeholders with respect to sustainable consumption and usage [67].

These business models, practices, and strategies share similarities in terms of their enablers. However, these business models require clear performance measurement metrics in order to achieve desired systemic effects on the triple bottom line of corporate outputs. Notably, the literature suggests a current imbalance with social sustainability impact receiving less attention.

The empirical studies contained in the list of top-cited articles address production and consumption in a wide range of industries including aluminum, chemical, leather, building, construction, food, furniture, fashion, and electronics (see Table 3). Notably, however, only

a single study focused on consumers [68]. Wang and Hazen (2016) examined the effect of remanufactured product knowledge on consumers' perceptions and their purchase intent in China. They found that quality knowledge had the strongest effect on perception and purchase intention when compared with cost and green attributions.

On the production side, empirical evidence captured by case studies and interviews underpins the integration of supply chain and circular economy concepts. For instance, Genovese et al. (2017) [9] provided evidence on emissions reduction through supply chain carbon mapping. Through four case studies, Geissdoerfer et al. (2018) [59] identified opportunities to reduce negative environmental and social impact through proactive multiple stakeholder management. These included supply chain network development for product recovery at the end of product life, use of recycled material mix to reduce the raw material import dependency, and alternate modes of transportation in order to reduce traffic-related pollution.

In addition, advanced technologies were studied as key enablers for sustainable production and supply chain management. For example, Pan et al. (2015) [8] reviewed waste-to-energy technologies and proposed strategies to implement waste-to-energy supply chains in a circular economy context. These included policy formation, economic schemes, performance evaluation measures, programs for social acceptance, and investment mobilization. Lopes de Sousa Jabbour et al. (2018) [13], Nascimento et al. (2019) [14], and Despeisse et al. (2017) [12] examined the applications of Industry 4.0 technologies such as additive manufacturing to manufacture products with 3D printers and treatment of waste for use as raw material.

4.3. Intellectual Structure of the Literature

The intellectual structure, or theoretical pillars of the literature, was analyzed through author co-citation mapping (see Figure 5). The size of an author node on the co-citation map suggests the frequency with which a scholar was cited in the reference lists of the review documents [48]. The proximity of nodes reflects the relative degree of intellectual affinity of the corresponding authors [48]; authors located close together (e.g., Van Wassenhove and Guide) are, therefore, considered to be closely affiliated. The lines connecting author nodes represent co-citation "links" between the two scholars; the density of the lines reflects their co-citation frequency [53]. The colored clusters represent "schools of thought" consisting of authors whose publications tend to share a common lineage [53,54].

The author co-citation map in Figure 5 visualizes four schools of thought, which we have labeled Sustainable Supply Chain Management, Circular Economy, Sustainable Production and Environmental Management, and Reverse Supply Chain Management. The coherence of the clusters highlights the clarity of the literature's conceptual structure. Though the smallest of the four schools of thought, the central location and numerous links to other schools suggests that Sustainable Supply Chain Management is the conceptual anchor of this literature. Based on his influence across all four schools, Joseph Sarkis is the key "boundary-spanning" scholar in this literature. His contributions span a wide range of conceptual foci including sustainable operations, environmental management, green supply chain management strategic decision frameworks, and performance measurement methodologies [69–71]. Sarkis's collaborations with Zhu and Geng in China cover a wide range of research including system pressures, operational practices, measurement models, and S-SCM in a circular economy in the Chinese context [72–74].

Sarkis' most recent contributions include a performance measurement framework for resilient supply chains, analysis of social sustainability impact from technologies under a circular economy approach, and assessment of corporate sustainability standards in tier-based supply chains [75,76]. Recent studies published by Seuring focus on social sustainability, uncertainty management, resilience, collaboration, and supply chain management in a circular economy [77–79].

Table 3. Top-cited documents in the Scopus-indexed literature on sustainable supply chain management in a circular economy (*n* = 709).

Rank	Document	Type	Scopus Citations
1	Genovese et al. (2017). Sustainable supply chain management and the transition towards a circular economy: Evidence and some applications.	Emp	407
2	Kalmykova et al. (2018). Circular economy—From review of theories and practices to development of implementation tools.	Rev	350
3	Pan et al. (2015). Strategies on implementation of waste-to-energy (WTE) supply chain for circular economy system.	Con	264
4	Lopes de Sousa Jabbour et al. (2018). Industry 4.0 and the circular economy: A proposed research agenda and original roadmap for sustainable operations.	Con	258
5	Geissdoerfer et al. (2018). Business models and supply chains for the circular economy.	Emp	241
6	Govindan and Hasanagic (2018). A systematic review on drivers, barriers, and practices towards circular economy: A supply chain perspective.	Rev	239
7	Zhu et al. (2010). Circular economy practices among Chinese manufacturers varying in environmental-oriented supply chain cooperation and the performance implications.	Emp	225
8	Homrich et al. (2018). The circular economy umbrella: Trends and gaps on integrating pathways.	Rev	190
9	Park et al. (2010). Creating integrated business and environmental value within the context of China's circular economy and ecological modernization.	Emp	186
10	Lüdeke-Freund et al. (2019). A review and typology of circular economy business model patterns.	Rev	179

Table 3. *Cont.*

Rank	Document	Type	Scopus Citations
11	Nascimento et al. (2019). Exploring Industry 4.0 technologies to enable circular economy practices in a manufacturing context: A business model proposal.	Emp	161
12	Despeisse et al. (2017). Unlocking value for a circular economy through 3D printing: A research agenda.	Con	155
13	Wang and Hazen (2016). Consumer product knowledge and intention to purchase remanufactured products.	Emp	141
14	Hong et al. (2018). Sustainable supply chain management practices, supply chain dynamic capabilities, and enterprise performance.	Emp	138
15	Moktadir et al. (2018). Drivers to sustainable manufacturing practices and circular economy: A perspective of leather industries in Bangladesh.	Emp	130
16	Nasir et al. (2017). Comparing linear and circular supply chains: A case study from the construction industry.	Emp	124
17	Zeng et al. (2017). Institutional pressures, sustainable supply chain management, and circular economy capability: Empirical evidence from Chinese eco-industrial park firms.	Emp	121
18	Islam and Huda (2018). Reverse logistics and closed-loop supply chain of Waste Electrical and Electronic Equipment (WEEE)/E-waste: A comprehensive literature review.	Rev	119
19	Winkler (2011). Closed-loop production systems-A sustainable supply chain approach.	Con	119
20	Leising et al. (2018). Circular Economy in the building sector: Three cases and a collaboration tool.	Emp	116

Con = conceptual; Emp = empirical; Rev = review.
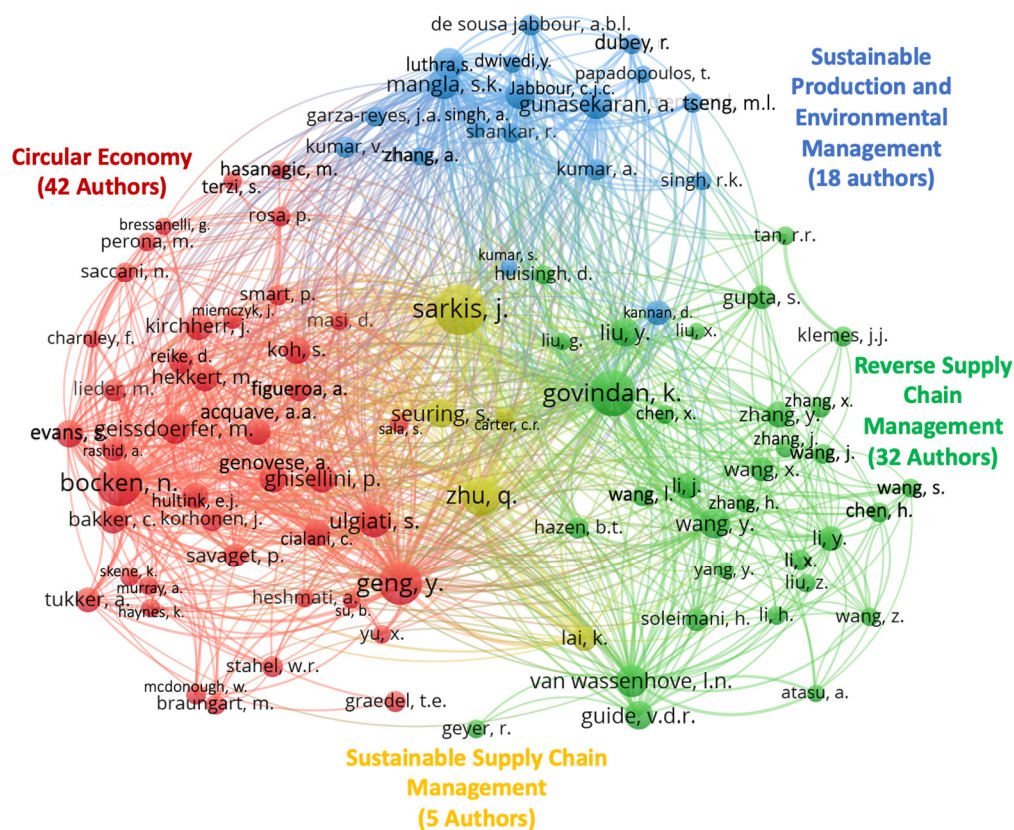
Figure 5. Author co-citation map of the literature on sustainable supply chain management in a circular economy, with a threshold of 80 co-citations (97 authors).

The Circular Economy school, comprising 42 authors, is the largest of the four clusters. Key scholars in this cluster (e.g., Bocken, Geng, Ulgiati, Geissdoerfer, Ghisellini, Genovese) represent diverse fields including engineering, environmental science, science and technology, business and management, and sustainable development. Their published works focus on conceptualizing the circular economy, identifying drivers and constraints, developing new business models, and developing applications as a vehicle for sustainability transition [9,11,46,80,81]. Their research highlights the importance of measurement when seeking to bring to bring about systems change in circular economy practices [11,46,80].

The collaboration between Ulgiati and Ghisellini yielded an extensive review of the circular economy at micro, meso, and macro levels of implementation. The Ghisellini et al. (2016) [46] review identified need for more research on measurement indicators for circular economy application. Ulgiati's research in the EU identified opportunities and challenges concerning the transition into a circular economy [82,83]. Bocken, Geissdoerfer and Evans emphasized conceptualizing circular economy through product design and business models with empirical studies focusing on the passage of the model from linearity to circularity [25,59,80,84,85].

The Sustainable Production and Environmental Management school comprises 18 authors, with key scholars including Mangla, Luthra, Jabbour, Gunasekaran and Kannan. Their research has focused on sustainable production, green manufacturing, production planning, optimization, and sustainable operations as well as environmental management. Recent publications have applied the circular economy concept explicitly to the production process [86–89].

Mangla and Luthra evaluated barriers and challenges of the circular supply chain, building frameworks for supplier selection, and providing practical implications based on studies in India [90,91]. Jabbour and colleagues proposed a framework that integrates the circular economy concept and human resource management from a change management perspective [92]. Jabbour and Gunasekaran focused on the adoption of advanced digital

technologies (Industry 4.0) as a means of integrating the circular economy with production and supply chain management. These technologies have included big data, cloud manufacturing, internet of things, additive manufacturing, and blockchain [13,93,94].

The last cluster, Reverse Supply Chain Management, consists of 32 authors, led by Govindan, Van Wassenhove, Wang, Liu, and Guide. These authors span engineering, social sciences, business, and management. Their research has concentrated on reverse supply chain management, circular supply chains, waste management, and integrated reverse loop practices including reuse, remanufacturing, recycling, and product-service systems [34,95,96]. Notably, authors in this school have also focused on the consumption side of supply chain management.

Govindan has examined reverse supply chain management from the perspectives of network development, decision marking models, forecasting, provider selection criteria, and performance measurement metrics [34,97,98]. Van Wassenhove and Wang's research has sought to assess reverse-loop circular economy practices including return, leasing, renting, sharing, and remanufacturing [68,95,99]. Research within this school has also examined consumer knowledge, perceptions, preferences, adoption criteria, and purchase intention toward products and services under the circular economy concept [68,99–101].

5. Discussion

This bibliometric review of research on sustainable supply chain management (S-SCM) in a circular economy builds upon prior reviews by explicitly linking the related but conceptually distinct concepts of S-SCM and circular economy. The main contribution of the review is to provide insights into how the conceptualization of S-SCM is enriched through integration with the circular economy.

This bibliometric review confirmed that S-SCM in a circular economy is an emergent field of study. Moreover, we believe that stakeholder pressure for achieving the UN SDGs will continue to generate interest in this interdisciplinary field of research, policy, and practice [19,102–104]. This conclusion is supported by the current growth trajectory of the literature (see Figure 2), as well as by the policy-driven contributions to this literature by scholars from the European Union, United Kingdom, and China [57,58]. Indeed, the literature already evidences unusually strong collaboration among scholars from different geographies.

Analysis of the top-cited documents in this literature highlighted the means through which the concept of the circular economy has transformed sustainable supply chain management strategies. This transformation is enabled by six reverse cycles of the circular economy: (1) repair and maintenance, (2) reuse and redistribution, (3) refurbishment and remanufacturing, (4) recycling, (5) cascading and repurposing, and (6) resource extraction [46,60]. Furthermore, these documents suggests that reframing supply chain management from a circular economy perspective has the potential to yield benefits at several levels.

At the macro level, countries can expect to achieve more rapid progress towards sustainable development goals related to resource security, emissions reduction, and landfill usage when supply chain management adopts circular economy principles [46]. At the meso level, industry collaboration can reduce resource scarcity and price volatility [13,22,64,66], lower harmful emissions [9,105], and increase support from communities through green operations and supply chain collaboration [46,60,66]. Collaboration creates the possibility for achieving the critical mass in operations that makes sustainable supply chain management economically viable for individual firms. At the micro level, adopting circular economy principles enables companies to position themselves with the right to operate in global markets, build brand reputation, create new revenue streams, and reduce business risks resulting from inventory and supply shortages [18,46,60,62].

The top-cited studies also point towards the potential that Industry 4.0 technologies hold for leveraging circular economy principles in supply chain management. Technologies such as additive manufacturing, big data, artificial intelligence, blockchain, and cloud

computing can be used to enhance resource recovery, reduce virgin material exploitation, and lower carbon emissions [12–14]. These technologies enable firms to gain greater precision in supply-demand forecasting, secure sustainable resources through circularity, and create new revenue streams from innovative products and services derived from circular economy strategies. Therefore, sustainable supply chain management enabled by advanced technologies has the potential to accelerate the transformation from linear to circular economy, and progress toward sustainable consumption and production [106,107].

Moreover, the examination of the highly cited documents indicated that the business models, strategies, and practices associated with managing supply chains in a circular economy may require a shift in the use of performance metrics. More specifically, the nature of the circular economy is such that performance measurement metrics will be needed for each actor engaging in this multi-level, systemic process. At the micro-level, relevant metrics are reflected in environmental, social, and governance (ESG) goals that organizations develop and report. However, more attention needs to be given to the aggregation of corporate metrics at the meso-level in the form of industry indexes and benchmarks, and in articulating linkage to the UN SDGs at the macro-level.

The author co-citation map revealed four schools of thought comprising the intellectual structure of the knowledge base on S-SCM in a circular economy. The first school, Sustainable Supply Chain Management, conceptualizes supply chain management for sustainable development [3,70]. Notably, this school's location in the center of the map highlights its role as the conceptual anchor of this literature. The Circular Economy, the second school, has focused on process reconfiguration, product redesign, and new business models that are grounded in a regenerative conceptualization of sustainable consumption and production [9,11,81]. The third school, Sustainable Production and Environmental Management examines how government and corporate policies and practices reorient operations and manufacturing to reduce harmful environmental effects while supporting economic growth [87–89]. The last school, Reverse Supply Chain Management, highlights the role that "reverse loops" associated with a circular economy can play in extending our understanding of sustainable supply chain management [7,68,108].

