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Sustainability in International Business

Talent Management, Market Entry Strategies, Competitiveness

Edited by
Anna Visvizi

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Editor

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About the Editor

Anna Visvizi

Anna Visvizi, Ph.D. (dr hab.), is an economist and political scientist, editor, researcher and political consultant with extensive experience in academia, think-tanks and government in Europe and the US, including the OECD. The author of several published works, Prof. Visvizi presented her work across Europe and the US, including Capitol Hill. A practiced team-worker, researcher, analyst and lecturer, Prof. Visvizi's expertise covers issues pertinent to the intersection of politics, economics and ICT. This is reflected in her research on applied aspects of ICT, especially AI and blockchain, in such domains as smart cities/smart villages, geopolitics, and business management. Prof. Visvizi's publication also cover such issues as knowledge and innovation management and technology diffusion, especially with regard to the EU and BRI. In her work, Prof. Visvizi places emphasis on engaging academia, the think-tank sector and decision-makers in dialogue to ensure well-founded and evidence-driven policymaking. Prof. Visvizi is Associated Professor at SGH Warsaw School of Economics, Warsaw, Poland, and Visiting Professor at Effat University, Jeddah, Saudi Arabia.

Preface to "Sustainability in International Business: Talent Management, Market Entry Strategies, Competitiveness"

In a context best characterized by uncertainty and volatility, it is necessary to rethink the key concepts and assumptions underpinning the broad debate on international business. In brief, the world is more interconnected than ever, yet—as the cases of COVID-19 and the war in Ukraine confirm—supply chains are not immune to developments in politics and society. Other factors weigh in on the analysis too. Moreover, as the context in which businesses operate is ever more competitive, traditional approaches to building a competitive edge and succeeding in foreign markets need to be reconsidered. Talent management might be the missing link. Hence, this book makes a case for a more direct engagement of the research community with this topic.

The chapters included in this reprint offer an insight into a selection of issues that are consequential to increasing our understanding of current developments in international business. The key topics discussed include internationalization strategies, talent management and competitiveness. However, topics such as gig economy and technology diffusion are also discussed. The authors employ a wide range of examples and case studies. Special emphasis is placed on the challenge of ensuring broadly understood sustainability.

This reprint will be of interest to anyone interested in international business, including researchers and students pursuing degrees in international business, management, and strategic management. Indeed, this book will be a great companion to undergraduate and graduate courses on related topics.

A warm "thank you"is extended to all contributing authors and to the publisher.

Anna Visvizi
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Editorial

Sustainability in International Business: Talent Management, Market Entry Strategies, Competitiveness

Anna Visvizi [1,2]

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The increasing velocity of international transactions; the technology-enhanced growing interconnectedness of people, business, and societies; and, finally, the escalating density of the day-to-day business interactions are the key sources of challenges that organizations, both in public and private sectors, are facing today [1,2]. The COVID-19 pandemic aggravated the already existing challenges and spurred a number of new ones. The pandemic and its implications brought rupture into nearly every aspect of our lives and into every dimension of our social, political, and economic systems locally, internationally, and globally, and the rich academic literature attests to that [3,4]. The selection of papers submitted to this Special Issue addresses a great number of these topics, thus giving the reader a useful overview of issues and developments that shape sustainability in international business today. The 15 papers included in this Special Issue, listed beneath, address three interconnected thematic groups: (i) talent management in times of rupture and uncertainty; (ii) market entry strategies; and (iii) current developments and emerging trends.

The discussion on talent management in contemporary organizations starts with the paper by Al Aina and Atan, who explore the impact of talent management practices on sustainable organizational performance. The authors demonstrate that talent attraction and talent retention had no impact on the sustainable organizational performance. However, learning, development, and career management had a significantly positive impact on sustainable organizational performance. In a similar manner, the following paper by Saleh and Atan demonstrates that a link exists between sustainable talent management practices, organizational culture, and employee job satisfaction. By focusing on the case of the higher education sector in North Lebanon, the paper's findings suggest that a strong and significant positive relationship between the sustainable talent management practices and employee's job satisfaction exists. Organizational culture is proven to have a mediating effect on these two variables.

The study by Ahmad et al. focuses on work–family conflict (WFC) to suggest that it is a challenge for organizations in emerging markets, where the position and role of women gradually changes. This implies that organizations need to devise a set of tools and practices that would allow a smooth inclusion of women in the formal workforce, while at the same time mitigating the scope and scale of WFC. By means of engaging in a discussion on ways of navigating challenges employees and employers face, Muazzam et al. examine problem-focused coping strategies and their efficiency in addressing work-related strain. The spotlight in the paper is directed at workplace bullying in higher education institutions (HEIs). It is argued that workplace bullying and its implications for absenteeism, turnover, and productivity represents one of the most challenging issues in talent management in HEIs. For this reason, the centrality and effectiveness of problem-focused coping strategies should be more broadly debated.

The second part of this Special Issue addresses the complex questions of market entry strategies under conditions of strain and uncertainty. With reference to Chines household appliance firms, Wu and Wang examine factors determining sustainable entry strategies.

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The authors argue monopoly firms dominating the new market may not be profitable all the time; however, appropriate competition can bring about a win-win situation. Kwon et al. dwell on the moderating effects of the continental factor on the relation between business strategies (cost advantage strategy and differentiation strategy) of the pharmaceutical industry and mergers and acquisitions (M&A) performance. As the findings of the paper suggest, the moderating effect of the continental factor was beneficial only in relation between the cost advantage strategy and M&A performance. Santos and Dunlap explore which resources are influential in market entry decisions considering that there are different resource needs between developed (DMNEs) and emerging market multinationals (EMNEs). The findings suggest that EMNEs seek out regions with a greater abundance of different resources than DMNEs.

Continuing the discussion on internationalization, resource acquisition, and growth potential of multinational enterprises, Çela et al. examine the internationalization of large companies from Central and Eastern Europe (CEE). By focusing explicitly on CEE, this paper determines the main factors that positively influence firms' internationalization. The main findings derived from this study show that firm characteristics, such as age, size, and corporate performance, have a positive effect on the internationalization process. An increase in age, size, and firm performance leads to higher levels of internationalization. Larger and relatively older firms have access to more resources and are more experienced in dealing with the environmental difficulties characteristic of these countries.

The third group of papers included in this Special Issue offers an insight into current developments and emerging trends in international business. Malik et al. shed light on the concepts of the platform and the gig economy to, on the one hand, delineate their conceptual boundaries and, on the other hand, to critically review the existing literature. The key findings of this paper reveal that while research on the gig economy proliferates, the distinction between the "platform" and "gig" economies frequently remains blurred in the analysis. Moreover, the discussion on gig economy is largely dispersed, and a clearer research agenda is needed to streamline the discussion to improve its exploratory and explanatory potential. In what follows, Belascu et al. discuss performance dissimilarities in European Union (EU) manufacturing by focusing on ownership and technological intensity. The results of the study show that EU foreign-owned businesses dominate locally owned ones in terms of size. This gives them an edge in obtaining higher profits, cash flow, and investments and coping with higher personnel costs. Furthermore, ownership is a more important differentiator of performance at the industry level than the industry's technological level. The notion of performance and competitiveness feature prominently in the paper by Dziembała , who examines determinants of competitiveness in Central and Eastern Europe. Competitiveness is explored also by Farinha et al., who discuss competitiveness as it applies to the tourism industry in the Algarve region in the south of Portugal. By examining the diverse stakeholders' perceptions of the issues, the authors conclude that a convergent perspective regarding sustainability challenges, namely, natural resources and biodiversity, safety, and supply chains exist. However, hotels and restaurants do not reflect the same perception regarding sustainability initiatives, e-tourism, or free Internet access. These divergences are essential results since they indicated which issues require local authorities' priority intervention. Hunjra et al. examine the moderating effect of institutional quality on the financial development and environmental quality. As the authors argue, there is a lack of knowledge as to how countries can achieve the goal to end poverty, whilst protecting the planet. The findings of this study suggest that countries in South Asia have utilized financial development for capitalization, instead of improving production technology. Institutional quality moderates the negative impact of financial development on environmental sustainability. Access to finance remains the most salient topic in research on small- and medium-sized enterprises (SMEs). The specificity of the challenge, and ways of mitigating it in Pakistan, are explored by Ahmad et al. The Special Issue closes with the paper by Bodziany et al. that examines the business sector, especially SMEs', response to COVID-19.