The map reframes sustainable supply chain management by connecting corporate practices to both production and consumption [47,99,100,109]. Nascimento et al. (2019) [14] asserted that supply networks must be circular in order to achieve sustainable production. Winkler (2011) [63] emphasized the need for all actors along the supply chain to co-operatively implement circular economy practices from production to consumption. The vital interdependency among circular economy, sustainable operations, and sustainable consumption is visualized on the map where sustainable supply chain management is located in the center linking the three concepts (see Figures 4 and 5).

On the production side, studies revolve around the integration of circular economy and sustainable production and operations. The goal is to create self-sustaining production systems minimizing virgin material exploitation through waste recovery, reuse, and transformation [22,90,93]. In a circular economy, supply chain management practices recover waste which can be transformed into raw material for use in newly designed materials, products, and supply chains [94,110]. Such systems are enabled by cascading, repurposing, and extraction processes that are, in turn, driven by renewable energy [9,11,46].

Studies have also uncovered circular-economy-related supply chain practices that support sustainable consumption. These include infrastructure enabling maintenance and repair, redistribution and reuse, remanufacturing and refurbishment, and recycling services, education to change consumer attitudes and behaviors, and incentives in the form of competitive pricing achieved [68,96,99,100,108]. Both self-sustaining production systems and infrastructure that increases consumer awareness, involvement, and responsibility also offer possibilities for moving toward more sustainable consumption.

Over the last 30 years, studies of sustainable supply chain management have tended to adopt an isolated view towards forward and reverse flows [3–5] However, as Lüdeke-Freund et al. (2019) [60] emphasized, the circular economy implementation posits the

reverse loop supply chain as its backbone. All 26 business models captured by Lüdeke-Freund et al. (2019), 34 circular economy practices identified by Govindan and Hasanagic (2018) [7], and 45 circular economy strategies proposed by Kalmykova et al. (2018) ride along the 6R reverse loops of the supply chain [46]. Adoption of a circular economy perspective emphasizes the long-lasting design and reduction concept which involves upstream collaboration with suppliers and forward flow providers.

6. Conclusions

The interplay among the four schools of thought identified in this review highlights the value gained by considering supply chain management in tandem with the circular economy. Over the past 30 years, scholars and practitioners in sustainable production, operations, and supply chain management increasingly integrated environmental management principles in order to reduce harmful effects on the environment. Yet, predominant conceptualizations of S-SCM continued to operate on a take–make–dispose linear economy model. This paradigm does not address the loss of valuable materials in landfills, resource scarcity, and over-consumption. The circular economy concept challenges production and supply chain management to adopt a "systems view" of sustainability solutions. When a circular economy perspective is adopted, managers begin to think in terms of product design, as well as processes for reduction, reuse, recycling, recovery, redesign and remanufacture. Putting these reverse loop processes into practice, however, requires more proactive engagement and collaboration among a broad set of stakeholders. In this closing section of the paper, we highlight limitations of the review, and discuss implications of the findings.

6.1. Limitation of the Findings

Two limitations deserve attention. First, as discussed earlier, bibliometric reviews are designed to analyze knowledge base attributes in lieu of examining specific findings from a body of literature. Therefore, despite the fact that this review did discuss theoretical trends in this emerging literature, this was based primarily on inferences drawn from co-citation analyses of bibliographic data associated with the Scopus-indexed database of documents. Future reviews may draw upon our findings in order to guide closer examination of findings using more fine-grained review methods.

Second, to enable closer reading of selected documents, the authors chose to exclude articles published in languages other than English. We do wish to note, however, that China, Brazil, and Italy were identified as particularly active in producing research on this topic. Reviews of the local language literatures in these countries could provide a useful complement to our own research.

6.2. Implications and a Proposed Model toward Sustainable Futures

The first implication from this review lies in the conceptual sphere. Drawing upon our findings, we have adapted Rebs, Brandenburg and Seuring's (2019) [111] model of sustainable supply chain management in a circular economy model (see Figure 6). The original model included three key elements: circular supply chain, stakeholder engagement, and triple bottom line benefits.

Our proposed model (see Figure 6) expands the original Rebs et al. (2019) [111] model to adopt a strategic perspective drawn from Suriyankietkaew and Petison's (2020) [42] review of the literature on strategic management for sustainability. The integrated model incorporates macro-level environmental constituencies and pressures (e.g., global SDG movement, changing market demands, institutional policies) that can be viewed as drivers of change in sustainability policies and practices (i.e., balance, resilience, sustainable development) toward sustainable futures. The proposed framework may become a sustainable business model that provides pragmatic guidance toward corporate sustainability.

Based on the enduring barriers identified in transitioning to a circular economy from supply chain management perspective [7,8,82], we identify several implications for policymakers. First, the most urgent tasks are the issuance of circularity policies, empowerment

of enforcement bodies, and development of stronger, relevant performance management metrics. The launch of top-down initiatives in the forms of subsidies and tax benefits can reduce the burden of capital investment on eco-innovation for product/service redesign, production, and supply chain reconfiguration with reverse loops, and the deployment of advanced technologies.

Second, along with these initiatives, a platform is needed that supports collaboration among different actors within and outside supply chains, enhances information sharing, and enables clearer benchmarking of progress and results. The launch of consumer education programs is needed to overcome attitudinal and behavioral barriers to the use of eco-products. As Ghisellini and Ulgiati (2020) [82] pointed out, recycling remains by far the dominant practice among the "6Rs". Within corporate supply chain management, this highlights both the urgency and potential of diversifying circular economy practices. This suggests a need to reprioritize financing, and build infrastructure that supports reduction, reuse, recovery, remanufacture and redesign practices.

Third, for practitioners, the proposed framework provides guidelines for evaluation of environmental impact, assessment of demand, and development of innovative strategies. Practitioners should seek to increase alignment between headquarters' ESG goals and local ESG initiatives, particularly in multinational companies. The review provides evidence that can support managers in building a business case to secure budget for leveraging reverse loop practices in the supply chain.

Findings from this review also suggest several directions for future research. First, future research can test and further refine the proposed framework. With the impact of COVID-19 pandemic, different countries and industries have their own challenges and priorities. It is imperative to validate the environment and consider different theories such as stakeholder theory and complexity theory.

Second, this review found a geographical imbalance in the global literature, with limited research from developing countries. Yet, developing societies are critical actors in global trade and supply chains. Thus, future studies should place greater emphasis on how developing nations are incorporating circular economy principles to refine supply chain management practices.

Third, collaboration among actors within and outside supply chain has been highlighted as a crucial factor driving systems change [6,22,25,60]. Future research should look more in depth into the duties and obligations of various supply chain participants. The complexity of global supply chain networks, different stages in implementing circular economy policies and growth agenda might cause the deviation when defining roles and responsibilities.

Finally, future studies are needed that examine the use of performance measurement metrics employed at micro, meso, and macro levels of sustainable supply chain management in a circular economy context. For example, research could investigate how environmental, social, and governance (ESG) goals align with actions and how they are measured in relation to United Nations Sustainable Development Goals (UN SDGs). Factors such as business structures, sizes, and geographies should be taken into consideration. For example, multinational corporations might centralize performance measurement activities and report at the corporate level without the breakdown by geography. This research could also examine how this would impact the way each country reports progress toward UN SDGs.
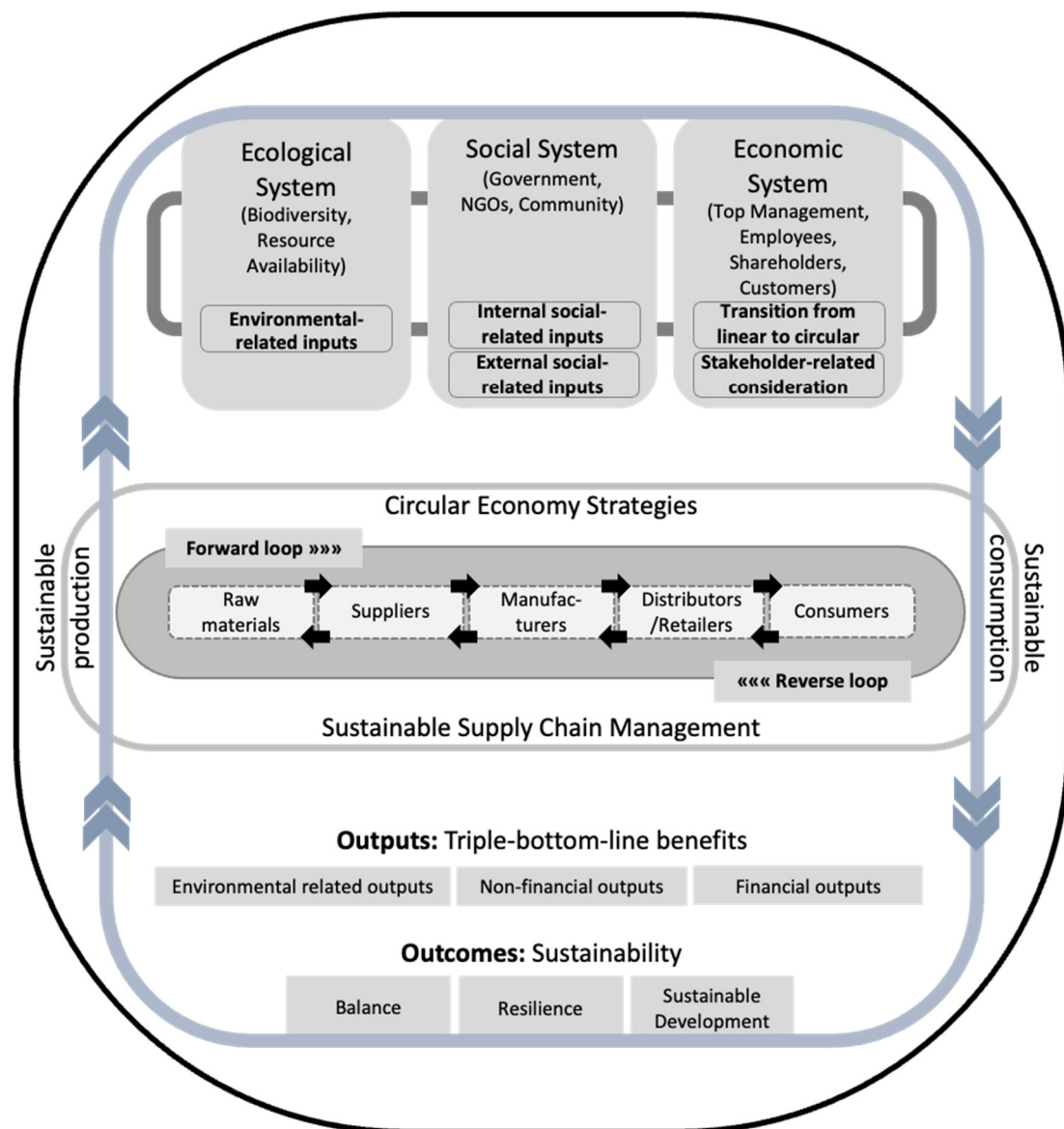
Figure 6. Proposed framework for sustainable supply chain in circular economy in the COVID-19 era (Source: adapted from Rebs et al., 2019 [111], p. 1276 and Suriyankietkaew and Petison, 2020 [42], p. 18).

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A Review of the Global Climate Finance Literature

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Abstract: This study conducts a bibliometric analysis and literature review of studies on climate finance. Since the Paris Agreement was adopted in December 2015, the academic community has paid closer attention to this emerging topic, as witnessed by a sharp increase in the number of publications. Our review lists this field's most influential publications, authors, and journals, based on citations. The bibliometric analysis highlights the multidisciplinary nature of climate finance research, which spans environmental science, energy, economics, and finance. The citation analysis also reveals that, despite the exponential growth in publications related to climate finance, leading journals in finance and economics have so far published only a small number of articles in this literature. In addition, the citation analysis identifies four main themes in the knowledge domain: the financing of renewable energy; the impacts of climate change risks on the financial sector; investor preferences for green investments and the impact on corporations; and the pricing and hedging of climate change risk in financial markets.

Keywords: climate finance; climate change; green finance; bibliometric review

1. Introduction

Climate finance is an emerging field of study that has drawn significant attention from the academic community, especially since the adoption of the Paris Agreement in December 2015, which seeks to limit the increase in global average temperatures to below 2 °C above pre-industrial levels. Climate finance studies the funding of public and private investments for the mitigation of and adaptation to climate change [1]. More broadly, climate finance also investigates the awareness and attitudes of investors toward climate change risks, the effects of these risks on their investment decisions, and the pricing and hedging of climate change risks in financial markets [2].

Climate finance studies are important for at least two reasons. First, climate change mitigation to limit global warming requires huge investments in renewable energy and new technology, as well as investments to make the economy less energy-intensive. For example, Boehm et al. [3] estimate that climate finance flows need to increase to USD 5 trillion per year by 2030 to limit global warming to the more ambitious target of 1.5 °C. Relatedly, adaption to climate change will also require huge financial flows, especially to developing countries, which are most vulnerable to rising temperatures and sea-level rises. According to estimates by UNEP [4], adaptation costs for developing countries are expected to rise to USD 140–300 billion annually in 2030, up from USD 70 billion per year in 2020. Figure 1 provides an overview of the main sources of climate finance, amounting to USD 653 billion in 2019–2021, and their various uses for mitigation and adaption, based on estimates by the Climate Policy Institute [5].
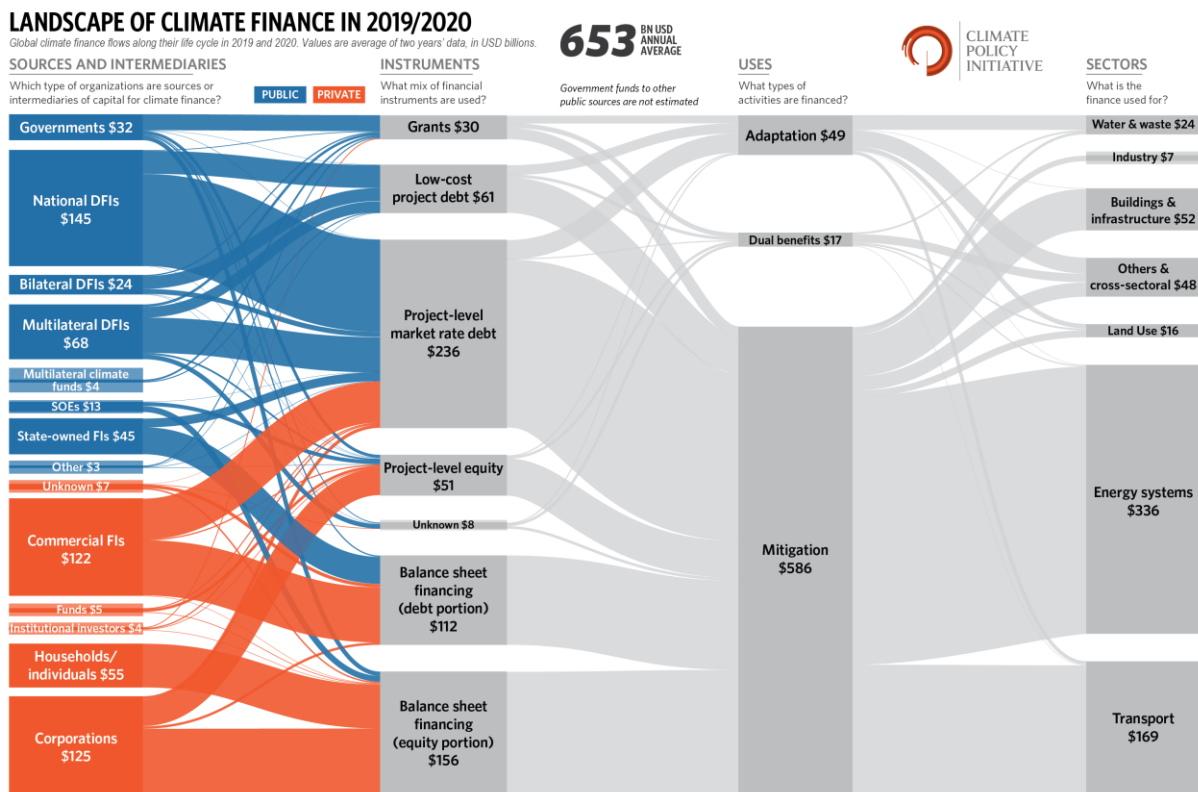
Figure 1. Climate finance sources and uses. Source: CPI [5]. Reprinted under a CC BY-NC-SA 4.0 License. DFI stands for development finance institutions.