List of Contributions:

1. Al Aina, R.; Atan, T. The Impact of Implementing Talent Management Practices on Sustainable Organizational Performance.
2. Saleh, R.; Atan, T. The Involvement of Sustainable Talent Management Practices on Employee's Job Satisfaction: Mediating Effect of Organizational Culture.
3. Ahmad, M.; Muazzam, A.; Anjum, A.; Visvizi, A.; Nawaz, R. Linking Work-Family Conflict (WFC) and Talent Management: Insights from a Developing Country.
4. Muazzam, A.; Anjum, A.; Visvizi, A. Problem-Focused Coping Strategies, Workplace Bullying, and Sustainability of HEIs.
5. Wu, Y.; Wang, S. Sustainable Market Entry Strategy under a Supply Chain Environment.
6. Kwon, J.; Kim, C.; Lee, K.C. Moderating Effect of the Continental Factor on the Business Strategy and M&A Performance in the Pharmaceutical Industry for Sustainable International Business.
7. Santos, R.S.; Dunlap, D.R. 51 Flavors: Regional Resource Configurations and Foreign Multinational Market Entry in the U.S. Biopharmaceutical Industry.
8. Çela, A.; Hysa, E.; Voica, M.C.; Panait, M.; Manta, O. Internationalization of Large Companies from Central and Eastern Europe or the Birth of New Stars.
9. Malik, R.; Visvizi, A.; Skrzek-Lubasińska, M. The Gig Economy: Current Issues, the Debate, and the New Avenues of Research.
10. Belascu, L.; Horobet, A.; Vrinceanu, G.; Popescu, C. Performance Dissimilarities in European Union Manufacturing: The Effect of Ownership and Technological Intensity.
11. Dziembała, M. The Enhancement of Sustainable Competitiveness of the CEE Regions at the Time of the COVID-19 Pandemic Instability.
12. Farinha, F.; Bienvenido-Huertas, D.; Duarte Pinheiro, M.; Silva, E.M.J.; Lança, R.; José Oliveira, M.; Batista, R. Sustainable Competitiveness of Tourism in the Algarve Region. Critical Stakeholders' Perception of the Supply Sector.
13. Hunjra, A.I.; Tayachi, T.; Chani, M.I.; Verhoeven, P.; Mehmood, A. The Moderating Effect of Institutional Quality on the Financial Development and Environmental Quality Nexus.
14. Ahmad, S.; Tayachi, T.; Haq, S.G.; Wang, W.; Ahmad, F. Entrepreneurial Specific Characteristics and Access to Finance of SMEs in Khyber Pakhtunkhwa, Pakistan.
15. Bodziany, M.; Ścibiorek, Z.; Zamiar, Z.; Visvizi, A. Managerial Competencies & Polish SMEs' Response to the COVID-19 Pandemic: An Insight.

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Article

Internationalization of Large Companies from Central and Eastern Europe or the Birth of New Stars

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Abstract: With rapid globalization, firm internationalization has become an important corporate strategy as well as the necessity for the survival and growth of the business. In the last decade, there has been a growth in literature that studies this field, especially in emerging countries. However, there exists a gap in the literature in CEE countries. This study aims to fill that gap by conducting an analysis and providing insight regarding the factors that lead to an increase in firm internationalization in this region. This research paper studies the main determinants that have an impact on the firm internationalization of large companies in CEE countries using panel data empirical methods, such as the random effect model and generalized method of moments (GMM) model for a panel of 50 firms from 11 CEE countries and a time duration of 14 years. This study determines the main factors that positively influence firm internationalization in selected countries. These countries have experienced a radical transition from centrally planned economies to market economies, and although they have experienced economic growth and a rise in productivity, they are still facing several challenges. Therefore, it is important to know what facilitates and helps firms to expand in international markets. The main findings derived from this study show that firm characteristics, such as age, size and corporate performance, have a positive effect on the internationalization process. An increase in age, size and firm performance leads to higher levels of internationalization. Larger and relatively older firms have access to more resources and are more experienced in dealing with the environmental difficulties characteristic of these countries.

Keywords: firm internationalization; international business; CEE countries; GMM model; random effect model

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1. Introduction

Firm-specific and environmental factors' impact on company internationalization have become highly interesting to study, especially in emerging and transition countries where the institutional and economic context is quite different from developed economies [1,2]. In these countries, the internationalization of firms provides opportunities, but also challenges, especially for early internationalizing companies [3–5]. Firm internationalization is a very broad and complex concept and includes a range of activities, such as importing and exporting of products, foreign direct investment (FDI) in host countries through mergers and acquisitions or greenfield investment, outsourcing, marketing, and research and development [6].

Currently, as the world becomes more globalized and countries become more economically integrated with each other, the amount of trade and investment between them increases. Living in the age of international competition, it has become increasingly important for firms to adapt to this relatively new environment and expand their operations

beyond their place of origin [7–15]. CEE countries were considered a "fascinating research laboratory" by [16] in their study. They are still a testing laboratory, and there are many unanswered questions related to them. The most important among them is whether their economies will catch up with Western European countries [17]. Some of them have made enormous steps, but differences still exist. Sustainable economic growth is the most important element that eradicates these differences, and firm internationalization is one factor that contributes highly to this. Therefore, supporting and motivating business from this perspective is the right policy to be followed by the government. Sustainable economic development requires sustainable business growth for large and small enterprises. Internationalization contributes to sustainable business growth and makes these businesses more aware and responsible about the local and international environment. Business organizations, particularly large organizations, are considered very important stakeholders with large potential to contribute to sustainable development [18]. According to [19], businesses have large responsibility towards the goal of global sustainability. According to him, business sustainability requires businesses to continue their activities without damaging the environment and contributing to the common good through positive value creation. Currently, an increasing number of businesses have acknowledged their responsibility in global sustainability and have become aware of their negative impact on the environment and society.

There is an incredible amount of interest in the activities of firms from emerging and transition countries expanding abroad [20,21]. As a result of the companies' efforts to internationalize their activities, we are witnessing the change of the position occupied by some countries, which, from net FDI recipients, turn into foreign capital providers, going through the stages identified by Dunning and exposed in the theory of investment development path [22–24].

Recently, this trend of firm internationalization has also been facilitated by several factors, such as the Internet or other sources of technological communication such as digital platforms [25–28]. These factors have changed the way companies conduct business. Companies, to survive this increased international competition, have searched for ways to expand their operations and profit from economies of scale in pursuit of competitive advantages.

Internationalization has been studied mostly in advanced economies, and recently, there has been a growth in the literature in emerging countries [29–32]. However, there seems to be a gap in the literature regarding emerging and transitioning countries despite the growing literature [33]. The process of internationalization is seen as a major dimension for growth and development. In general, Central and Eastern European (CEE) countries have small domestic markets. Therefore, globalization and internationalization are seen as options to offer larger opportunities for firms in these countries to grow, and this might be crucial for them [34]. In this area of globalization, going international is inevitable for sustainable growth and development [35–37]. Therefore, with increasing globalization, the process of internationalization has become significant not only for large firms, but also for small and medium enterprises. The CEE region is less globalized than Western Europe, which makes it an excellent candidate for study in the area of globalization processes [38]. Central and Eastern European countries are net recipients of FDI, being at an early stage in the path of investment development proposed by John Dunning [23,39]. In CEE countries, firms do not record a long history of private markets and internationalization. During the last decade, they have experienced privatization of state-owned enterprises, restructuring of these companies to adjust to the market economy and birth of new private entities [40]. During this period, these firms were also struggling with weak institutions and an economic environment not very suitable for growth. However, they have experienced changes quite quickly facilitated by membership in World Trade Organization and integration in European Union [21,41–43]. The EU membership of CEE countries is a factor that favors the internationalization of companies from this region that thus have access to a regional market of considerable size on which they can operate in a somewhat easy way given the existence of European regulations.

Many of the largest companies from CEE countries are subsidiaries of companies headquartered in other parts of the world [44], and as a result, strategic decisions are made outside the CEE [45]. In contrast, the share of large companies headquartered in the CEE with subsidiaries outside the CEE is very small, with only a few [46].

Motives of internationalization of firms from emerging and transition countries differ from firms of developed economies [47]. Although there is an increasing interest of scholars in the internationalization of emerging and transition economies, there are only a few studies concentrating on firms from CEE countries [21]. This work focuses on firm activities in foreign countries that involve their effort to obtain revenues from their exporting or FDI investment in these host markets. This study's aim is to fill the literature gap and develop more evidence regarding the process of internationalization for firms in CEE countries. Based on these arguments, it is important to see what the main determinants of large firms' internationalization are in these countries. Therefore, the main research question is the identification of the main factors that lead to the higher international performance of large firms in the CEE region. What is the impact of the main factors, such as firm performance, age, size foreign ownership, intangible assets, etc., studied largely by the literature in advanced economies, in the countries of CEE?

2. Literature Review

The emergence and development of multinational companies and foreign direct investment flows are explained by various theories, such as the theory of monopoly advantage, product life cycle theory, eclectic theory or internationalization theory [48,49]. The theory of internalization of production is closely linked to the theory of the firm because the company and the market are considered to be two alternative ways of organizing the same transactions [50]. According to [51], multinational corporations replace external markets with internal flows of factors of production, goods and services when the costs of these flows are lower than the costs of organizing markets. A firm tends to grow until the cost of an additional transaction, through it, equals the cost of that transaction through the market or by another firm. Internalization, seen primarily as a way to create an internal market for intermediate products, has its own costs related to the increased flow of information, administrative costs for the organization of the internal market, and costs that must be lower than additional income obtained by internalization. This theory considers not so much the internalization of a market as the internalization of externalities by creating an internal market in case the external market does not exist or is inefficient. This is the situation for intermediate goods. Activities, such as research, development, staff training and marketing, are independent activities, but are linked by flows of intermediate products consisting of knowledge and expertise [48].

Companies' advantages (in the field of production and marketing) are the basis of the decision to invest if intrafirm transfers involve lower costs than transactions on the market. This company-specific advantage is not a good that could be acquired, and it is not a single patent or invention; it must be seen as a "transfer of the ability to invent". Another researcher [52], points out that technology transfer has no or almost zero cost. This process involves the transfer of models and drawings, but also a cost of transmission and absorption of knowledge that are not incorporated in the drawings, but that conditions the correct application of projects.

Williamson [50] believes that FDI and multinational companies' expansion are not designed to strengthen the monopoly or oligopoly position but to ensure the most efficient transfer of knowledge abroad. Compared to the classic option—licensing, under certain conditions—multinational companies prefer the transfer of technology through FDI. This is also confirmed by practice—the concentration of FDI in industries with significant technology transfers is noticed. Rugman [53] considers that all existing theories about FDI are variants of the theory of internalization, internalization being an answer for any type of externality (for example: market distortions—tariff and nontariff barriers). This is also supported by the study of [54].

The two most important theories in this field of firm internationalization are the Uppsala theory of incremental internationalization and resource-based view (RBV) theory [55–57]. The Uppsala model of incremental internationalization has its roots in the Scandinavian school of research in this field, with some of the most cited works from authors such as [58–61]. These two authors, [62], developed the Uppsala theory, and according to this model, the process of internationalization of firms is an incremental process. In this model, firms tend to increase their internationalization and their commitment to foreign markets as their experience improves. The international process prescribed by this theory starts with small steps. In the beginning, firms choose markets that are near in terms of physical distance.

This theory includes two main stages of internationalization. First, enterprises select new overseas destinations for expansions based on their physical proximity to the host country, and later, firms expand farther to more distant markets once they gain experience in each host country. Therefore, according to this theory, firms start their international activity by a low commitment in markets that are physically close and gradually increase their activity. The Uppsala theory of firm internationalization was developed by observing Swedish firms' internationalization, and these firms were located in advanced economies. In addition, the external environment the firms are operating currently is different compared to the period in which this theory was first born. With facilities such as the internet or other information technology advantages, this incremental process has developed and shortened. Therefore, later changes and updates of this theory occurred. Johanson and Vahlne [60] revised this theory by including networks of relationships.

RBV theory predicts that the success of firms in foreign markets depends on their ability to develop distinguishing characteristics compared to other firms. According to this theory, tangible and intangible resources create competitive advantages for a firm [63]. RBV theory highlights that the competitive advantages a firm has can generate profit above normal [64]. RBV has its roots in strategic management, [63] and specifically in the work of [64]. According to him, firm resources include "all assets, capabilities, organizational processes, firm attributes, information, knowledge" that a firm possesses. A firm needs to have sustainable competitive advantages, which are associated with resources that are valuable, rare, inimitable or irreplaceable. This theory predicts that internal resources and characteristics are the real drivers of firm internationalization.

2.1. Firm Performance

The relationship between performance and internationalization is one of the most discussed topics in this field. In the literature, numerous studies that have explored this relationship have arrived at contradictory results. There are three different relationships identified in the literature. Some studies, such as [65,66], have concluded that there exists a positive relationship between internationalization and performance, while other studies, such as [67], have concluded that this relationship is negative. Later studies, such as [68,69], proposed a U-shaped relationship and S-shaped relationship [70,71].

The scientific literature on this topic has been mostly concentrated on multinational firms from developed countries. The performance of the firm is a very important element, and the companies need to be profitable enough in the domestic market to be able to move to international markets. Most of the studies mentioned above study the impact of internationalization on firm performance. There are only a few papers that analyze the impact of performance on firm internationalization. Ruigrok et al. [72] explore the impact of performance on internationalization from a behavioral perspective.

From an RBV perspective, performance has a positive impact on firm internationalization. A firm with positive performance possesses intangible and tangible resources to engage in international market activities. Nevertheless, there is also another counterargument that considers that highly profitable companies are less likely to engage in risky behaviors, such as internationalization. Therefore, the impact of performance on internationalization might be negative. The literature in this aspect is not in the same line, as

poor performance might affect the strategic decisions in a company by pushing them to look for new ways in an international environment to improve their condition. In contrast, insufficient resources because of poorer performance limits firms to engage in international markets [73].

The firms operating in emerging and transition countries are considered escape-oriented types of companies, which are in search of international markets to escape from their home environment. These types of firms tend to be in their initial stages of the internationalization process. Companies from CEE countries do not have a long history of operating in international markets. Therefore, considering these arguments, it is expected that an increase in performance would provide these firms with more resources to engage and diversify their risk from home countries in international markets, and an improvement in performance has a positive effect on their degree of internationalization. Therefore, based on this argument, the hypothesis tested is:

Hypothesis 1 (H1). *Firm performance has a positive and statistically significant effect on the international performance of large firms in CEE countries*.

2.1.1. Foreign Ownership

Foreign ownership can help these firms overcome their liabilities of foreignness through their relationships and knowledge about foreign markets. Foreign investors monitor managers' activity and influence governance and strategic decision making [74]. Through their networks and knowledge of foreign markets, they can also provide these firms with more resources. Singla et al. [75] find that foreign corporate ownership and foreign institutional ownership are positively related to internationalization, while family, domestic corporate and institutional ownership are negatively related to internationalization.

RBV theory predicts that different types of owners can provide access to different resources for the firm and therefore impact its capability to internationalize [76]. This theory explains how the motivation of owners, which is also the motivation of the firm, and capability influence internationalization. The ownership of foreign individuals, corporations, or institutions has been found to have a positive impact on firm internationalization in transition countries [77]. Based on these findings, the hypothesis formulated is:

Hypothesis 2 (H2). *Foreign ownership has a positive and statistically significant effect on the international performance of large firms in CEE countries*.

2.1.2. Firm Age and Size

According to Uppsala theory, firms follow an incremental process during their internationalization; therefore, age and size are very important factors to consider. Successful internationalization is influenced by capabilities and resources [78]. Capabilities and resources are elements that are closely connected to age, with young firms having limited access to resources and fewer capabilities than older firms [79]. In this aspect, we have what are called liabilities of newness. According to liabilities of newness, young firms tend to have higher rates of failure because they possess fewer resources, capabilities and recognition in the market. Firms from CEE countries do not have a long history of operating in foreign markets. They are relatively young, with a large number of them coming into existence after the 1990s. Even for firms that have a longer history, their process of internationalization started with the fall of the communism system [33]. Therefore, age and size are expected to positively affect firm internationalization in these countries. In other words, an increase in the age or size of these firms leads them to have higher international market performance. Based on this discussion, the following hypotheses are formulated:

Hypothesis 3 (H3). *Age has a positive and statistically significant effect on the international performance of large firms in CEE countries*.