Second, given the potentially large economic and social impacts of climate change, investors need to develop the capacity to measure and manage the impact of climate change risks on their investments, for both financial and real assets. An important related question is how climate change risks can be hedged by investors. Furthermore, to what extent are climate risks already priced into financial markets nowadays? The climate finance literature reviewed in this paper has started to address these urgent topics, showing a huge increase in published articles, especially in recent years (2015–2022).

This climate finance literature review addresses the following research questions:

1. What is the overall volume and distribution of published climate finance studies by time, country, and journal?
2. What articles and authors have had the most significant influence on climate finance research, based on citations?
3. What clusters of journals and authors that are often cited together can be identified in the climate finance literature?
4. What have been the main research topics in climate finance in the past, and what are they in the present?

To address these research questions, we conducted a bibliometric review of 1347 journal articles in the Scopus citation database that are related to climate finance. Our bibliometric review highlights the most cited articles, journals, and authors. Furthermore, through journal and author co-citation analyses, we identify sub-fields and clusters of related research in the climate finance literature. In addition, we analyze the most frequently cited keywords and their evolution over time to show the topical focus in climate finance research and how it has changed over time. Apart from the bibliometric review, we also shortly summarize and synthesize the content of the most cited articles to provide researchers with an overview of the field and the main topics covered in this literature. In addition, we review the most cited climate finance works published in the top finance field journals.

The added value of a bibliometric review is that it can highlight contributions from any field or journal because it only focuses on objective article properties such as keywords and citations. A substantive literature review can add more depth but is limited by the field-specific knowledge and subjective interests of the review authors. This matters especially in climate finance, which is a truly multidisciplinary subject involving the fields of finance, economics, energy policy, and environmental science, amongst others. Our bibliometric review identifies the most influential articles, providing a good entry point for those who are new to the field. In addition, for climate finance experts, it can highlight influential articles from other disciplines that otherwise may go unnoticed.

This paper contributes to the literature by combining a bibliometric review of the climate finance literature with a substantive review of the most cited articles and a review of highly cited articles in the top finance field journals. We extend an earlier bibliometric review of Zhang, Zhang, and Managi [6] of the green finance literature, which covered 381 publications in the Web of Science citation database from 2001 to 2018, to a review of 1347 journal articles in Scopus in the period 1991–2021. Furthermore, we complement and extend recent substantive reviews of the climate finance literature by Hong et al. [1] and Giglio et al. [2]. The latter two reviews focus on publications in leading finance and economics journals, which have only recently begun to publish articles on climate finance. Our review also includes and highlights influential earlier contributions published in non-core and multidisciplinary journals, as well as frequently cited climate finance articles in related fields, such as energy policy and environmental science.

2. Materials and Methods

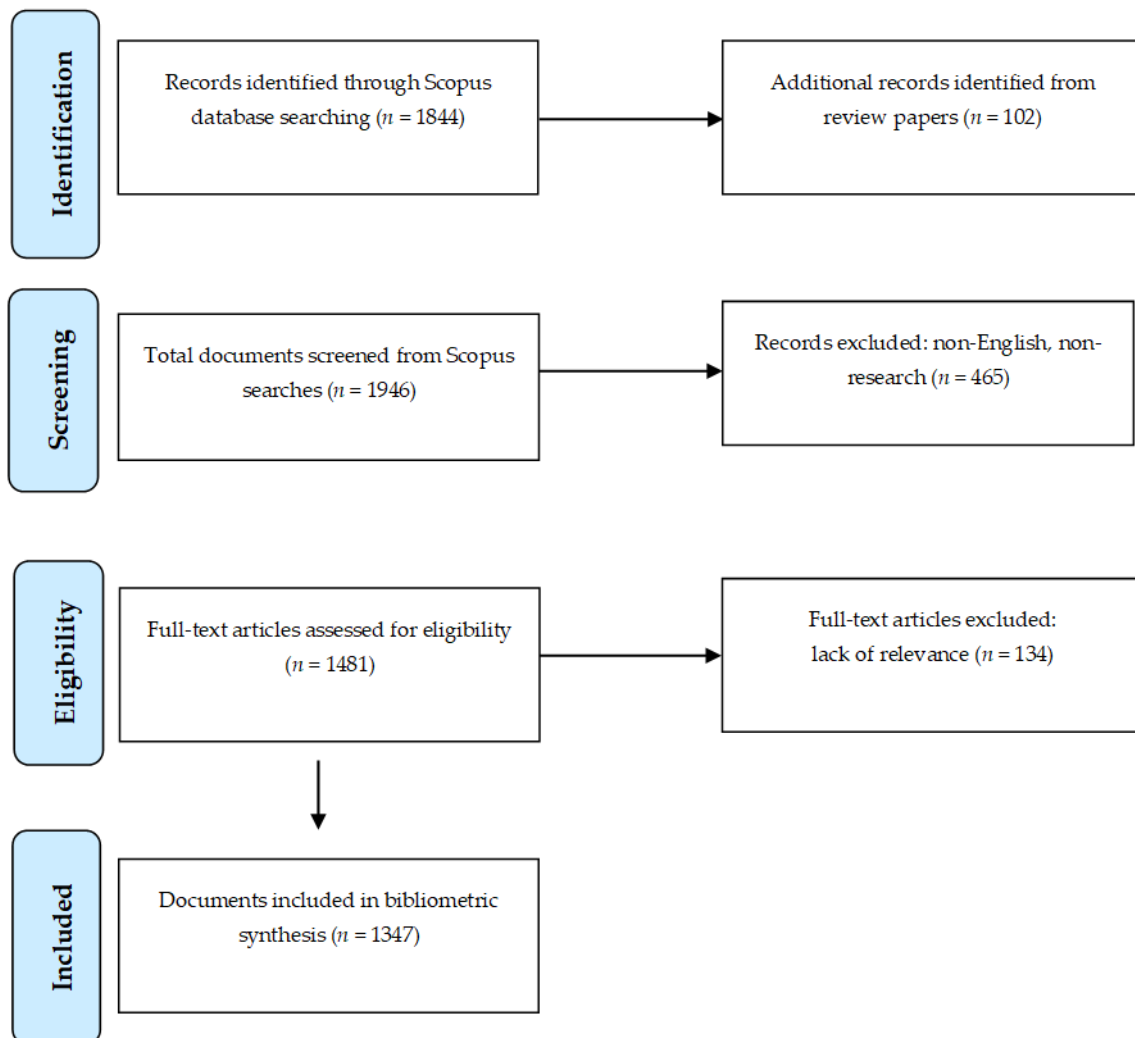### 2.1. Identification of Sources

This bibliometric review adopts the Scopus citation database to conduct the study because it has broader coverage than its primary industry competitor, the Web of Science (WoS) database [7]. We can further confirm this conclusion by comparing our study with a recent bibliometric study on climate finance using the WoS database [8], which includes far fewer documents from each year.

Following previous bibliometric reviews [9,10], we adopt the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines for conducting this systematic review [11]. PRISMA outlines four steps to identify and extract documents for a bibliometric review, as shown in Figure 2.

First, we searched for articles containing the following terms in their title or keywords: climate finance, carbon finance, green finance, green investing, or green bonds (and alternative spellings: climate financing, carbon financing, green financing, or green investment). Second, we searched the abstract, title, and keywords for the combination of "climate change" (or "climate risk") and one of seven finance-specific terms: "asset pricing", "stock return", "stock market", "bond market", "financial market", "portfolio" & "investor", or "portfolio" & "hedging". We had to employ several finance-related search terms because some articles that did not explicitly refer to "climate finance" (or a related search term) in their title had to be identified using their abstract through a combination of "climate change" (or "climate risk") and the seven finance-specific search terms. For example, Choi, Gao, and Jiang [12] published a journal article titled "Attention to Global Warming" in the *Review of Financial Studies*' special issue on climate finance. This article's title does not seem related to climate finance, and Scopus does not store keywords for this journal. However, it contains "climate change" and "financial market" in its abstract, and therefore it was successfully detected by our set of search terms.

The authors started the initial literature search on 14 February 2022, yielding 1844 articles. Following Zheng and Kouwenberg [10], we limited this review to English journal articles, excluding 470 documents. Moreover, to increase the validity of our study, the authors cross-checked the reference lists of all 70 review-type papers in the database. After the comparison, we identified 102 additional articles not detected by the initial search. In the next step, the authors manually screened the documents to determine whether they

were a good fit for the study. Therefore, papers irrelevant to climate finance, those without author names, and duplicates of other studies were removed from the database. The scan led to the exclusion of 134 documents. The final database contains 1347 peer-reviewed journal articles on climate finance published since 1991.

Identification

| Records identified through Scopus database searching (*n* = 1844) | → | Additional records identified from review papers (*n* = 102) |

Screening

| Total documents screened from Scopus searches (*n* = 1946) | → | Records excluded: non-English, non-research (*n* = 465) |

Eligibility

| Full-text articles assessed for eligibility (*n* = 1481) | → | Full-text articles excluded: lack of relevance (*n* = 134) |

Included

| Documents included in bibliometric synthesis (*n* = 1347) |

Figure 2. PRISMA flow diagram demonstrates the four steps of the systemic review process [10].

2.2. Data Extraction

The 1347 Scopus-cited journal articles were downloaded into a comma-separated value (.csv) file format for bibliometric analysis in VOSviewer. The downloaded data contain each article's citation information, bibliographical information, abstract and keywords, and references. The 1347 articles were also saved in Excel format for descriptive analysis and later imported into the Tableau software for topographical analysis.

2.3. Data Analysis

The bibliometric data analysis consists of two parts. The first part is the descriptive analysis which aims to reveal the essential features of the knowledge domain, such as the most frequently cited articles and the growth trajectory of climate finance studies. The authors perform those descriptive analyses in Excel. The second part is the bibliometric analysis, consisting of citation analysis, co-citation analysis, and a keyword co-occurrence analysis, performed in VOSviewer.

Citation analysis measures the frequency with which other Scopus-listed articles have cited a given unit (author or document) in the review database. Although academic works

can be cited for various reasons [13], academia generally uses citation counts as a measure of scholarly impact [14]. Therefore, citation analysis can reveal influential authors, articles, and journals within a knowledge domain. However, citation analysis is limited by the scope of the database. This limitation means a citation analysis only measures the citation counts from the same index source, while any citation from articles outside the index is not acknowledged [15]. Hence, the citation count tends to vary between different citation index platforms. For example, Heinkel, Kraus, and Zechner [16] had received 370 Scopus citations as of 17 April 2022, whereas they had received 1061 Google Scholar citations and 345 WoS citations as of the same day.

To some extent, co-citation analysis can partially mitigate the limitations of citation analysis. A co-citation occurs when two documents appear together in the reference list of another article [17,18]. For example, when two articles authored by Reboredo [19] and Reboredo and Ugolini [20] appear together on the reference list of a third document [21], these two documents are co-cited. When two documents are frequently co-cited together, it often indicates an intellectual similarity between them [22]. Because co-citation analysis explores the intellectual structure of a knowledge domain through the reference lists of the articles within a database, it therefore covers literature far beyond the coverage of the database used for the review and even goes beyond the coverage of the Scopus index. Given the ability of co-citation analysis to overstep the bounds of the citation database used, it complements traditional citation analysis and offers a more comprehensive understanding of a knowledge domain [10].

Keyword co-occurrence analysis, or co-word analysis, extracts author keywords from the articles within a database to present a graphical network of the topics in the literature and their connections. The underlying assumption of keyword co-occurrence is that when two or more keywords are frequently adopted by the same document, they represent contextual and conceptual similarity [18]. Naturally, the proximity between the keywords on the graphical network map represents the relatedness of the keywords [23]. Moreover, compared with citation analysis or co-citation analysis, keyword co-occurrence analysis draws from the keywords adopted by authors to summarize the main topics in a knowledge domain and their links [24]. In addition, by mapping the occurrences of keywords by date, an author can identify the emerging trends within a knowledge domain and any shifts of topic focus within the knowledge base [25].

3. Results

3.1. Volume and Geographic Distribution of Published Studies

Figure 3 shows the annual number of publications on climate finance in the period of 1991–2021 (1258 out of 1347 articles), with 2021 being the last full year covered in our database. The year 2022 is excluded from the figure, as the data was collected in February 2022. We notice an exponential growth in the volume of climate finance articles, especially from 2015 onwards. Specifically, in the period of 2016–2021, the annual number of climate finance articles published in the Scopus database grew more than fivefold, from 68 to 369 per year.

One of the key developments that may have contributed to this trend is the signing of the Paris Agreement in December 2015, at the Paris Climate Conference [26]. Article 2.1c of the Paris Agreement states that countries must make "finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development" [26]. At COP21 developed countries also reiterated their commitment to mobilize at least USD 100 billion per year by 2020 to support climate change mitigation and adaptation in developing countries [27]. In addition, at COP21 targets were set to limit the increase in global average temperatures to below 2 °C above pre-industrial levels and to pursue efforts to limit it to 1.5 °C.

Climate finance was already on the agenda of policymakers long before 2015. For example, the United Nations Framework Convention on Climate Change (UNFCCC) established the Global Environment Facility (GEF) to fund climate change projects in 1994. The commitment of USD 100 billion per year to support climate-related efforts in developing

countries was made originally at COP15 in Copenhagen in 2009 [27]. Furthermore, at COP 16 in 2010, the Green Climate Fund (GCF) was launched to reduce greenhouse gas (GHG) emissions in developing countries and to help vulnerable countries adapt to climate change. However, Figure 3 suggests that academic interest in climate finance only took off seriously beginning in 2015. In conclusion, the evolution of the literature on climate finance can be linked to events in international climate change policy.
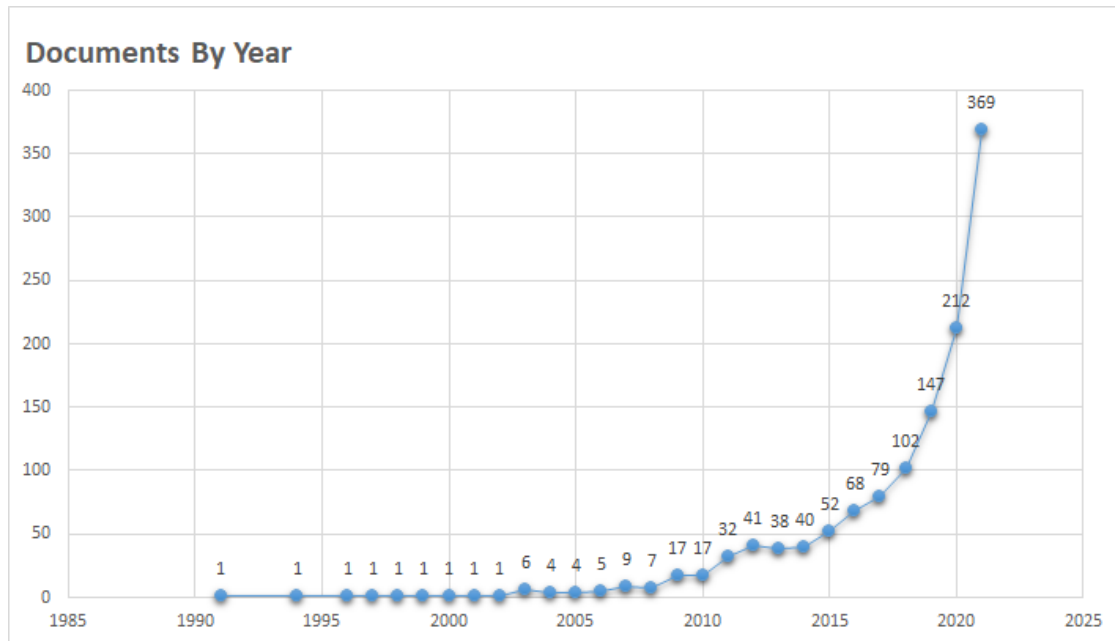
Figure 3. The number of climate finance publications over time, 1991–2021.

Figure 4 shows the geographical distribution of the climate finance literature based on the national affiliation of the authors. We observe that the climate finance literature is truly global, with contributions from all continents, covering 88 countries. China produced the largest number of publications on climate finance in the database (292), followed by the United States (251) and the United Kingdom (192). Relatively few articles in the climate finance literature have an author from Africa or Latin America.

When combing the 27 countries of the European Union (E.U.) together, the E.U. is clearly leading with 555 documents (a share of 27%), compared to 292 (14%) for China and 251 (12%) for the United States. Europe's share of the literature becomes even larger at 40% when we combine the E.U. with other Western European countries (the United Kingdom, Switzerland, Norway, Iceland, and Liechtenstein). For comparison, the share of these European countries in the total number of Scopus documents published in 1996–2021 is 34%, versus 21% for the United States and 12% for China. Hence, the United States contributes a substantially lower share of climate finance studies compared to its overall share in Scopus (12% vs. 21%), while this pattern is the opposite for European countries (40% vs. 34%) and China (14% vs. 12%).

The large gap in climate finance publications between the United States and Western Europe is likely caused by differences in public and political support for climate change mitigation policies. In the United States, concerns about climate change are politically polarized, with a large majority of Democrats supporting climate change policies, while Republicans largely oppose them [28]. As a result of these political divisions, the U.S. Senate never ratified the Kyoto Protocol. Furthermore, under the Trump administration in 2017, the United States withdrew from the Paris Climate Agreement, but it eventually rejoined the pact in 2021 under the Biden administration.

Figure 4. Global distribution of Scopus-indexed journal articles on climate finance by affiliation of the authors, 1991–2021.

By contrast, the E.U. has been one of the leaders in global climate action since the early 1990s, enshrining emission reduction targets in law, providing policy support for renewable energy investments, and introducing a CO_2 emission rights trading system. We highlight these regional differences in climate change beliefs and policies, as they can help explain why the most cited articles in the climate finance literature were nearly all written by authors affiliated with non-U.S. universities (e.g., universities in the E.U., Canada, Japan, the United Kingdom, Switzerland, China, etc.).

Regarding China's large share of the climate finance documents, it may partially be explained by China's overall lead in scholarly output in the Scopus database by 2020 [29]. On the other hand, China has also been pursuing climate change policies more actively in the last decade. For example, in 2020, China's President Xi Jinping announced that China aims to reach peak CO_2 emissions before 2030 and become carbon-neutral before 2060. China was the largest emitter of greenhouse gasses in 2020, whereas the United States has emitted the largest cumulative amount of greenhouse gasses since 1751, closely followed by the E.U. [30].

3.2. Journals

The next objective is to provide an overview of the journals most active in publishing climate finance articles, shown in Table 1.

Table 1. The 20 most active journals publishing climate finance articles ranked by volume of articles, 1991–2021 (*n* = 1347).

Rank	Journal	Publisher	Discipline	Articles	Scopus Citations	CPD
1	*Sustainability*	MDPI	Multi-discipl.	70	558	8
2	*Climate Policy*	Taylor & Francis	Environ. Sci.	60	1031	17
3	*J. Cleaner Production*	Elsevier	Multi-discipl.	50	1410	28
4	*Energy Policy*	Elsevier	Energy	46	2537	55
5	*J. Sustainable Finance & Investment*	Taylor & Francis	Finance	44	388	9
6	*Environ. Science and Pollution Research*	Springer	Environ. Sci.	31	229	7
7	*Energy Economics*	Elsevier	Energy & Econ.	29	730	25
8	*Finance Research Letters*	Elsevier	Finance	20	649	32
9	*Ecological Economics*	Elsevier	Environ. & Econ.	19	667	35
10	*Climate and Development*	Taylor & Francis	Environ. Sci.	16	190	12
11	*Energies*	MDPI	Energy	16	186	12
12	*International Environmental Agreements*	Springer	Multi-discipl.	14	183	13
13	*Resources Policy*	Elsevier	Multi-discipl.	14	24	2
14	*Climatic Change*	Springer	Environ. Sci.	13	160	12
15	*Business Strategy and the Environment*	Wiley	Multi-discipl.	12	337	28
16	*Environmental & Resource Economics*	Springer	Multi-discipl.	12	121	10
17	*Renewable and Sustainable Energy Reviews*	Elsevier	Energy	11	612	56
18	*Technological Forecasting and Social Change*	Elsevier	Multi-discipl.	11	366	33
19	*Review of Financial Studies*	Oxford Uni. Press	Finance	11	311	28
20	*Journal of Environmental Management*	Elsevier	Environ. Sci.	11	272	25

Note: CPD denotes citations per document.

The results reveal that climate finance is truly a multidisciplinary topic, with articles published in journals focusing on environmental science (e.g., *Climate Policy* and *Environmental Science and Pollution Research*), energy (*Energy Policy* and *Energy Economics*), finance (*J. Sustainable Finance & Investment* and *Finance Research Letters*), and economics (*Energy Economics* and *Ecological Economics*), as well as in broad multidisciplinary journals (*Sustainability* and *J. Cleaner Production*). Interestingly, only three journals in the top 20 by the number of articles are pure finance journals (*J. Sustainable Finance & Investment*, *Finance Research Letters*, and *Rev. Financial Studies*), whereas most top field journals in finance and economics in terms of scholarly impact are absent.

Table 2 ranks the journals based on the total number of Scopus citations received, including only citations to articles within our climate finance database. The top cited journals in the climate finance literature reflect the nexus of climate change (environmental science), energy policy, finance, economics, sustainability, as well as management. By far, the largest number of citations are to the journal *Energy Policy* (2537), with the top cited articles focusing on investment in renewable energy and its financing. Second is the *Journal of Cleaner Production* (1410), further emphasizing the importance of financing the transition to renewable energy in this literature. Third is the environmental science journal *Climate Policy* (1031), highlighting the multidisciplinary nature of the body of knowledge. In the fourth and fifth rankings are two cross-disciplinary economic journals, *Energy Economics* (730) and *Ecological Economics* (667), respectively. The first finance journal occurs in sixth position, *Financial Research Letters* (649).

Table 2. The 20 most influential journals publishing climate finance articles ranked by Scopus citations, 1991–2021 (*n* = 1347).

Rank	Source	Publisher	Coverage	Articles	Scopus Citations	CPD
1	*Energy Policy*	Elsevier	Energy	46	2537	55
2	*J. Cleaner Production*	Elsevier	Multi-discipl.	50	1410	28
3	*Climate Policy*	Taylor & Francis	Environ. Sci.	60	1031	17
4	*Energy Economics*	Elsevier	Energy & Econ.	29	730	25
5	*Ecological Economics*	Elsevier	Environ. & Econ.	19	667	35
6	*Finance Research Letters*	Elsevier	Finance	20	649	32
7	*Renewable and Sust. Energy Reviews*	Elsevier	Energy	11	612	56
8	*Sustainability*	MDPI AG	Multi-discipl.	70	558	8
9	*Nature Climate Change*	Nature Pub. Group	Environ. Sci.	7	438	63
10	*J. Sustainable Finance & Investment*	Taylor & Francis	Finance	44	388	9
11	*J. Environ. Econ. Management*	Elsevier	Environ. & Econ.	6	374	62
12	*J. Financial and Quantitative Analysis*	Cambridge Uni. Press	Finance	2	371	186
13	*Technological Forecasting and Social Change*	Elsevier	Multi-discipl.	11	366	33
14	*Business Strategy and the Environment*	Wiley	Multi-discipl.	12	337	28
15	*Review of Financial Studies*	Oxford Uni. Press	Finance	11	311	28
16	*Applied Energy*	Elsevier	Energy	8	277	35
17	*Journal of Environmental Management*	Elsevier	Environ. Sci.	11	272	25
18	*Mitig. Adapt. Strateg. Global Change*	Springer	Multi-discipl.	9	250	28
19	*Environmental Scienceand Pollution Res.*	Springer	Environ. Sci.	31	229	7
20	*J. Financial Economics*	Elsevier	Finance	9	220	24

Note: CPD denotes citations per document.

Three high-impact finance journals also appear in Table 2, namely *J. Financial & Quant. Analysis* (371), the *Rev. Financial Studies* (311), and *J. Financial Economics* (220), at ranks 12, 15, and 20, respectively. Remarkably, these leading finance journals have published only 22 of the 1347 articles in our climate finance database. The *J. Finance*, often considered the top field journal for finance, did not even contribute a single article to the database. The relative lack of attention to climate finance in mainstream finance journals seems to have created a gap that *Finance Research Letters* has filled in (20 articles, 649 citations), as well as the specialized *J. Sustainable Finance & Investment* (44 articles, 388 citations). Overall, we conclude that climate finance is a multidisciplinary field, appearing in journals focusing on energy policy, environmental science and climate change, and economics and finance, as well as in cross-disciplinary journals such as the *Journal of Cleaner Production* and *Sustainability*.

The top finance journals have contributed relatively few articles to the climate finance literature. A study by Diaz-Rainey, Robertson, and Wilson [31] found that only 12 of 20,725 articles (0.06%) published in the leading 21 finance journals from 1998–2015 were related to climate finance. This conclusion also held when they repeated their search in 29 top business journals covering accounting, economics, management, marketing, and

operations research. Goodall [32] and Diaz-Rainey et al. [31] propose several possible explanations for the dearth of climate finance research in top finance journals. One is that finance as a discipline prefers to focus on selected theoretical models and empirical tests of those models, while ignoring practical problems that require a forward-looking and cross-disciplinary mindset.

Another possible explanation is that climate finance was not yet considered a relevant topic by the editors of elite finance and business journals until quite recently. The top finance journals have chief editors that are nearly all based in the United States, where climate change beliefs are more polarized and support for policy interventions by the federal government is much lower than in Europe. In line with this, we note that the top 10 journals publishing articles on climate finance in Table 1 all have senior editors that are affiliated with universities outside the United States (Europe, Canada, China, etc.). Among the top 20 climate finance journals in Table 1, only four journals had an editor based in the United States on their senior editor team (e.g., editors in chief or managing editors) as of December 2022. Those four journals are: *Resources Policy*, *Climatic Change*, *Rev. Financial Studies*, and *J. Environmental Management*.

The attitudes of editors at top finance journals may be changing, though, as our results show that the *Rev. Financial Studies* and *J. Financial Economics* have recently started to publish more research on climate finance. For example, in 2017 the *Rev. Financial Studies* launched a call for innovative research proposals on climate finance, resulting in a special journal issue published eventually in 2020 [1].

Journal Co-Citation Analysis

Figure 5 shows a journal co-citation analysis (JCA) map, in which the node sizes reflect the number of co-citations received by a given journal. A link between journals indicates that articles published in two journals were co-cited together. Furthermore, journals located closely to each other in a JCA map are often co-cited together, implying a degree of similarity in the content of the articles [18]. The assignment of color to nodes is based on the number of co-citations to articles published in the journal group, using a clustering technique [33]. Thus, articles published in a cluster of journals with a common color can be interpreted as having a relatively high similarity in their contents.

The largest nodes in Figure 5 are in the yellow cluster, dominated by *Energy Policy* and the *J. Cleaner Production*, the top two journals based on the number of co-citations. Other notable journals in this cluster are *Sustainability*, *Renewable and Sustainable Energy Reviews*, and *Renewable Energy*. The journals in the yellow cluster tend to focus on energy policy, renewable energy, and sustainability in general. The large node size of *Energy Policy* in Figure 5 shows that the climate finance knowledge domain is policy-driven, focusing on policies to finance the shift from conventional fossil fuels to renewable energy. This is consistent with Table 3, which lists the publications with the highest number of citations. Several of these articles are about public policies for stimulating renewable energy investment and were published in *Energy Policy*.

The purple cluster consists of specific journals in economics and finance like *Energy Economics*, *Finance Research Letters*, and the *J. Sustainable Finance & Investment* that have published relatively high numbers of climate finance articles (see Table 1). We interpret the purple cluster as a group of journals in economics and finance that has shown an early interest in publishing climate finance articles. The largest node in this cluster is *Energy Economics*, the leading field journal for energy economics and finance studies. Highly cited articles in *Energy Economics* on climate finance focus on the stock prices of clean energy firms [34], the impact of news about climate change on stock prices [35,36], and green bonds [19]. Articles in *Financial Research Letters*, the second largest node in the purple cluster, show a related focus on green investments.
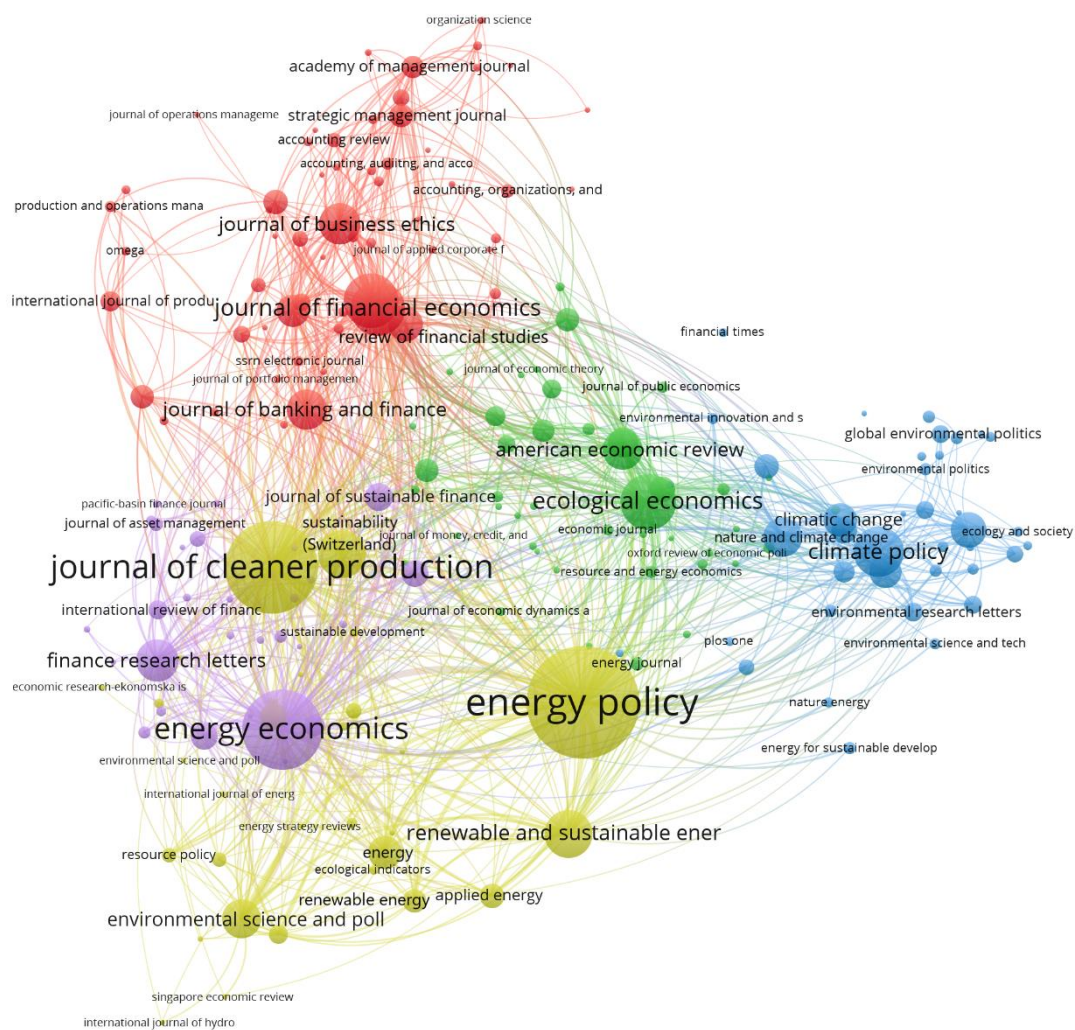
Figure 5. Source co-citation map based on 22,462 sources (threshold 20 co-citations, display top 200).