Hypothesis 4 (H4). *Size has a positive and statistically significant effect on the international performance of large firms in CEE countries*.

2.1.3. Growth of Intangible Assets

Intangible assets are important elements when considering firm internationalization. Intangible assets facilitate firm internationalization because they help these firms overcome liabilities of foreignness [80]. The framework of resource-based view theory states that firms that have distinguishable capabilities are able to generate more profit and use these capabilities to expand in foreign markets. In RBV theory, capabilities and knowledge, such as trademarks, copyrights, goodwill, franchises and secret processes, play a very important role. They are difficult to imitate and create competitive advantage for firms. Firms have difficulties surviving in international market competition only by relying on their own resources and capabilities [81]. In particular, firms from transition and emerging countries, which face difficulties distinct from these countries, rely upon the networks and technologies that are absorbed and used from international markets, mostly from developed markets. The intangible resource growth of these firms displays higher opportunities for them to expand even more in foreign markets. Therefore, intangible asset growth means an increase in the competitive advantages of these firms, which motivates them to expand abroad. With respect to this argument, the growth of intangible assets positively affects internationalization. Based on the above arguments, the following hypothesis is formulated:

Hypothesis 5 (H5). *Intangible resource growth has a positive and statistically significant effect on the international performance of large firms in CEE countries*.

2.1.4. Capital Investment

Firm internationalization is a strategic decision in nature. Vithessonthi [82] argues that firms with large capital investments, which means that high fixed costs, are more likely to expand into foreign markets. These companies are looking for ways to internationalize because they want to diversify their risk and use their assets more efficiently. Therefore, in this case, capital investments have a positive effect on internationalization. Conversely, if firms are at risk, they are less likely to expand into foreign markets. In this case, the impact of capital investments in internationalization is negative or nonexistent [83]. Based on the literature above, hypothesis six is formulated as follows:

Hypothesis 6 (H6). *Capital investment has a positive and statistically significant effect on the international performance of large firms in CEE countries*.

2.1.5. Industry Dummy Variables

The type of industry the firm operates in has an undeniable impact on its internationalization. Different industries have different characteristics, and the environment these industries create for their firms influences a firm's strategy and approach towards internationalization. Industry classifies firms based on common activity and characteristics. Andersson [84] shows that firms operating in different industries have different internationalization patterns. Javalgi et al. [85] conclude that firm characteristics' impact and significance in export propensity varies according to the industry.

Reis [86] argues that external characteristics, mostly represented by industry characteristics, influence firm behavior and export intensity. Firms are influenced by the exporting behavior of other firms in the industry and tend to follow them. In addition, other exporting firms can create information spillover. Firms operating in different industries also have different product characteristics and therefore different probabilities of engaging in international activities. For instance, firms operating in manufacturing are more likely to export than firms operating in the service sector. Innovation and technology in the industry are also important factors that differentiate firms [87,88]. Innovation gives firms competitive

advantages and increases their survival in international markets. Love and Roper [89] argue that innovative small and medium firms are more likely to export non-innovative firms. In addition, [90] concluded that firms that operate in sectors with high levels of R&D expenditure are more likely to export. Following the above literature, the hypothesis is formulated as follows:

Hypothesis 7 (H7). *Operating in the manufacturing industry has a negative and statistically significant effect on the international performance of large firms in CEE countries*.

2.1.6. Leverage

Leverage is another element that has an impact on firm internationalization. It is expected that the effect of leverage on internationalization will be negative [91,92]. Jung [72] define it as "potential slack resources" and find a negative impact of them on firm internationalization. Formally:

Hypothesis 8 (H8). *Leverage has a negative and statistically significant effect on the international performance of large firms in CEE countries*.

2.1.7. Domestic Market Growth Rate

Firm internationalization is also influenced by the domestic country market. Firms located in markets that are growing tend to behave differently than firms that operate in large and mature markets [93]. Firms in growing markets have fewer motives to expand internationally if there is a growing demand in the domestic market. Therefore, a growing domestic market is expected to have a negative impact on firm internationalization. Based on this the hypothesis formed is:

Hypothesis 9 (H9). *The domestic market growth rate has a negative and statistically significant effect on the international performance of large firms in CEE countries*.

3. Materials and Methods

3.1. Sample

The sample for this analysis was constructed by collecting data on firms that generate revenues outside the country of their origin. Data were collected for 14 years on 50 firms that had their headquarters in one of the CEE countries and were listed on the stock exchange. Two databases were used to collect the data, Thomson Reuters Eikon and Bureau van Dijk Orbis data. On the Eikon database, all the data regarding financial variables and the dependent variables were collected, while from the Orbis database, we extracted data regarding ownership structure during the period from 2005 to 2018. With these data, panel data with 50 firms from 2005 to 2018 were constructed. The firms included in this database are from 11 countries of CEE, specifically, Poland, Hungary, Slovakia, Romania, Slovenia, Bulgaria, Lithuania, Croatia, Czech Republic, Serbia, and Latvia.

3.2. Specification of Variables

The dependent variable is the degree of internationalization measured as the percentage of foreign revenue to total revenue of the firm, which is also one of the most commonly used measures [94]. Data on this variable were collected from the Thomson Reuters Eikon database. Our first intention was to collect data regarding firm foreign exports and foreign assets separately, but data regarding exports were not reported separately in the Eikon database, and very few firms had data regarding their foreign assets Therefore, since there was a large amount of missing data, only data on their foreign revenues were extracted. Data on foreign revenues were reported according to the firm's business segments. Data on revenues belonging to their domestic markets were not taken into consideration when calculating foreign revenues.

The graph in Figure 1 provides a graphical representation of both the mean of % foreign revenue to total revenue and the mean of exports as % of GDP from 2005 to 2018. From this graphical representation, the increasing trend from 2005 to 2018 in the mean values of degree internationalization can easily be seen. To see if the data collected for these companies were a good representation of the firms in this region, macrolevel data, such as export % of GDP, were collected to make a comparative analysis. Data on exports were collected from the World Bank World Development Indicator (WDI). Looking closely at the data also presented in Tables 1 and 2, this sample of the data is a very good representative of the companies operating in this region. The mean % of foreign revenues to total revenues follows the same trend as exports % of GDP, and the percentage values are very close. An explanation of this can also be the fact that the sample is composed of large and very large firms. These firms' share in total exports of each country is relatively high and important. A slight decrease is seen in the amount of foreign revenues to total revenues in 2009, and this can be attributed to the financial crisis in 2008.

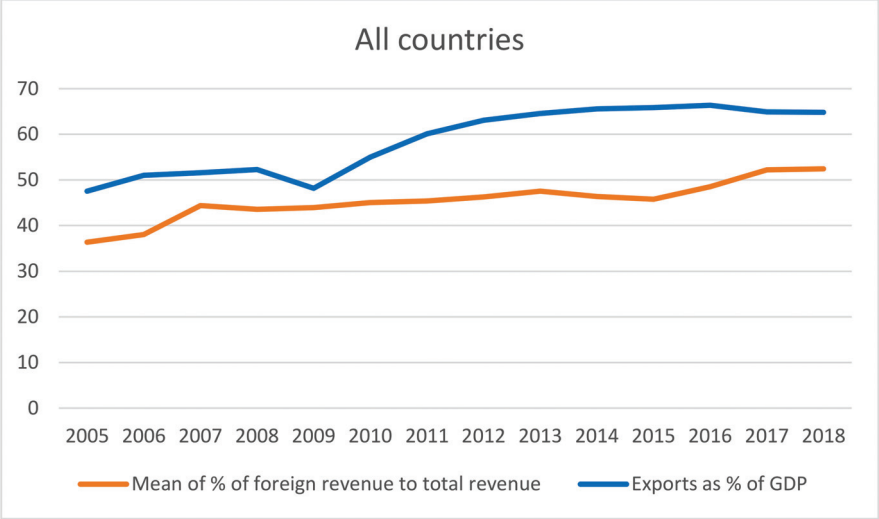

Figure 1. Mean of % of foreign revenue to total revenue and mean of exports as % of GDP. Source: World Bank.