The top finance journals (*J. Financial Economics* and *Rev. Financial Studies*) show up separately in the red cluster, together with top management journals such as the *J. Business Ethics* and *Strategic Management Journal*. The journals in the red cluster have in common that they published relatively few climate finance articles, even though this cluster contains some of the most influential titles in finance, accounting, and management. This probably reflects the finding of Diaz-Rainey et al. [31] that the top journals in finance and business used to publish almost no studies on climate finance until recently. Co-citations to journals in the red cluster can also refer to general theories and findings in the field (e.g., the factor model of Fama and French [37]) rather than to articles specifically about climate finance.

The green cluster consists of economics journals, led by *Ecological Economics* and the *American Economic Review* in terms of the number of co-citations. *Ecological Economics* published several influential articles on the financial risks posed by climate change, including an early contribution by Busch and Hoffmann [38], and later Campiglio [39] and Dafermos, Nikolaidi, and Galanis [40]. *American Economic Review*, on the other hand, has not published any articles on climate finance in our database. Its large node rather reflects citations to the capital structure theory of Modigliani and Miller [41] and a widely cited theoretical article by Acemoglu et al. [42] on how technological innovation to limit carbon emissions can be stimulated by government policies such as carbon taxes and research subsidies.

Finally, the blue cluster consists of journals focusing on climate change and environmental science, such as *Climate Policy, Climatic Change*, and *Nature Climate Change*. The main emphasis of these journals is on understanding climate change, its causes, and its

consequences, as well as on policies for climate change adaptation and mitigation. Climate finance articles are also published in this group of journals, including several influential articles that estimate the impact of climate change risk on the financial system as a whole, such as Dietz et al. [43], Battiston et al. [44], and Campiglio et al. [45].

In sum, the journal co-citation map identifies a cluster of specific journals in economics and finance like *Energy Economics*, *Finance Research Letters,* and the *J. Sustainable Finance & Investment* that have shown an early focus on climate finance and are often cited together, separately from mainstream journals in finance and economics (which are in the red and green clusters). Another core pillar of the climate finance literature consists of journals focusing on energy policy, cleaner production, and sustainability (*Energy Policy* and *J. Cleaner Production*). Finally, the literature on climate change and environmental science is another important cornerstone of research in climate finance.

3.3. Influential Articles

We now turn our focus to the most influential articles and authors in the climate finance literature. Table 3 shows the 20 most influential articles based on the number of Scopus citations.

Table 3. The 20 most influential climate finance journal articles ranked by Scopus citations, 1991–2021.

Rank	Document	Source	Paper Type	Scopus Citations
1	Heinkel et al. (2001). The effect of green investment on corporate behavior [16]	*J. Fin. Quant. Anal.*	Conceptual	362
2	Bürer, M. J., & Wüstenhagen, R. (2009). Which renew. energy policy is a venture capitalist's best friend? [46]	*Energy Policy*	Empirical	263
3	Wüstenhagen, R., & Menichetti, E. (2012). Strategic choices for renewable energy investment [47]	*Energy Policy*	Conceptual /Review	250
4	Kumar et al. (2012). Stock prices of clean energy firms, oil and carbon markets [34]	*Energy Econ.*	Empirical	225
5	Chava, S. (2014). Environmental externalities and cost of capital [48]	*Mgmt. Science*	Empirical	215
6	Hintermann, B. (2010). Allowance price drivers in the first phase of the EU ETS [49]	*J. Environ. Econ. Manag.*	Conceptual /Empirical	200
7	Polzin et al. (2015). Public policy influence on renewable energy investments [50]	*Energy Policy*	Empirical	185
8	Awerbuch, S. (2006). Portfolio-based electricity generation planning [51]	*Mitig. Adapt. Strat. Glob. Chang.*	Conceptual	181
9	Luo et al. (2012). Corporate incentives to disclose carbon information [52]	*J. Int. Financ. Manag. Account*	Empirical	180
10	Campiglio, E. (2016). Beyond carbon pricing [39]	*Ecol. Econ.*	Conceptual	175
11	Delmas, M. A., & Montes-Sancho, M. J. (2011). U.S. state policies for renewable energy [53]	*Energy Policy*	Empirical	175
12	Battiston et al. (2017). A climate stress-test of the financial system [44]	*Nat. Clim. Change.*	Empirical	166
13	Zerbib, O. D. (2019). The effect of pro-environmental preferences on bond prices [54]	*J. Bank. Finance*	Empirical	140
14	Fisher-Vanden, K., & Thorburn, K. S. (2011). Voluntary corporate env. initiatives and shareholder wealth [55]	*J. Environ. Econ. Manag.*	Empirical	140
15	Dietz et al. (2016). 'Climate value at risk' of global financial assets [43]	*Nat. Clim. Change.*	Empirical	138
16	Dinica, V. (2006). Support systems for the diffusion of renewable energy tech.—an investor perspective [56]	*Energy Policy*	Conceptual	135
17	Barradale, M. J. (2010). Impact of public policy uncertainty on ren. energy investment [57]	*Energy Policy*	Empirical	134
18	Ellis et al. (2007). CDM: Taking stock and looking forward [58]	*Energy Policy*	Review	132
19	Otto et al. (2020). Social tipping dynamics for stabilizing Earth's climate by 2050 [59]	*Proc. Natl. Acad. Sci.*	Empirical /Review	130
20	Taghizadeh-Hesary, F., & Yoshino, N. (2019). The way to induce private part. in green finance [60]	*Finance Res. Lett.*	Conceptual	126

Ranked first is a theoretical article by Heinkel et al. [16] about the effect of green investment on corporate behavior. The authors use an equilibrium model to show that if a group of ethical investors in the market refuses to invest in a polluting firm, it will raise the

polluting firm's cost of capital. The polluting firm can respond by switching to a cleaner alternative and thus becoming socially responsible. However, it only does so if the firm's cost of "cleaning up" is relatively low compared to the increased cost of capital. More than 20% of the polluting firms' investors have to become green in this model to induce a change in policy at the polluting firm.

Interestingly, after writing this important and influential study on green investment in 2001, Heinkel, Kraus, and Zechner did not publish any other articles on climate finance, as these authors focus on corporate finance in general. Furthermore, the *J. Financial & Quant. Analysis*, a leading finance journal, did not publish any other articles on climate finance included in our database after Heinkel et al. [16], except for one related study in 2021 entitled "Climate Change News Risk and Corporate Bond Returns" by Huynh and Xia [61]. The 20-year gap between the two publications nicely illustrates the lack of interest in climate change in the field of finance until recently.

The fifth most cited article in Table 3, "Environmental externalities and cost of capital" by Chava [48], is an empirical study that tests whether investors demand a higher cost of capital for stocks that do not pass environmental screens, including climate change concerns. Using estimates of firms' implied costs of capital, Chava [48] shows that investors indeed demand significantly higher returns on stocks of firms with environmental concerns, supporting the model predictions of Heinkel et al. [16].

Ranked second and third based on citations in Table 3 are two articles published in *Energy Policy*, by Bürer and Wüstenhagen [46] and Wüstenhagen and Menichetti [47], respectively. Bürer and Wüstenhagen [46] conducted surveys and interviews with private investors in innovative clean energy firms to gain insights into investor preferences for renewable energy policy, such as feed-in tariffs and tax breaks. The second publication, Wüstenhagen and Menichetti [47], is an introduction to a special issue with the best papers presented at a 2010 conference on "Strategic choices for renewable energy investment." The selected papers focus on how investors make their renewable energy investment decisions and how these are influenced by energy policy. Three other articles in Table 3 published in *Energy Policy*, Polzin et al. [50], Delmas and Montes-Sancho [53], and Barradale [57], also focus on how public policy affects investment in renewable energy.

Ranked fourth in Table 3 is an empirical study by Kumar et al. [34] investigating the factors driving the prices of clean energy stocks. The study's main finding is that rising oil prices positively influence clean energy stock prices due to a substitution effect. However, carbon prices did not significantly impact clean energy stocks in the period investigated. Later work confirmed the weak association between carbon prices and clean energy stock returns [62], implying that investors in clean energy firms can diversify their portfolios by investing in carbon emission rights.

Hintermann [49], the sixth most cited study, analyzes the prices of carbon emission rights in the first phase of the E.U. Emissions Trading Scheme (EU ETS). The EU ETS is a so-called "cap-and-trade" system that puts a cap on total carbon emissions and requires selected polluting industries to obtain allowances for their actual emissions. Some of these emission allowances are distributed initially to the firms, but they can also be bought and sold in a secondary market. The advantages of allowance trading are that it puts a market price on the marginal cost of curbing CO_2 emissions (abatement), and it gives firms a strong financial incentive to reduce their emissions. Hintermann [49] developed a model for the price of emission rights based on fundamental factors such as coal and gas prices and tested it empirically. We refer to Hintermann, Peterson, and Rickels [63] for a review of the price dynamics of carbon rights.

Recent empirical work by Dechezleprêtre, Nachtigall, and Venmans [64] suggests that the EU ETS has substantially reduced CO_2 emissions without hurting corporate profits and employment. Relatedly, the 10th most cited article in Table 3, Campiglio [39], argues that carbon pricing may not be sufficient to incentivize banks to shift their lending from high-carbon firms to low-carbon firms due to market failures in the financial sector. Additional banking regulation may be needed to solve this problem, according to Campiglio [39].

Two other noteworthy frequently cited studies in the climate finance literature in Table 3 are Dietz et al. [43] and Battiston et al. [44], both published in *Nature Climate Change*. Dietz et al. [43] estimate the potential losses among global financial assets, such as stocks and bonds, due to the impact of climate change. Dietz et al. [43] use the dynamic integrated climate-economy (DICE) model of Nordhaus [65,66] to estimate the impact of global warming on GDP growth and subsequently on the value of global financial assets (whose cash flows are assumed to grow with GDP). Dietz et al. [43] estimate that the expected loss of financial assets amounts to USD 2.5 trillion (1.8% of the assets' value) in a baseline business-as-usual scenario. In a 1% worst-case tail outcome, the losses increase to a staggering USD 24.2 trillion (16.9%). Dietz et al. [43] show that policies to limit global warming to no more than 2 degrees Celsius would lead to a 0.2% higher value of financial assets after including mitigation costs, and a 9.1% higher value in the 1% tail scenario, relative to a business-as-usual scenario.

Battiston et al. [44] estimate the impact of climate risks on the financial system, including banks, investment funds, pension funds, and insurance companies. The financial sector has both direct exposure by investing in fossil-fuel companies whose assets may become "stranded" [67], as well as exposure to power producers using non-renewable energy, energy-intensive industries, and real estate exposed to climate change risk. Furthermore, there are indirect exposures through investments in other financial companies (e.g., banks) that have direct exposures. Battiston et al. [44] conclude that the financial sector's direct exposure to fossil-fuel securities is small (4–13%), but the combined direct and indirect exposure to climate-policy-sensitive companies is much larger (36–48%). In addition, Battiston et al. [44] carry out climate stress tests for banks in the E.U., estimating the possible losses in a worst-case scenario where investments in fossil-fuel energy companies and utilities become worthless.

Studies such as Dietz et al. [43] and Battiston et al. [44] that estimate the impact of climate change risk on the financial sector and global financial markets necessarily depend on many simplifying assumptions and are subject to great uncertainty, given the long-term nature of climate change risks and the unknown impact of future mitigation policies. However, these types of "climate value-at-risk" and "climate stress test" studies are important, as they raise awareness among financial institutions, investors, and regulators, to consider climate change as a risk factor that needs to be integrated into existing financial risk management frameworks. We refer to Battiston et al. [68] and literature reviews by Monasterolo [69] and Campiglio et al. [70] for more recent work in this area.

Topics and Methodologies in the Most Cited Articles

We now review the topics studied and the methodologies applied in the top 20 most cited articles in Table 3. First of all, we note that 11 out of the 20 most cited climate finance articles analyze policies to mitigate climate change, such as feed-in tariffs for renewable energy, tax breaks, and cap-and-trade systems. The motivation of these articles is mostly practical, rather than theoretical: ascertaining which government policies can best stimulate more private investment in renewable energy and new technology to mitigate climate change (e.g., Campiglio [39]). The underlying philosophy appears to be that: (1) climate change is a real long-term threat to society; (2) private sector investment in climate change mitigation is insufficient due to relatively high costs, market failures, and behavioral biases; and (3) policy intervention is therefore required. Most of these articles are published in *Energy Policy* and have authors based in Europe, a region where national policies to mitigate climate change have been implemented since the early 1990s. The methodologies used in these policy-oriented studies include conceptual models to evaluate the potential of policies to stimulate private climate finance flows [47], surveys to learn more about the preferred policies of renewable energy investors [46], and empirical tests of the effectiveness of policies implemented globally [50].

As a recommendation for future research, we note that this strand of literature can benefit from integrating theoretical frameworks from economics to better explain the

trade-offs involved in policies to support renewable technologies (see, e.g., [42,71,72]). Related Yi et al. [73] used evolutionary game theory and system dynamics to model how power producers respond to feed-in tariffs and renewable portfolio standards, providing policymakers with a new methodology for setting policy parameters (such as subsidies, quotas, and fines). Furthermore, the optimal policies need to be reassessed regularly, as technological innovations and economies of scale have greatly reduced the unit costs of renewable energy sources such as wind and solar recently.

The second most widely studied topic in Table 3 is the impact of climate change risk on asset prices. It includes the theoretical analysis of the impact of green investor preferences on corporate finance by Heinkel et al. [16] and subsequent empirical tests of this theory by Chava [48] and Zerbib [54]. Fisher-Vanden and Thorburn [55] tested the stock market's response to voluntary carbon emission disclosures by firms. Furthermore, it includes the analysis of carbon rights prices in the E.U. by Hintermann [49]. In addition, this theme encompasses the studies of Dietz et al. [43] and Battiston et al. [44] that propose methodologies for estimating the impact of climate change risk on the financial sector. The focus of these studies is on developing financial–economic theory and methodology for assessing the impact of climate change on financial assets, as well as empirical tests of the theory. Although Hintermann [43] and Battiston et al. [44] also include some implications for climate change policy, this strand of literature is less focused on policy.

Open issues for further research in this area are more refined modeling of asset losses due to climate change risk (see Hong et al. [1]), as well as how to model drivers of investor green preferences, such as climate change beliefs, perceptions about market failures, and moral values [74,75]. Another direction for future research is to derive more practical policy recommendations from asset pricing studies about how to increase private climate financing (see, e.g., Flammer [76]).

3.4. Co-Citation Analysis

Table 4 shows the 20 most influential documents based on a co-citation analysis. A co-citation occurs when two articles in the climate finance database together cite the same document. Co-citation analysis has the advantage that it extends to the combined reference lists of the articles, thus going beyond the limits of our climate finance database and the Scopus citation database.

Table 4. The 20 most co-cited articles by documents in the climate finance database, 1991–2021.

Rank	Document	Source	Paper Type	Co-Citations
1	Zerbib, O. D. (2019). The effect of pro-environmental preferences on bond prices: Evidence from green bonds [54]	*J. Bank. Finance*	Empirical	62
2	Reboredo, J. C. (2018). Green bond and financial markets: Co-movement, diversification and price spillover effects [19]	*Energy Econ.*	Empirical	52
3	Gianfrate, G., & Peri, M. (2019). The green advantage: Exploring the convenience of issuing green bonds [77]	*J. Clean. Prod.*	Empirical	49
4	Campiglio, E. (2016). Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy [39]	*Ecol. Econ.*	Conceptual	38
5	Wang, Y., & Zhi, Q. (2016). The role of green finance in environmental protection [78]	*Energy Procedia*	Conceptual	38
6	Taghizadeh-Hesary, F., & Yoshino, N. (2019). The way to induce private participation in green finance and investment [60]	*Finance Res. Lett.*	Conceptual	34
7	Hachenberg, B., & Schiereck, D. (2018). Are green bonds priced differently from conventional bonds? [79]	*J. Asset Manag.*	Empirical	33

Table 4. *Cont.*

Rank	Document	Source	Paper Type	Co-Citations
8	Reboredo, J. C., & Ugolini, A. (2020). Price connectedness between green bond and financial markets [20]	*Econ. Model.*	Empirical	31
9	Eyraud, L., Clements, B., & Wane, A. (2013). Green investment: Trends and determinants [80]	*Energy Policy*	Review/Empirical	29
10	Febi, W., et al. (2018). The impact of liquidity risk on the yield spread of green bonds [81]	*Finance Res. Lett.*	Empirical	29
11	Pham, L. (2016). Is it risky to go green? A volatility analysis of the green bond market [82]	*J. Sustain. Finance Invest*	Empirical	28
12	Zhang et al. (2019). A bibliometric analysis on green finance [6]	*Finance Res. Lett.*	Review	27
13	Bachelet, M. J., Becchetti, L., & Manfredonia, S. (2019). The green bonds premium puzzle [83]	*Sustainability*	Empirical	26
14	Broadstock, D. C., & Cheng, L. T. (2019). Time-varying relation between black and green bond price benchmarks [84]	*Finance Res. Lett.*	Empirical	25
15	Chava, S. (2014). Environmental externalities and cost of capital [48]	*Manag. Sci.*	Empirical	24
16	Climent, F., & Soriano, P. (2011). Green and good? The investment performance of U.S. environmental mutual funds [85]	*J. Bus. Ethics*	Empirical	21
17	Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds [37]	*J. Financ. Econ*	Empirical	21
18	Kumar et al. (2012). Stock prices of clean energy firms, oil and carbon markets [34]	*Energy Econ.*	Empirical	21
19	Tang, D. Y., & Zhang, Y. (2020). Do shareholders benefit from green bonds? [86]	*J. Corp. Finance*	Empirical	21
20	Heinkel et al. (2001). The effect of green investment on corporate behavior [16]	*J. Financial Quant. Anal.*	Conceptual	20

Remarkably, 16 out of the 20 most co-cited articles in Table 4 are on green bonds, green finance, or green investment based on the document title, which we will refer to as the green finance literature. By contrast, among the top 20 most cited papers in the database in Table 3, only three refer to green finance [16,54,60]. We believe there are several possible reasons for the dominance of green finance articles in the co-citation analysis. First, articles in the green finance literature tend to be cited together as a group (of two or more articles) rather than individually, which leads to more co-citations. Second, our keyword co-occurrence map in Section 3.6 shows that the keywords "green finance" and "green bonds" have been frequently used in the most recent climate finance literature since 2019. In other words, green finance is a recently trending topic. Combined with the vast volume of climate finance articles appearing in 2019 and 2020, this may have boosted the number of co-citations to the green finance literature.

The three most co-cited articles in Table 4 all focus on green bonds, which are fixed-income securities that raise capital for climate-related and environmental projects. Zerbib [54] compares the yield on green bonds to the yield on equivalent regular bonds by the same issuer to measure the impact of pro-environmental preferences on bond prices. Zerbib [54] finds that green bond yields are only 2 basis points (0.02%) lower than yields on otherwise equal non-green bonds, an almost negligible premium. Zerbib concludes that social and environmental preferences still have a limited impact on bond yields. He further conjectures that any observed lower cost of debt for companies with good environmental performance (e.g., as documented by Chava [48]) must be due to their lower risk, not due to the impact of investor preferences.

Relatedly, Gianfrate and Peri [77] estimate the yield premium on green bonds using a propensity-matching approach. This method has the advantage that it can also match green

bonds with similar non-green bonds by other issuers. Gianfrate and Peri [77] conclude that issuers can save 15 to 21 basis points in interest rate (yield) when issuing green bonds. This cost advantage of green bonds is important, as climate finance flows need to increase to USD 5 trillion per year by 2030 to achieve the 1.5 °C global warming limit of the Paris agreement, according to estimates by Boehm et al. [3].

Reboredo [19] studies green bonds from the investor perspective, estimating their risk and diversification benefits relative to other investments such as Treasury bonds, corporate bonds, stocks, and energy commodity futures. Reboredo [19] concludes that green bonds have negligible diversification benefits for investors in regular corporate bonds and Treasury bonds, as green bonds are close substitutes. However, green bonds have considerable diversification benefits for investments in stocks and energy markets, having only a weak link to large price fluctuations in those markets. In sum, the literature so far shows that green bonds allow investors to contribute to climate change mitigation efforts without sacrificing much in terms of expected return, while also reducing their overall portfolio risk if they are already invested in equity or energy markets.

3.5. Influential Authors and Sub-Fields in the Climate Finance Literature

We now turn our attention to the most cited authors in the climate finance knowledge base, displayed in Table 5. The most frequently cited author, with 517 citations to 12 articles, is Farhad Taghizadeh-Hesary of Tokai University in Japan. Taghizadeh-Hesary and Yoshino [60,87] propose conceptual frameworks and practical policy recommendations for making the financing of renewable energy projects more attractive and less risky for private investors. For example, the proposed solutions include green credit guarantee schemes, tax credits, and establishing community-based investment funds.

Table 5. The 20 most cited authors publishing climate finance articles by Scopus citations, 1991–2021.

Rank	Author	Institution	Nation	Docs.	Scopus Citations	CPD
1	Farhad Taghizadeh-Hesary	Tokai U	Japan	12	517	43
2	Rolf Wüstenhagen	U of St. Gallen	Switzerland	2	513	257
3	Shunsuke Managi	Kyushu U	Japan	6	408	68
4	Friedemann Polzin	Utrecht U	Netherlands	4	375	94
5	Robert Heinkel	U of British Columbia	Canada	1	362	362
6	Alan Kraus	U of British Columbia	Canada	1	362	362
7	Josef Zechner	U of British Columbia	Canada	1	362	362
8	Emanuela Menichetti	Obs. Méd. de l'Energie	France	2	350	175
9	Naoyuki Yoshino	Keio U	Japan	9	338	38
10	Olaf Weber	U of Waterloo	Canada	7	266	38
11	Mary Jean Bürer	HEIG-VD	Switzerland	1	263	263
12	Irene Monasterolo	Vienna U of Econ. & Business	Austria	6	263	44
13	Surender Kumar	U of Delhi	India	1	225	225
14	Akimi Matsuda	Nomura Securities	Japan	1	225	225
15	Antoine Mandel	Pantheon-Sorbonne U	France	2	219	110
16	Sudheer Chava	Georgia Inst. of Technology	United States	1	215	215
17	Beat Hintermann	U of Basel	Switzerland	2	214	107
18	Michael Migendt	EBS U	Germany	2	205	103
19	Florian A. Täube	CBS Cologne Business School	Germany	2	205	103
20	Juan Carlos Reboredo	U of Santiago de Compostela	Spain	5	204	41

Note: CPD denotes citations per document.

Another highly cited author, with 513 citations to only two articles, is Rolf Wüstenhagen of the University of St. Gallen. Wüstenhagen's research focuses on renewable energy in general, while his two articles in our climate finance database specifically analyze policies that can stimulate investment in renewable energy and minimize risk for investors [46,47].

Shunsuke Managi of Kyushu University in Japan is the third most cited author in the climate finance literature, with six documents. His highly cited works include an empirical

study on the factors driving the prices of clean energy stocks [34] and a study on the drivers of green bond market growth at the country level [88]. Furthermore, Zhang et al. [6] conducted a bibliometric review of the green finance literature, covering 381 papers from 2001 to 2018. In line with our study, Zhang et al. [6] concluded that there was a great lack of articles on green finance in mainstream finance and economics journals.

The fourth most cited author, Friedemann Polzin of Utrecht University in the Netherlands, studies the financing of sustainable innovation and entrepreneurship. His most cited papers in the literature include an empirical study on how different public policies influence renewable energy investments [50], as well as two systematic literature reviews on private finance for renewable energy, focusing on the barriers to investment and possible policy solutions [89,90].

Heinkel, Kraus, and Zechner also feature among the top 10 cited authors in Table 5, as Heinkel et al. [16] is the most cited climate finance article. Their theoretical contribution shows that the presence of green investors who refuse to invest in a polluting firm for ethical reasons will raise the polluting firm's cost of capital. Furthermore, if the proportion of ethical investors is sufficiently large, the increased cost of capital can induce the polluting firm to clean up. Apart from this single influential work in 2001, Heinkel, Kraus, and Zechner have not published other articles on climate finance. Thus, for some of the influential authors in the top 20, climate finance is not a core topic.

A notable exception is Irene Monasterolo, who is a professor of climate finance at EDHEC, France. Monasterolo is a co-author of "A climate stress-test of the financial system" [44], estimating the impact of climate risks on banks and institutional investors. Furthermore, Battiston, Mandel, and Monasterolo [68] developed CLIMAFIN, a tool that financial institutions can use to assess their exposure to physical climate change risks, as well as exposure to transition risks due to the shift toward carbon neutrality. We refer to the literature review of Monasterolo [69] for an overview of climate-related financial risks.

Author Co-Citation Analysis

We now apply author co-citation analysis to group authors into clusters based on the similarity of their co-citations [91,92]. The author co-citation map, shown in Figure 6, can be used to identify sub-fields within the climate finance knowledge base [92,93]. It was generated by using a threshold of at least 20 co-citations and displaying the top 200 authors based on co-citations.

Authors in the yellow cluster in Figure 6 focus on green finance, especially policies that stimulate investment in renewable energy, with Taghizadeh-Hesary, Yoshino, and Mohsin as the most influential authors. Both Farhad Taghizadeh-Hesary and Naoyuki Yoshino are affiliated with a Japanese university, and they frequently collaborate. Their earlier publications focused on the economic effects of fossil fuels [94,95], while their more recent work emphases green finance investments in renewable energy [60,87]. Another large node in this cluster is for the author Muhammad Mohsin, affiliated with Jiangsu University in China. Mohsin's research primarily focuses on environmental sustainability [96] and energy consumption in relation to economic growth [97]. Other notable authors in the yellow cluster include Nadeem Iqbal, Wasim Iqbal, and Abdul Khaliq Rasheed, who have in common that are all based in Asia and have co-authored articles with Mohsin or Taghizadeh-Hesary. In sum, scholars in the yellow cluster are located in Asia and form a close co-authorship network.

Authors in the green cluster are mostly Chinese scholars, affiliated with Chinese universities. Their publications tend to focus on green finance [78] and green bonds [86], topics which are often co-cited in the recent climate finance literature (see Table 4). Furthermore, authors in the green cluster also often study the impact of green finance policies specifically in China [98,99]. The largest node in the green cluster belongs to Yao Wang of the Central University of Finance and Economics (CUFE) in Beijing, China. Yao Wang heads the International Institute of Green Finance (IIGF), a green finance research unit and think tank that promotes the development of green finance in China and abroad.
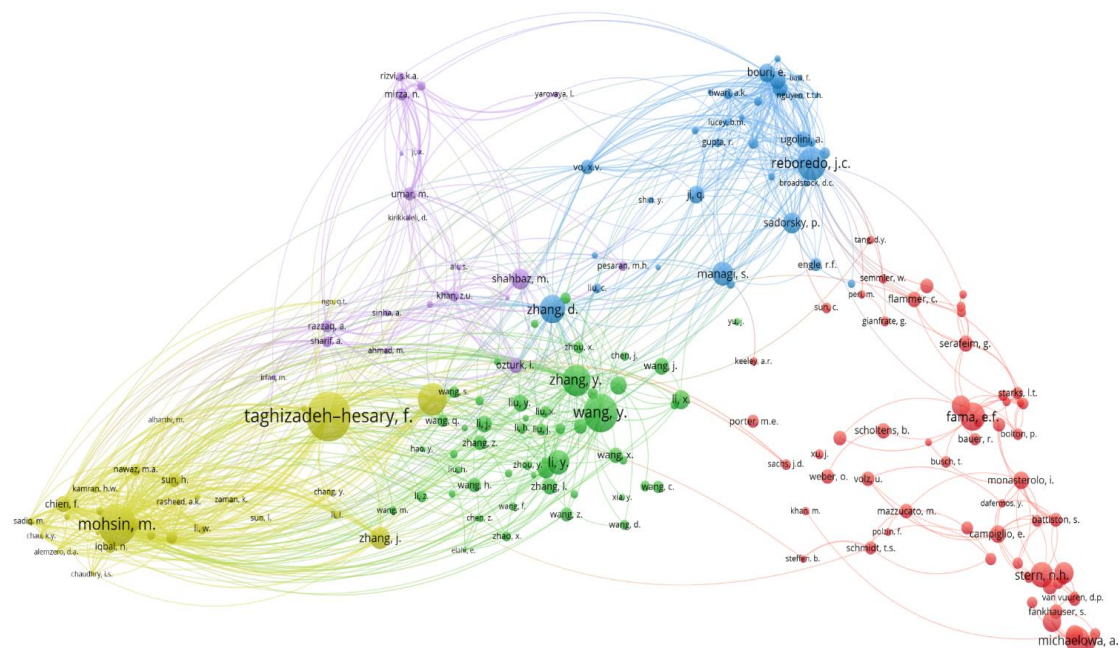
Figure 6. Author co-citation map based on 55,055 authors (threshold 20 co-citations, display top 200).

The purple cluster in Figure 6 groups authors that focus on carbon emissions, energy consumption, and their links with economic development and green finance. Muhammad Shahbaz, Asif Razzaq, and Muhammad Umar are among the notable authors in this group, who are all three from East Asia and affiliated with Chinese universities. These links with Asia may explain why the purple cluster is quite close to both the yellow and green clusters in terms of distance.