Table 1. Mean % of foreign revenue to total revenue for the groups of firms in each country.

Year	Poland	Slovakia	Romania	Slovenia	Bulgaria	Hungary	Lithuania	Latvia	Croatia	Czech Republic	Serbia
2005	16.32	72.56		36.56	49.06	43.16	57.29	87.61	10.31	26.93	
2006	18.61	68.00		48.86	33.30	47.97	51.68	89.93	25.55	29.72	4.57
2007	17.64	72.18	59.31	51.45	25.20	51.56	54.60	98.95	24.93	25.68	6.44
2008	21.11	79.39	47.61	54.12	23.15	55.74	56.62	91.21	23.25	21.90	4.71
2009	23.07	78.97	44.13	44.81	24.44	57.44	57.60	92.63	23.98	23.11	12.84
2010	24.05	77.77	44.87	48.22	31.56	59.24	51.29	94.86	26.49	26.87	10.06
2011	23.83	70.35	46.05	49.56	28.31	59.84	51.43	93.16	39.98	25.85	10.60
2012	24.47	72.69	46.31	54.65	31.00	60.22	54.43	87.23	40.83	25.94	10.94
2013	23.38	82.65	47.86	56.27	31.57	60.26	54.33	83.77	40.99	23.99	17.59
2014	24.16	72.51	48.56	57.14	29.93	59.48	51.25	78.71	39.86	26.80	21.50
2015	24.19	62.52	47.63	60.54	29.08	59.03	63.40	67.16	39.60	29.04	21.15
2016	24.30	69.58	47.20	62.64	27.05	44.29	98.88	67.20	38.87	27.10	26.29
2017	24.82	74.91	49.60	61.40	32.10	58.52	98.99	73.15	42.46	29.39	28.95
2018	24.68	75.46	47.74	62.24	35.89	58.29	97.13	79.59	41.52	27.74	26.38

Source World Bank.

Table 2. Exports of goods and services as % of GDP.

Year	Poland	Slovakia	Romania	Slovenia	Bulgaria	Hungary	Lithuania	Latvia	Croatia	Czech Republic	Serbia
2005	34.61	72.05	24.71	59.58	42.86	62.55	53.84	43.20	39.36	62.18	27.96
2006	37.86	81.03	26.16	64.70	47.32	73.98	55.62	39.90	39.70	65.19	29.44
2007	38.56	83.28	26.02	67.60	52.38	77.94	50.36	38.45	38.98	66.41	27.29
2008	37.86	80.05	32.40	66.11	52.54	79.29	57.14	39.47	38.47	63.23	28.44
2009	37.18	67.61	37.03	57.24	42.33	74.41	51.94	42.47	34.48	58.68	26.35
2010	40.06	76.34	37.41	64.29	50.18	81.83	65.34	53.57	37.61	66.03	32.26
2011	42.56	85.05	39.87	70.37	59.07	86.75	75.00	57.77	40.30	71.31	33.00
2012	44.44	91.43	41.16	73.12	60.80	86.41	81.62	61.19	41.53	76.17	35.84
2013	46.32	93.82	41.02	74.52	64.89	85.66	84.06	60.26	42.74	76.87	39.85
2014	47.57	91.85	41.19	75.84	64.92	87.67	81.10	61.20	45.27	82.55	42.08
2015	49.50	92.31	41.53	76.94	64.10	88.97	75.82	60.72	48.14	81.05	45.27
2016	52.19	93.50	41.64	77.77	63.98	89.73	74.10	60.40	48.74	79.56	48.62
2017	54.34	96.89		82.88	67.37	88.25	80.90	62.12	51.09	79.73	50.54
2018	55.31	97.25		85.21	64.49	86.53	82.29	61.30	51.23	78.39	50.91

Source World Bank.

CEE countries have increased their presence in international markets in the last two decades, and this trend has had a steady increase over the years [95]. After the fall of the communist system in this region, these countries started to integrate into foreign markets, which also helped from their geographical location in Europe. After the fall of communism, their increase in presence in international markets was also helped by large foreign direct investment. The proximity of these countries to other large European markets helped in this situation. Most of their exports are towards other European countries [42,49,96]. Therefore, their exports were mostly concentrated in manufacturing goods and the European market. Table A1 in the Appendix A gives a better view regarding the main destinations of these countries' exports in 2018. In this table, it is observed that the top five main export destinations for these countries belong to European countries. Of course, proximity to these markets plays an important role in this regard. Table A1 shows that Germany is the number one destination of exports for most of these countries.

Table 3 gives a summary of the variables, their measurement expected impact and hypotheses. Firm performance was measured using the variable of return on assets (ROA). In measuring firm performance, ROA is an accounting-based measure and is the most widely used measurement type of performance. According to [97], when measuring firm performance, ROA is the most commonly used measure of performance among account-based measures, with 46% of researchers using it when studying its relationship with corporate governance. In this study, we also used ROA as the measure of performance. Data for this variable were extracted from the firm's annual financial reports, and the time series for each firm included in this study were obtained from the Thomson Reuters Eikon database. ROA in this database represents the return on assets before taxes. It is calculated as income before tax for the fiscal year divided by the average total assets for the same period and is expressed as a percentage.

Foreign ownership was measured as the percentage of shares owned directly by private foreign companies, institutions or individuals. Shares owned directly by foreign public authorities or foreign governments were not included. Data on this variable were collected in the Orbis database. Size in this study was measured by the natural logarithm of the number of permanent employees. The number of permanent employees was also extracted from the firm's annual financial reports. It represents the number of full-time employees and full-time equivalents of part-time employees as reported at the end of the fiscal year. This number does not include part-time employees if the company differentiates between these two and reports them separately and seasonal employees unless reported as full-time by the company. Age was measured as a natural logarithm of the number of years of operation since the inception of the company. This variable was calculated as the actual year minus the year of firm inception. Data regarding firm inception and its history were collected from Orbis and checked in Eikon.

Table 3. Measurement of variables.

Variables	Description	Expected Impact	Hypothesis
Degree of internationalization	Foreign revenue to total revenue		
ROA	Net profit to total assets	+	H1
Foreign ownership	% of shared owned directly by foreign firms, institutions, individuals, etc.	+	H2
Size	Natural logarithm of number of permanent employees	+	H3
Age	Natural logarithm of the number of years of operation since inception	±	H4
Intangible resources growth	Annual growth rate of intangible assets	+	H5
Capital investment	Capital expenditure to one period lagged total assets	±	H6
Manufacturing industry dummy	1 of the firm is affiliated to manufacturing industry	±	H7
Leverage	% of total debt to total assets	−	H8
Domestic market growth rate	Gross domestic product (GDP) growth	−	H9

We collected data from Orbis regarding the firm inception year because Orbis gives a detailed history for each company, especially in case merges and acquisitions occurred or there was a change in the name of the company. Leverage was measured as a percentage of total debt divided by total assets. Intangible resource growth was measured as the annual growth of intangible assets. Intangible assets consist of patents, copyrights, franchises, goodwill, trademarks, trade names, secret processes and organization costs. Capital investment was measured as capital expenditures divided by one period lagged total assets. Capital expenditures were the purchase of fixed assets, purchase of intangibles and software development costs. As a proxy for the domestic market growth rate, the real annual growth of gross domestic production (GDP) of each country in which the firm has its headquarters was used. Data on this variable were extracted from the WDI of the World Bank. GDP represents the production capacity of an economy, and its growth means a growing economy and larger markets.

3.3. Model Specification

Considering that the data are panel data, panel data econometric methods were used. First, a graphical and statistical analysis was conducted. The fixed-effect approach was excluded because some of the variables were time-invariant variables, such as industry dummies that controlled for the effect of industry. Running an OLS model for this type of data would result in biased estimates because of the likely autocorrelation and heteroscedasticity problems. The random effect model uses a generalized least square estimator (GLS), which corrects for these serial correlations and heteroscedasticity. Therefore, a random effect model is used as the first step. In addition, to account for the problem of endogeneity bias and produce robust results, a generalized method of moments (GMM) is used as the final step.