Authors in the blue cluster in Figure 6 mostly contribute to the empirical climate finance literature, studying the relation between the prices of green bonds, clean energy stocks, oil prices, and carbon rights. For example, the blue cluster includes Reboredo's [19] study on the link between returns on green bonds and other investments, and the work of Kumar et al. [34] on the stock prices of clean energy firms. Another notable author in the blue cluster is Perry Sadorsky, who also studied the link between clean energy stocks and oil prices [100,101]. Authors in this cluster frequently publish in the journal *Energy Economics*. Dayong Zhang, of the Southwestern University of Finance and Economics in China, is also in the blue cluster and is close to the center of the co-citation map. Zhang co-authored a bibliometric review of the green finance literature together with Shunsuke Managi [6].

Finally, the red cluster, including Nicholas Stern, Irene Monasterolo, and Patrick Bolton, amongst others, is focused on the economic and financial impacts of climate change (e.g., Stern [102]). The authors in this cluster tend to publish more in mainstream economics and finance journals compared to other clusters. Furthermore, co-citations to authors in the red cluster can also refer to general theories and findings in the finance and economics literature that are unrelated to climate change (e.g., Fama and French [37]). Interestingly, and in line with earlier findings, the red financial–economic cluster is quite disconnected from the other author clusters in Figure 6.

In sum, Figure 6 shows groups of frequently co-cited authors in the climate finance literature, with the clusters driven both by common topics as well as by regional co-author social networks. In particular, authors in the yellow, green, and purple clusters are mainly affiliated with universities in Asia, while the authors in the red cluster are mainly with universities in Western countries.

In terms of topics and methodology, green finance and government policies that can stimulate it are central topics for authors in both the yellow and green clusters, with an

emphasis on conceptual papers reviewing policies and empirical papers that test policy effectiveness. Authors in the blue cluster are more focused on empirical studies of clean energy stocks and oil prices, using econometric models to estimate their linkages. Finally, the red cluster is focused on the economic and financial impacts of climate change, with asset pricing and financial risk modeling as the main methodologies.

3.6. *Topical Focus of the Climate Finance Literature*

We now apply keyword co-occurrence analysis to identify the core topics studied in the climate finance literature. A keyword co-occurrence analysis counts how often keywords are jointly listed by authors, revealing which topics are conceptually similar or are often studied together. Figure 7 shows a keyword co-occurrence map generated with VOSviewer, where the proximity of the keywords in the network map represents the relatedness of the keywords [23]. Furthermore, the different colors in Figure 7 indicate how the popularity of keywords has changed over time [18], shifting from blue colors for earlier climate finance studies (in 2015) to yellow for more recent publications (2019 onward).
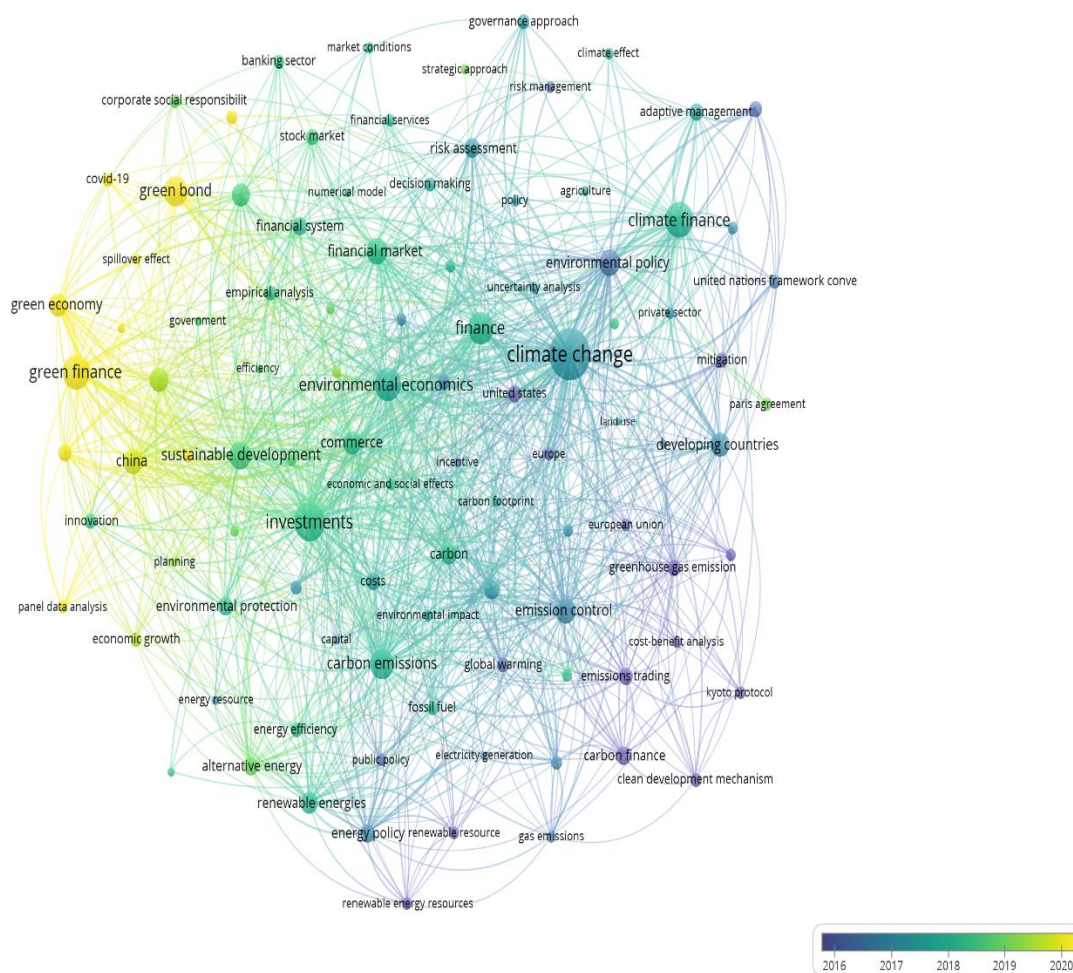
Figure 7. Keyword co-occurrence map with temporal overlay (min. 10 co-occurrences, display top 100).

The most commonly co-occurring keywords in the climate finance literature are "climate change" (470), "climate finance" (229), "green finance" (213), "investments" (276), and "environmental economics" (194). The temporal overlay shows that the focus of the literature has shifted from "carbon finance" and "carbon markets" initially in 2015 to "green finance" and "green bonds" in 2019. This shift in focus was probably stimulated by the substantial increase in green bond issuance since 2016 [76], which also provided finance researchers with new data to study the cost of debt for climate-related investments.

Typical finance keywords such as "Asset pricing" (14), "Financial risk" (10), "Risk management" (26), and "Portfolio diversification" (8) are still rarely mentioned in combination with climate change and other climate finance keywords, again confirming that studies on core finance topics such as the pricing and management of climate change risks are still relatively new in this literature. The next section provides an overview of recent studies on these topics in leading finance journals.

3.7. Recent Contributions in Leading Finance Journals

Our bibliometric review and earlier studies [6,31] revealed that the top field journals in finance have published only a few articles on climate finance so far. In an attempt to address this shortfall, recently in 2020 and 2021, leading finance journals such as the *Rev. Financial Studies* and *J. Financial Economics* published several articles and dedicated special issues on climate finance. Due to their recency, these new articles have not received sufficient citations yet to appear prominently in our bibliometric analysis. However, we expect this strand of literature to become influential in the next few years, as more scholars and journal editors in finance are now focusing on the topic.

For this reason, Table 6 lists the 20 most cited articles in the climate finance database published in the top six finance journals based on the journal ranking of Bajo, Barbi, and Hillier [103] (*J. Financial Economics*, *Rev. Financial Studies*, *J. Finance*, *J. Financial & Quant. Analysis*, *J. Banking & Finance*, and *J. Corporate Finance*). We note that 15 out of the 20 articles (75%) in Table 6 have been published since 2020, compared to only 2 articles (10%) earlier in Table 4, showing how recent the interest in climate finance in the top field journals is. In this section, we briefly review these highly cited finance articles in Table 6 to provide an overview and entry point for interested scholars from other fields.

Table 6. The 20 most cited articles in the climate finance database published in the Top 6 finance journals.

Rank	Document	Source	Paper Type	Scopus Citations
1	Heinkel et al. (2001), The effect of green investment on corporate behavior [16]	*J. Fin. Quant. Anal.*	Conceptual	380
2	Zerbib O.D. (2019), The effect of pro-environmental preferences on bond prices: Evidence from green bonds [54]	*J. Bank. Finance*	Empirical	169
3	Krueger P., Sautner Z., Starks L.T. (2020), The importance of climate risks for institutional investors [104]	*Rev. Fin. Studies*	Empirical	120
4	Tang D.Y., Zhang Y. (2020), Do shareholders benefit from green bonds? [86]	*J. Corporate Finance*	Empirical	108
5	Bernstein A., Gustafson M.T., Lewis R. (2019), Disaster on the horizon: price effect of sea level rise [105]	*J. Financial Economics*	Empirical	91
6	Flammer C. (2021), Corporate green bonds [106]	*J. Financial Economics*	Empirical	69
7	Choi D., Gao Z., Jiang W. (2020), Attention to global warming [12]	*Rev. Fin. Studies*	Empirical	53
8	Engle et al. (2020), Hedging climate change news [107]	*Rev. Fin. Studies*	Conceptual/ Empirical	53
9	Pedersen L.H., Fitzgibbons S., Pomorski L. (2021), Responsible investing: The ESG-efficient frontier [108]	*J. Financial Economics*	Conceptual/ Empirical	44
10	Bolton P., Kacperczyk M. (2021), Do investors care about carbon risk? [109]	*J. Financial Economics*	Empirical	42
11	Baldauf M., Garlappi L., Yannelis C. (2020), Does climate change affect real estate prices? [110]	*Rev. Fin. Studies*	Empirical	37
12	Hong et al. (2020), Climate finance [1]	*Rev. Fin. Studies*	Review	35
13	Ilhan E., Sautner Z., Vilkov G. (2021), Carbon Tail Risk [111]	*Rev. Fin. Studies*	Empirical	33
14	Barnett M., Brock W., Hansen L.P. (2020), Pricing uncertainty induced by climate change [112]	*Rev. of Fin. Studies*	Conceptual	32

Table 6. *Cont.*

Rank	Document	Source	Paper Type	Scopus Citations
15	Painter M. (2020), An inconvenient cost: The effects of climate change on municipal bonds [113]	*J. Financial Economics*	Empirical	31
16	Murfin J., Spiegel M. (2020), Is the risk of sea level rise capitalized in residential real estate? [114]	*Rev. Fin. Studies*	Empirical	24
17	Pástor, Stambaugh R.F., Taylor L.A. (2021), Sustainable investing in equilibrium [115]	*J. Financial Economics*	Conceptual	22
18	Eichholtz P., et al. (2019), Environmental performance and the cost of debt: Evidence from commercial mortgages and REIT bonds [116]	*J. Bank. Finance*	Empirical	22
19	Alok S., Kumar N., Wermers R. (2020), Do fund managers misestimate climatic disaster risk [117]	*Rev. Fin. Studies*	Empirical	17
20	Balvers R., Du D., Zhao X. (2017), Temperature shocks and the cost of equity capital [118]	*J. Bank. Finance*	Empirical	17

The two most cited articles in leading finance journals are Heinkel et al. [16] and Zerbib [54], with 380 and 169 citations, respectively. As mentioned earlier, the theoretical work of Heinkel et al. [16] analyzed how the presence of green investors can increase the cost of capital for a polluting firm. Zerbib [54] empirically tested whether yields on green bonds for climate-related projects are lower compared to equivalent non-green bonds due to the impact of pro-environmental investor preferences, finding an insignificant yield premium.

Relatedly, Flammer [106] analyses why companies issue green bonds for climate-change-related projects. As the proceeds of the bonds cannot be used for other projects and a green bond needs to be certified, it would be easier to simply issue a general corporate bond to obtain funds. Flammer [106] argues that green bonds can be preferred by companies for three possible reasons: to signal a commitment to pro-environmental policies, as a form of green-washing without commitment to greener policies, and as a way to reduce the cost of finance. Flammer [106] examines all three motivations empirically and finds that issuers of green bonds improve their environmental performance after issuance by lowering CO_2 emissions. Subsequently, these firms also receive better environmental ratings from rating agencies. In addition, stock prices react positively to news about a green bond issuance, especially the first time a company issues them. Flammer does not find a significant difference in yields between green bonds and matched non-green bonds issued by other companies, suggesting that obtaining a lower borrowing cost is not a primary motive. Flammer [106] concludes that companies issue green bonds as a credible signal of their commitment to reducing their environmental impact.

Directly related and consistent with Flammer [106], Tang and Zhang [86] also find that the stock market reacts positively when a firm issues a green bond, especially the first time, and that green bonds do not provide lower financing costs (yields) for issuers. Furthermore, Tang and Zhang [86] document that stock liquidity improves and institutional ownership increases after a company issues a green bond, suggesting that green bond issuers can attract more media attention and expand their investor base (e.g., ethical investors and impact investors). Hence, despite the fact that there is no direct payback in terms of a lower borrowing rate, green bonds offer several other benefits to issuers, such as signaling a commitment to green policies, a higher stock price, better stock liquidity, and attracting new investors.

Another important topic is whether the market prices the risk of climate change. One complicating factor is that climate change is a long-term risk, and companies have time to mitigate the impact. For example, companies can relocate to reduce physical climate risks (e.g., flooding or extreme heat) and adapt their processes to limit indirect climate risks (e.g., switching to renewable energy sources). Therefore, studies about the pricing of climate change risk often focus on assets tied to a specific location, such as real estate and

municipal bonds. For example, some counties and cities in the United States are exposed to much higher sea-level-rise risk, such as New Orleans and New York. Painter [113] analyzes the yield on municipal bonds and finds that counties exposed to climate risk pay significantly higher borrowing costs on longer-maturity bonds. Hence, investors in the municipal bond market appear to identify counties subject to higher climate risk and price their bonds lower accordingly. Relatedly, Eichholtz et al. [116] show that mortgages on environmentally certified buildings have lower interest rates than comparable non-green buildings, implying that banks and investors recognize the lower risk and higher income associated with energy-saving policies.

There is evidence suggesting that the real estate market also prices climate change risks, as Bernstein et al. [105] show that coastal properties exposed to sea-level-rise (SLR) risk sell at a 7% discount compared to otherwise similar homes. Interestingly, Bernstein et al. [105] find that the discount is mainly driven by properties that are not expected to be flooded in the next 50 years, suggesting that markets are already pricing the long-horizon costs of climate change. Furthermore, the rents of these high-SLR-risk properties are not affected, confirming that expected long-term damage drives the discount in property prices (rather than any short-term impacts). On the contrary, Murfin and Spiegel [114] find that SLR risk is not priced yet in U.S. residential real estate. Several factors can explain these contrasting results; for example, SLR risk may be priced only by more sophisticated real estate investors and those who believe in climate change. Supporting that explanation, Baldauf et al. [110] show that local beliefs about climate change in the United States to a large extent determine whether there is a price discount for houses affected by flood risk.

A related research topic is whether stock markets discount the value of listed companies with high climate change risk exposure. Bolton and Kacperczyk [109] report evidence that they do, as stocks of firms with higher CO_2 emissions earn significantly higher stock returns, especially after the 2015 Paris Agreement. Bolton and Kacperczyk interpret this result as follows: Investors realize that firms with higher CO_2 emissions are subject to future regulatory risks, such as limits on emissions and carbon pricing schemes, as well as high competitive risks from new entrants with better technology (e.g., using renewables). As a compensation for these risks, investors require a higher expected stock return for investing in "brown" firms with high CO_2 emissions. This also implies that brown firms face a higher cost of capital, raising the hurdle rate for their expansion plans. Relatedly, Balvers et al. [118] find that exposure to temperature shock risk also raises the cost of equity capital.