4. Results

Summary of Descriptive Statistics and Model Description

Table 4 presents a correlation matrix and descriptive statistics of the variables included in the model. Observing the results of the table multicollinearity does not appear to be a problem in this sample. In general, the correlation of the variables is low. To ensure the problem of multicollinearity in the data, we checked the variance inflation factor (VIF). The VIF appears to be 1.23, which is smaller than the critical value of 5.0. Therefore,

it is concluded that there is no problem of multicollinearity that should be taken into consideration before running the regression.

Table 5 shows the results of the random effect and the GMM models. Model one is the baseline model with all the main variables (size, age, ROAt-1, foreign ownership, capital investment, leverage and intangible resource growth) without including the dummy variables and domestic market growth rate. A one-year lag was applied to ROA since decisions to enter and expand further in foreign markets require time and are taken based on the firm's previous performance.

Table 4. Descriptive statistics and correlation matrix.

	Std. Dev.	Mean	Degree of Internationalization	Size	Ln Age	ROA	Foreign Ownership	Capital Investment	Intangible Resources growth	Leverage	Baltic GDP	Central GDP	Southeast GDP
Degree of internationalization	0.289	0.426	1										
Size	1.2	8.634	−0.084	1									
Ln age	0.656	3.361	0.316	−0.079	1								
ROA	0.073	0.046	0.046	0.033	−0.05	1							
Foreign ownership	0.309	0.449	0.033	−0.11	0.15	0.01	1						
Capital investment	0.047	0.067	−0.034	0.342	−0.172	0.299	0.058	1					
Intangible resources growth	2.646	0.395	−0.017	0.003	−0.047	0.065	−0.091	0.045	1				
Leverage	0.154	0.212	0.164	−0.187	0.07	−0.181	0.008	−0.082	−0.048	1			
Baltic GDP growth rate	0.012	0	0.035	−0.071	−0.002	0.042	−0.021	0.077	0.012	0.095	1		
Central GDP growth rate	0.023	0.024	−0.049	0.024	−0.056	0.013	0.033	−0.014	0.02	−0.166	−0.04	1	
Southeast GDP growth rate	0.012	0.002	0.001	−0.031	0.092	0.013	0.082	0.015	−0.015	0.001	−0.007	−0.178	1

In the second model, we included three interaction variables (Baltic GDP growth rate, Southeast GDP growth rate and Central GDP growth rate). The whole region of the CEE was divided into three subregions: the Baltic subregion (Lithuania and Latvia), the southeastern subregion (Bulgaria, Croatia, Romania and Serbia), and the central subregion (Poland, Czech Republic, Hungry and Slovakia). Based on these three subregions, three dummies were created, and the central region was kept as a base category. Variable Baltic takes value 1 if the country belongs to Baltic subregion and 0 otherwise; variable Southeast takes value 1 if the country belongs to Southeast subregion and 0 otherwise; and variable Central take value 1 if the country belongs to Central subregion and 0 otherwise. These dummy variables are multiplied by the domestic market growth rate or real GDP growth rate, and Baltic GDP growth rate, Southeast GDP growth rate and Central GDP growth rate variables are formed. In the second model, we included the Baltic GDP growth rate, Southeast GDP growth rate and Central GDP growth rate, which represent the domestic market growth rate for each subregion, and two dummy variables of Baltic and Southeast to control for the effect of these subregions. We created dummy variables for each industry based on the broad industry categories of the Standard Industrial Classification (SIC) to control for industry effects since the firms included in this study belong to different industries. Differences in technology, innovation, demand, and government regulation influence differences in industry internationalization [98]. Industry classification for each firm was made based on the firm's main activity, and data for these dummy variables were obtained from the Obis database. Seven industry dummies were created based on the main SIC division group: (1) manufacturing; (2) mining; (3) transportation, communications, electric, gas, and sanitary services; (4) construction; (5) services; (6) wholesale trade; and (7) retail trade. However, in the end, considering that 52% of the firms in the sample belonged

to manufacturing (see Table 5), only two dummy variables were created, manufacturing, a dummy variable that takes value 1 if the firm is from manufacturing industry and 0 otherwise; and other industries, a dummy variable that takes value 1 if the firm belongs to six other industries and 0 otherwise. Other industry variables were kept as the base category, and manufacturing was included in the third model. Therefore, in the third model, all variables are included.

Table 5. Results of Random effect and GMM models.

	1	2	3	4
Variables	**Degree of International-ization**	**Degree of International-ization**	**Degree of International-ization**	**Degree of International-ization**
Size	0.0592 **	0.0626 **	0.0724 **	0.2422 ***
	(−0.0298)	(−0.03)	(−0.0298)	(−0.0872)
Ln age	0.112 **	0.105 **	0.0980 **	0.1155 **
	(−0.0452)	(−0.0463)	(−0.0432)	(−0.0559)
ROA_{t-1}	0.153 ***	0.156 ***	0.156 ***	0.4275 *
	(−0.0527)	(−0.0529)	(−0.0525)	(−0.2324)
Foreign ownership	0.0550 **	0.0532 **	0.0506 **	0.1071
	(−0.0271)	(−0.0252)	(−0.0248)	(−0.1174)
Capital investment	−0.172 *	−0.160 *	−0.161 *	0.1527
	(−0.0895)	(−0.091)	(−0.0926)	(−0.2799)
Leverage	−0.0452	−0.0331	−0.0364	0.034
	(−0.0561)	(−0.0565)	(−0.0543)	(−0.2862)
Intangible resources growth	0.0016	0.0016	0.00163	0.0021
	(−0.00135)	(−0.00137)	(−0.00135)	(−0.0018)
Baltic GDP growth rate		−0.355 ***	−0.344 ***	−0.4467
		(−0.0818)	(−0.0832)	(−0.5798)
Southeast GDP growth rate		0.322	0.363	1.0957
		(−0.3)	(−0.296)	(−1.2045)
Central GDP growth rate		0.206	0.217	−0.0518
		(−0.204)	(−0.201)	(−0.6137)
Baltic		0.326	0.348	0.7347 ***
		(−0.337)	(−0.218)	(−0.2063)
Southeast		−0.0579	−0.0854	−0.1556
		(−0.112)	(−0.087)	(−0.1671)
Manufacturing			0.342 ***	0.527 ***
			(−0.0659)	0.1291
Constant	−0.478	−0.498	−0.733 **	−2.4379 ***
	(−0.378)	(−0.383)	(−0.366)	(−0.8185)
Observations	475	475	475	475
Number of id	50	50	50	50
Overall R-sq	0.03	0.07	0.38	-
Hansen	-	-	-	0.26
Method	RE	RE	RE	GMM

Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

In the fourth model, a generalized method of moments (GMM) for panel data is applied. The reason behind this model application is to account for the possible endogeneity problem and to compare the results with the random effect model. Endogeneity is a problem that arises when one of the explanatory variables is correlated with the error term or when the error terms are correlated in structural equations. There are three reasons for the endogeneity problem: omitted variables, measurement errors and simultaneity. Simultaneity occurs when one of the explanatory variables is jointly determined with the dependent variable [99].

What is most important and the reason why researchers pay attention to this problem is that endogeneity bias causes inconsistency in the estimators, which means that as your sample of data grows (as n moves towards infinity), your estimation of the parameters does not approach the true values. Endogeneity can also cause changes in the signs of the parameters and therefore lead to incorrect interpretation of the results and confusing conclusions [100]. In this study, we used a two-step system GMM since this type of estimator is more efficient than a one-step first-differenced transformation. First-differenced

transformation can cause loss of data. The Stata command used for two-step system GMM was xtabond2.