Pástor et al. [115] analyze how climate risk exposure and the environmental preferences of investors should impact stock prices in equilibrium. Their model predicts that green stocks have relatively low expected returns due to their lower climate change risk and investors' preference for holding them, whereas brown stocks have higher expected returns for the opposite reasons. A follow-up empirical study by Pástor, Stambaugh, and Taylor [119] investigates why in practice green stocks can temporarily deliver stronger performance than brown stocks. This tends to happen when there are unexpected increases in investor preferences for green investments (e.g., large flows to ESG funds) or shocks that raise investor awareness about climate change risk (e.g., extreme weather events or new environmental regulations). Choi et al. [12] indeed find that stocks of carbon-intensive firms perform poorly when the weather is abnormally warm and investors pay more attention to climate change risks, as evidenced by increased Google search volume.

Hence, although brown stocks earn higher expected returns in the long-term to compensate for their higher risk exposure, they will go through bouts of underperformance when there is news that heightens awareness about climate change risk or worsens investors' dislike of these stocks. Engle et al. [107] show how investors can hedge this risk by investing in a stock portfolio that tends to perform well when negative climate risk news arrives. Relatedly, Andersson, Bolton, and Samama [120] create portfolios of low-carbon-emission stocks that closely track a broad market index like the S&P 500 to reduce exposure to climate change risk. Ilhan et al. [111] show that the cost of downside risk protection in

the options market is more expensive for U.S. firms with high carbon emissions and that this cost differential increases when there is negative news about climate risks.

Apart from studying asset prices, finance researchers have also directly surveyed investors to ask how they deal with climate change risk. A survey by Krueger et al. [104] confirms that most institutional investors are concerned about climate change risk and that they have already acted to manage or reduce their exposure in the previous five years. For example, they integrated ESG into their investment process, analyzed their portfolio's carbon footprint and stranded asset risk, or went even further by actively reducing those exposures. About 25% of the institutional investors in the survey already hedged climate risk or took it into account in their valuation models. Interestingly, divestment was the least employed risk management strategy (by 20%). Investors rather preferred to engage in discussions with firm managers about the financial consequences of climate risks. The surveyed investors also believed that stock valuations already reflect climate change risk to a large extent, although not yet fully. Relatedly, Pedersen et al. [108] propose an equilibrium framework for analyzing the costs and benefits of responsible investing.

One of the complexities for investors who aim to manage climate change risks is that the possible trajectory of climate change and its impacts are subject to great uncertainty, involving different climate models and their parameters (scientific uncertainty), future policy responses (policy uncertainty), and mitigation efforts by companies and households (economic uncertainty). Uncertainty is a form of ambiguity [121], where both the future outcomes and their probabilities are not known exactly. Barnett et al. [112] propose a modeling framework that can price the social costs of this ambiguity due to climate change using asset pricing techniques from the finance literature.

For more information on the recent climate finance literature publications in mainstream journals in Table 6, we refer readers to literature reviews by Hong et al. [1], Giglio et al. [2], and Campiglio et al. [70]. In their introduction to a special issue about climate finance, Hong et al. [1] provide an overview of recent climate finance research in leading finance journals and several interesting avenues for new research. Giglio et al. [2] and Campiglio et al. [70] review the climate finance literature with an emphasis on asset pricing and financial risks.

Topics and Methodologies in the Most Cited Finance Articles

We now summarize the common topics and methodologies in the top 20 most cited articles in top finance journals. First of all, 16 out of 20 study the impact of climate change risk on asset prices. This strand of literature includes the theoretical analysis of the impact of green investor preferences on corporate finance by Heinkel et al. [16] and the equilibrium asset pricing models with ESG investors and climate change risk of Pástor et al. [115] and Pedersen et al. [108]. It also includes several empirical studies that test the impact of climate change risk on asset prices for real estate prices [105,110,114], stock prices [12,109,118], municipal bonds [113], stock options [111], and green bonds [54,86,106]. Relatedly, Engle et al. [107] propose a novel methodology for hedging climate change risk with a long–short stock portfolio.

Thus, climate finance studies in the top field journals focus on: (1) extending asset pricing theory to include climate change risk and investor ESG preferences, (2) testing these theories with large financial datasets, and (3) developing methodologies for measuring and hedging the financial risks of climate change. Absent in leading finance journals are the type of policy-oriented articles that are among the most frequently cited in the wider climate finance literature (see Table 3). More generally, missing in articles published in top finance journals are the notions that market failures and behavioral biases require policy intervention by governments to avert a climate crisis, as argued by Nordhaus [66,122] and Stern [102], and that more private climate finance flows need to be mobilized urgently. As Diaz-Rainey et al. [31] argued, top finance journals prefer to focus on selected theoretical models and their empirical tests, while ignoring practical problems that require a forward-looking mindset. Another explanation is that top finance journals have chief editors that are

nearly all based in the United States, where climate change beliefs are politically polarized and support for public policy interventions in free markets is low.

The methodologies applied in the finance literature in Table 6 are generally rigorous, but they are also limited due to the emphasis on the rational actions of firms, consumers, and investors in free markets. The models could be extended further to include environmental externalities, market failures, behavioral biases, and moral beliefs as driving forces of investor ESG preferences and government interventions (e.g., carbon taxes and cap-and-trade systems). Without such extensions, it is hard to fully assess the long-term financial impacts of climate change, as shifts in investor ESG preferences and regulatory interventions by policymakers that could leave carbon assets stranded to remain a deus ex machina. Another direction for increasing the relevance of the research is to provide more practical recommendations for stimulating climate finance flows, such as Flammer [76] and Blanchard, Gollier, and Tirole [123] recently did.

4. Limitations

The purpose of this research review was to document the number of articles on climate finance published over the years, to identify the most cited articles, and to highlight groups of journals and authors that are often jointly cited. For this purpose, we applied a bibliometric analysis to publication records from the Scopus citation database, analyzing 1347 articles published between 1991 and 2022. We also summarized the main research topics studied in the climate finance literature in the past and present, using both a keyword analysis and a substantive review of the most frequently cited articles.

One limitation of the bibliometric review is that our combination of search terms may not have identified all relevant climate finance studies in the Scopus citation database. For this reason, the authors cross-checked the reference lists of the 70 review-type articles found in the search and added 102 articles that were undetected initially. However, we may still have missed some relevant related articles. For example, some of the literature on sustainable and ESG investing may also be relevant for climate finance but is excluded from our search. We decided not to extend the scope of our search further, as otherwise the number of articles included would become too large to analyze effectively (e.g., complicating manual screening of the content), or the database would consist of many articles without direct relevance to climate finance.

Another limitation of a bibliometric review is that citation counts can be increased by social networks of (co-)authors who frequently cite each other, and by editors who explicitly ask authors to cite recently published studies in their journals to raise the impact factor. For example, in the author co-citation analysis in Figure 6, we noted clusters of authors in Asia that frequently collaborate on green finance articles. In addition, citation analysis is backward-looking and puts less emphasis on recently published articles that have had less time to accumulate high citation counts. We countered this drawback by adding a separate review of articles in top finance journals (Table 6), which have only recently started to publish more climate finance articles; 15 out of the 20 reviewed articles were published since 2020.

One limitation of our substantive review of the article contents and findings is that it may reflect the interests and biases of the authors, who are both finance scholars. This limitation was partially alleviated through the use of the bibliometric analysis and limiting our summary of the literature to the top 20 most frequently cited papers only. We subjectively decided to add the top 20 articles in six leading finance journals to the review in a separate section. Our aim was to account for the fact that mainstream finance journals have only recently started to publish more climate finance articles (since 2019), and we expect these new contributions to become highly cited in the future.

5. Conclusions

Our bibliometric review reveals that the climate finance literature has grown exponentially, especially from 2015 onwards. The annual number of climate finance articles in the

Scopus citation database has grown more than fivefold from 68 per year in 2016 to 369 in 2021. Drivers of this surge in interest likely include the adoption of the Paris Agreement in 2015 that aims to limit the increase in global average temperature to well below 2 °C and that intends to make finance flows consistent with a path towards significantly lower greenhouse gas emissions. Since 2015 there has also been a large increase in global climate finance flows [5] and a boom in green bond issuance to finance climate-related projects [76]. An analysis of keywords shows that the focus of the literature has shifted from an initial focus on "carbon finance" and "carbon markets" in 2015 to "green finance" and "green bonds" more recently in 2019.

In terms of geographical distribution, authors affiliated with universities in the E.U. countries produced 27% of the climate finance documents, followed by China (14%), the United States (12%), and the United Kingdom (9%). Western European countries contribute a larger proportion of climate finance studies compared to their share in global scientific output, while for the United States the pattern is the opposite. This is probably the result of the E.U.'s lead in climate change policy since the early 1990s, while in the United States climate change is a politically polarized issue and support for federal policy intervention has been less consistent through the years. Our review shows that the most cited articles in the climate finance literature tend to have authors from Europe, while the senior editors of the journals that publish most climate finance articles tend to be based outside the United States as well.

Climate finance is truly a multidisciplinary topic, as the literature is published in environmental science, energy, economics, and finance journals, as well as interdisciplinary journals. The most influential climate finance journal in terms of total citation count is *Energy Policy*, followed by the *J. Cleaner Production* and *Climate Policy*. Other often cited journals are *Energy Economics*, *Ecological Economics*, and *Financial Research Letters*. A close inspection of the most cited journals and articles showed that one of the leading topics in the literature is the financing of renewable energy transitions, as well as policies that encourage more private investments in renewable energy.

A journal co-citation analysis revealed a large cluster of journals focusing on energy policy, cleaner production, and sustainability (e.g., *Energy Policy* and *J. Cleaner Production*). Furthermore, the literature on climate change and environmental science is another important foundation for research in climate finance. In addition, the journal co-citation map identified a group of non-core journals in economics and finance like *Energy Economics*, *Finance Research Letters*, and the *J. Sustainable Finance & Investment* that have shown an early focus on climate finance and are often cited together, separately from mainstream journals in finance and economics, which are in two separate clusters.

Remarkably, the four leading field journals in finance (*J. Financial Economics*, *J. Finance*, *Rev. Financial Studies*, and *J. Financial & Quant. Analysis*) together have published only 22 of the 1347 articles in our climate finance database. This reconfirms the earlier findings of Diaz-Rainey et al. [31] and Zhang et al. [6] that mainstream finance and economics journals did not show interest in the topic. A potential explanation put forward by Diaz-Rainey et al. [31] is that finance as a discipline ignores practical problems that require a forward-looking and cross-disciplinary mindset and instead prefers to focus on deriving and testing selected theoretical models. Furthermore, the senior editors of top finance journals are almost exclusively based in the United States, where beliefs about climate change are more polarized and there is less support for federal climate change policies than in Europe. However, attitudes are shifting, as our results show that leading finance journals have recently started to publish more research on climate finance since 2019, including several dedicated special issues. We have reviewed this nascent literature in a separate section, as we expect it to become more influential in terms of citations in the coming years.

We can identify four major themes among the most cited articles in the literature that we reviewed. The first theme is the study of renewable energy financing and policies that can stimulate more private investments in renewable energy projects. Frequently cited contributions include Barradale [57], Delmas and Montes-Sancho [53], Wüstenhagen and

Menichetti [47], Polzin et al. [50], and Taghizadeh-Hesary and Yoshino [60,87], amongst others. The leading outlet for articles on this topic is *Energy Policy*. Articles in this group tend to have a practical focus and are among the earliest influential publications in the climate finance literature, apart from Heinkel et al. [16]. For future research, this strand of literature could benefit from integrating more theoretical frameworks from the economics and finance literature as the basis for policy recommendations. Furthermore, as technological innovation and economies of scale have greatly reduced the cost of renewable energy recently, the optimal policies can change over time and need to be reassessed regularly.

A second major theme consists of studies that try to estimate the impact of climate change risks on the financial sector and global financial markets. Primary contributions are by Dietz et al. [43] and Battiston et al. [44], both published in *Nature Climate Change*. This group of studies develops new methods that allow financial institutions and investors to assess the impact of climate change risk on their balance sheets. It has led to new tools such as "climate value-at-risk" and "climate stress tests" that can be integrated into existing financial risk management frameworks. We refer to Battiston et al. [68] and Monasterolo [69] for recent work in this area. Relatedly, Krueger et al. [104] recently surveyed institutional investors about their perceptions of climate change and their ways of dealing with the associated risks. Open issues for further research in this area are more refined modeling of the asset losses due to climate change risk (see Hong et al. [1]), as well as how to model shifts in investor preferences, new technology, and government policy that trigger stranded asset risk.

The third main theme is the effect of investor preferences for green investments on corporate behavior and the cost of capital. An early theoretical work in this area by Heinkel et al. [16] is the most cited article in the climate finance literature. Another influential article is an empirical study by Chava [48], documenting that investors demand a higher cost of capital for listed companies that do not pass environmental screenings. A recent focal area of study is green bonds for financing climate-related projects. Why do companies issue green bonds, what are the benefits to investors, and what is their yield premium compared to regular bonds? Key studies on green bonds are Reboredo [19], Zerbib [54], Gianfrate and Peri [77], and Flammer [106], which are often co-cited together as a group. This strand of literature has made great progress in analyzing green bond datasets that have recently become available, but there is still relatively little research on how corporations adapt to climate change risk and shifts in investor preferences for sustainability. More evidence is also needed on the drivers of investor ESG preferences, such as climate change beliefs, perceptions about market failures, and moral values [74,75].

A fourth theme consists of the pricing and hedging of climate change risk in financial markets. The most frequently cited early contribution is by Hintermann [49] in the *J. of Environmental Economics and Management*, who developed and tested an economic model for the prices of E.U. carbon emission rights. Our review reveals that leading finance-field journals have recently published several studies on the impact of climate change risk on the prices of stocks [109], options [111], residential real estate [105,110,114], and municipal bonds [113]. The findings of these studies reveal that financial markets already discount long-term climate change risks today and that assets with high exposure trade at a discount, although the full extent of these risks may not yet be fully priced in [70]. We note that most empirical studies are based on datasets up to 2017, while since then there have been large increases in sustainable fund flows, major changes in climate change policies (e.g., in the United States under the Biden administration), and several attention-grabbing extreme climate events globally. New research is therefore needed to test whether financial markets are pricing climate change risk more efficiently nowadays. Another direction for future research is to provide more practical recommendations that can stimulate climate finance flows, rather than only focusing on asset pricing theories and their empirical tests; see Flammer [76] and Blanchard et al. [123], for example.

In stark contrast to the large strand of asset pricing research in climate finance, the corporate response to climate change risk and ESG investor preferences is much less

explored in the literature. Future research could investigate behavioral biases of managers, such as status quo bias, ambiguity aversion, and path-dependency in investment decisions, that can deter investment in new technology for climate change mitigation. Another important topic for future research is the role of investor activism and boards of directors in guiding corporate strategy and investments toward achieving lower CO_2 emissions and reducing exposure to climate change risk [124]. Also, a less explored topic is how to integrate climate change mitigation and adaption into investment models and project evaluations under uncertainty [125,126].

Furthermore, an essential area for further research is the funding of technological innovations in the corporate sector that can help mitigate climate change risks, such as carbon capture and storage (see, e.g., Chen, Wang, and Ye [127]). Another important issue for future research is how private climate finance flows can be stimulated in developing countries that lack large domestic institutional investors [128]. Finally, new studies could focus on financial innovations that can make markets for carbon rights and carbon offsets more liquid, efficient, and accessible to corporations and investors worldwide [129,130]. In conclusion, although the climate finance literature has grown exponentially recently, there are still many important unanswered questions and unexplored areas for further study in the coming years.

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