5. Discussions

This study performs a random effect and GMM model to examine the impact of several variables on firms' degree of internationalization using panel data for 11 CEE countries and a time duration of 14 years. Companies taken into consideration are large firms. Table 5 outlines the model's results. Some of the main variables, such as ROA_{t-1}, size, age, and manufacturing, do not show any changes in the sign and significance level between the random effect models and GMM. Size has a significant and positive impact in the random effect models. This significance increases in the GMM model from the 5% to 1% level of significance. The impact of this variable is as hypothesized in the literature section. Large firms have the necessary resources to support the cost of internationalization and overcome liabilities of foreignness and liabilities of newness [101]. Age also has a positive and significant impact in both models. The significance level of this variable does not change, and the impact is in line with what was hypothesized in H_4. In the random effect model, we see a high impact of ROA_{t-1} on the degree of internationalization [102]. This variable impact is positive and significant, as hypothesized. Considering that international sales are part of total firm sales, does this means that successful firms in the region are the ones who are at least as successful in foreign markets, as they are on the domestic market? This is interesting, because this implies the key to their success of their internationalization. However, this variable becomes less significant in the GMM model, but the sign remains positive, as predicted in the literature. Foreign ownership also has a positive sign, but this variable becomes statistically insignificant in the GMM model. The signing of this variable is as hypothesized; however, it was expected that its impact would be highly significant. The impact of capital investment, leverage and intangible resource growth rate variables appears to be almost insignificant in all three models. In other words, our empirical results do not show any significant impact of these three variables on the degree of internationalization. The GDP growth rate or the domestic market growth rate of Baltic countries show a negative and highly significant impact in the random effect model; however, this variable becomes insignificant in the GMM model. We see the opposite effect for the Baltic dummy variable. Being in one of the Baltic countries appears to positively affect the degree of internationalization. This positive effect is also seen in the case of the manufacturing dummy variable. Operating in the manufacturing sector appears to have a positive effect on internationalization. This effect in the same as hypothesis H7. Therefore, based on these results, it is concluded that factors, such as size, age, firm performance, foreign ownership or industry, are very important factors in the degree of internationalization, but capital investment, leverage, intangible resource growth and domestic market growth rate do not have a statistically significant effect on the degree of internationalization. In addition, based on the results of GMM, we fail to reject the null hypotheses H_1, H_3, H_4 and H_7. In other words, we fail to reject the null hypothesis for variables size, age and ROA_{t-1} since these variables are statistically significant and have a positive impact as hypothesized. However, we reject null hypotheses H_2, H_5, H_6, H_8 and H_9. For variables of capital investment, foreign ownership, intangible resource growth rate, leverage and domestic market growth rate, the results of GMM show their impact to be statistically insignificant.

One important contribution of the results of this paper is the identification of the problem of endogeneity and usage of the GMM model. The impact of endogeneity on the results appears in the discrepancies between the test results of GLS and GMM estimators. Variables of capital investment and leverage appear to be the source of endogeneity. Their sign changes from a random effect model to a GMM model. Vithessonthi [82] also identifies the problem of endogeneity of capital investment and uses the IV method to account for it.

6. Conclusions

Using panel data of 14 years and 50 firms from CEE countries, this study's objective was to investigate determinants of firm internationalization in CEE countries. This study contributes to the literature by extending it and adding more research and insight into firm internationalization topics in CEE countries. The literature for the CEE countries has started to grow only recently. However, most of this literature studies the internationalization of firms from only one country, such as the firm internationalization in Poland, Slovenia, Hungary, Estonia and Czech Republic, countries that are the most researched in this field. However, other countries of the region remain under-researched. Therefore, there is a lack of more comprehensive studies that include all countries and analyze the whole region. Adding research for firm internationalization in the context of these countries helps to better understand the foreign expansion of firms' from transition countries.

Despite the limitations, it is believed that this study offers the same insightful contributions. First, firm-level characteristics, such as performance, age, size and industry, are important for firm expansion in international markets. They have a positive effect; the better the previous performance of the firm is, the more motivated these firms are to engage in costly processes of internationalization. This is very insightful as it provides evidence that firms need to experience growth in their domestic markets and their success in domestic markets contribute to their success in international markets. Therefore, there is an important theoretical contribution of this paper in this regard, which needs to be highlighted and that is the importance of pre-entry performance improvement of firms in their domestic markets. Pre-entry period of firms in international markets is very under-researched in the literature and this paper highlights the importance of pre-entry and continues success in domestic performance of firms. Based on this future research need to be channeled in this direction. Expansion in foreign markets is costly and requires resources and capabilities and financial and managerial resources to support it to overcome the liabilities of foreignness and newness. That is why large and relatively experienced firms perform better. These large and experienced firms, in addition to financial and managerial resources, have constructed relationships and networks that help them to explore new opportunities or gain additional resources that cannot be accessed in domestic markets. Firms in CEE countries face a more difficult domestic environment than those in advanced economies; there are weak legal institutions and a high level of corruption in the public sector. Therefore, we believe this might be a reason why size and age are highly significant, large and relatively old firms are more experienced dealing with this environment and these kinds of issues. They know the environment better, and they have informal networks [103] and financial resources to deal with problems faster than small new ventures.

Another result that supports this argument is the Baltic dummy, which takes a value of 1 for firms that have their headquarters in Latvia or Lithuania and has a positive sign. These two countries are very geographically close to advanced economies, such as Sweden and Finland, and they are influenced by these countries. Estonia, Lithuania, and Latvia, for instance, are considered by the World Bank to be the top countries by ease of doing business, on the 16th, 14th and 19th, respectively [104]. They are small open economies and quite exposed to international development.

The internationalization capacity of companies in Central and Eastern Europe was fueled by the liberalization of capital movements after the fall of communism. Extensive flows of foreign direct investment, especially through the privatization process, have led to the emergence of externalities, such as technology transfer, know-how and expertise that have benefited by local companies. The intensification of the competition in these countries as a result of the pressure generated by the presence of the companies with foreign capital, but also the accession of the former communist countries to the EU generated (for the domestic companies) the necessity but also the possibility of regional expansion. Access to an unrestricted regional market that affects financial and material flows has accelerated the process of internationalization of companies in this region. The migration process that dramatically affected these countries has also contributed to the intensification of the

internationalization process of some local companies that have benefited not only from financial capital, but also from the expertise of former migrants.

Multinational companies in the CEE often have regional involvement in the sense that they have invested in countries in the area, fueled by geographical proximity, the tradition of economic relations since the communist period and the existence of similar economic, social and political systems. The existence of companies with the majority foreign capital in these countries appeared, most of the time as a result of the privatization process, considerably fuels the internationalization process in the region, the companies having the main assets to ensure the success of such a complex process. State-owned companies from certain countries, such as Poland, Slovenia or Croatia, are also important players in the regional landscape, thus joining the global trend regarding state involvement in the phenomenon of internationalization of companies. In the end, it is concluded that firm characteristics, such as age, size and performance, are important contributors to the higher international performance of large firms from CEE countries. However, more research is required with regard to other factors, such as foreign ownership, capital investment, leverage, intangible resource growth and domestic market growth rate.

7. Limitations

Several limitations of this study are acknowledged. Although there is a large dimension of time in the data, there is a small number of firms included in the sample. In addition, not all CEE countries are included. This limitation comes due to the lack of panel data for a large number of firms in this region. Second, we measured firm internationalization as the amount of foreign revenue to total revenue, excluding in this way other dimensions of it such as breadth, depth and speed, which are very important to gain a better view of this phenomenon in CEE countries. Internationalization is a very dimensional phenomenon, and measuring other aspects gives a clearer picture and robust results. However, this limitation of this study is linked with the lack of data. Moreover, there is also a lack of comparison of experienced large firms with rapidly internationalizing small new ventures, which are gaining much attention in the recent literature due to their small size and early internationalization. As future research directions, we will consider a study aimed at the phenomenon of internationalization of companies from CEE countries that are part of the non-Euro area given the common characteristics of these companies, namely, belonging to the former communist bloc, EU membership and the efforts made to meet the convergence criteria that give a certain specificity. Additionally, as a future research direction, we will consider the analysis of the internationalization–sustainability relationship for the countries of Central and Eastern Europe, considering the involvement of transnational companies in promoting the principles of sustainable development through various mechanisms and tools, such as corporate social responsibility programs. An increasing number of companies are pursuing the improvement of nonfinancial performance considering the interest of stakeholders in the social and environmental impact of corporations.

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Appendix A

Table A1. Main export destination for CEE countries.

	Country	5 Top Partners of Exports for Each Country in 2018
1	Estonia	Finland, Sweden, Russian Federation, Latvia, USA
2	Latvia	Lithuania, Estonia, Russian Federation, Sweden, Germany
3	Lithuania	Russian Federation, Latvia, Poland, Germany, USA
4	Poland	Germany, Czech Republic, United Kingdom, France, Italy
5	Czech Republic	Germany, Slovakia, Poland, France, United Kingdom
6	Slovakia	Germany, Czech Republic, Poland, France, Italy
7	Hungry	Germany, Slovakia, Italy, Romania, Austria
8	Romania	Germany, Italy, France, Hungary, United Kingdom
9	Bulgaria	Germany, Italy, Romania, Turkey, Greece
10	Slovenia	Germany, Italy, Croatia, Austria, France
11	Croatia	Italy, Germany, Slovenia, Bosnia and Herzegovina, Austria,
12	Albania	Italy, Spain, Greece, Serbia, Germany
13	Montenegro	Serbia, Hungary, Bosnia and Herzegovina, Slovenia, Poland,
14	Serbia	Italy, Germany, Bosnia and Herzegovina, Romania, Russian Federation
15	North Macedonia	Germany, Serbia, Bulgaria, Belgium, Greece
16	Bosnia and Herzegovina	Germany, Croatia, Italy Slovenia, Serbia

Source: UNCTADSTAT.

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Sustainable Market Entry Strategy under a Supply Chain Environment

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Abstract: Firms routinely face the challenging decision of whether and how to enter a new market. Inspired by the practice of Chinese household appliance firms sustainably entering the rural market from the urban market, Tesla and Topshop entered the Chinese market from their own. We model a supply chain system composed of a manufacturer and a retailer to investigate entry strategies for facing a new market. These sustainable entry processes can help enterprises better achieve their own promotion and increase profits. The equilibrium solutions indicate that (1) the manufacturer's exclusive entry mode is "market development" entry, while the retailer's exclusive entry or joint entry mode can achieve "dual benefit" entry under certain conditions; and (2) both the manufacturer and the retailer prefer the joint entry mode. It is the only Nash equilibrium. Monopoly firms dominating the new market may not be profitable all the time. Appropriate competition can bring about a win-win situation. These results provide theoretical proof for the preference and rationality of the rural market entry mode in the Chinese household appliance industry and of the overseas market entry mode for international enterprises.

Keywords: supply chain; market entry; entry mode; exclusive entry; joint entry

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1. Introduction

COVID-19 has swept the world in 2020, and trade friction between China and the United States is constantly escalating. Whether it is the Chinese mainland market or the overall international market, both are full of many uncertain factors and developing rapidly. In such a dynamic and increasingly complex business environment all around the world, more and more enterprises are constantly seeking innovation and change to adapt to new markets. Market entry has become an important step for enterprises to explore new strategic development, and the huge opportunity it contains has become an important breakthrough for domestic and foreign enterprises to improve their supply chain value. Many enterprises achieve new market entry through technological innovation, productivity improvement, product diversity, channel optimization, and geographical expansion. However, when enterprises enter the market, what kind of marketing strategy to choose has also become a key factor to determine their survival and development. Therefore, an accurate market entry decision has become one of the key factors for the stability and creation of enterprises. The entry strategy may also be important to the protection of market prosperity and the interests of whole related industries. The object of this paper is to solve the problem of how to choose an entry strategy when an enterprise faces a new market entry. Considering such a complex environment and the sustainable development of the enterprise, how should the entry strategy be deployed? Enterprises will also continue to improve with such a sustainable market entry strategy.

The household appliance industry, as an important pillar industry in the Chinese national economy, has gradually matured with the channel layout in the domestic urban market. Considering the above phenomenon, the large household appliance manufacturers

and electronic retailers have begun to enter the rural market in China. For the rural market, household appliance manufacturers and large retailers have been racing around the field. Haier focuses on building a sales platform for the rural market through its household appliance supermarket chain brand "Gooday". Household appliance retail giants Suning and Gome also focus on the rural market layout. In 2015, Gome began to increase its number of stores on a large scale, especially in the rural market. In the first three years after its entry into the rural market, the number of stores increased by 416, a number which is still rising. Suning is also expanding and exploring ways to enter the rural market. Through its own Suning shopping station, it extends to the lower market, carries out its rural market business in the form of service stations, and penetrates into all levels of the national market.

Looking at the world, the new American electric car Tesla was initially sold in the North American market through the direct sales mode and achieved quite good results. In 2012, Tesla officially entered the Chinese market, continuing its direct sales mode as in the North American market. Users can place orders on the Tesla website and then go to the pickup center to get the car. Different from the traditional way of selling cars through 4S stores and other dealers, Tesla has adopted this direct selling mode in both the original market and the newly entered Chinese market. In addition, its marketing focuses on the construction of support services for new energy vehicles. Car consumers can bundle exclusive charging piles for installation and invest in the construction of free super-fast charging stations in a wide range. In the past few years since entering China, the sales volume of Tesla cars has continuously doubled, and the construction of the Technology Innovation Center and the Tesla Gigafactory has begun. In the era of global promotion of new energy vehicles, the timing, mode, and marketing strategy of Tesla's entry into the Chinese market have laid a solid foundation for its rapid development of new market business.

Now let's take a look at a fast fashion brand that also entered the Chinese market in 2012. Topshop is a fast fashion brand belonging to the UK's largest clothing retail group, which has a number of followers in the UK, European, and North American markets. As a brand that has been selling well in foreign markets for several years and is familiar to the vast majority of consumers, Topshop faces a bumpy road in entering the Chinese market. It opened its first store in China in 2012 and signed a contract with a third-party retailer, Shangpin.com, in 2014 to begin its expansion in the Chinese market. On its website, the brand sells clothes of the same design and style as those in the U.S. and Europe, with few customizations and matching guidelines for the Chinese market. After less than four years, in December 2018, Topshop announced a complete liquidation sale and exited the Chinese market.

Through the review of different types of enterprises, we find that different enterprises consider different opportunities in the process of market entry, enter in different ways, and adopt different marketing strategies. In view of the channel structure, which is different from that of the urban market, various major appliance manufacturers and electronic retailers penetrate the rural market through the combination of physical retail stores and online outlet stores in the Chinese household appliance industry. When Tesla entered the Chinese market, it continued the same direct store mode as in Europe and the United States for the sales of its main cars. Topshop chose to develop its business in China through a third-party retailer, copying its marketing strategy in Europe and the United States. These different entry modes and marketing strategies are also the root causes of the different results.

1.1. Research Objective and Overview of Results

Given the above observations and discussion from industry practice, our main research objective is to study the entry strategies that an enterprise may adopt when accessing a new market. That motivated us to explore questions such as the following: Faced with the development of a new market, how should an entry decision be made? Should either the

manufacturer or the retailer be the exclusive one to enter the new market, or might the joint entry of both be a good choice? Facing the huge temptation of a new market, what is the most important factor when choosing which way to enter the new market? What impact will different entry strategies have on the entire market environment?

To answer the questions above, we build a supply chain system consisting of one manufacturer and one retailer, in which the manufacturer chooses to sell the product through the retailer in the original market. In the face of new markets, we study three entry modes for entering new markets (exclusive entry for the manufacturer, exclusive entry for the retailer, and joint entry), focusing on the analysis of their preferences for new market entry modes. Our analysis yields some interesting theoretical results that are in line with our real-world observations. We first show that the manufacturer and the retailer may prefer different choices when facing a new market under certain conditions. Second, contrary to conventional wisdom, we find that it is not always the optimal choice for a monopoly to enter a market exclusively and control the whole new market. Third, we find that the manufacturer always prefers "market development" exclusive entry, while the retailer can get "dual benefit" entry through joint entry. Finally, we show that all of our findings can be combined with the above Chinese appliance industry practices, Topshop's entry into the Chinese mainland market, and the Tesla's practices.

The remainder of this paper is organized as followed. The next section gives a related literature review. Section 3 constructs a game theory model consists with a manufacturer and a retailer. Section 4 presents the optimal mode of entering the market. Section 5 gives a preference analysis to illustrate our result more intuitively. Section 6 considers the case of price discrimination. Section 7 presents concluding remarks and directions for future research. All proofs are relegated to Appendix A.

2. Literature Review

In this section, we provide a brief review of literature related to our work. This paper involves three streams of research: competitive strategies in market entry, new technology industry entry, and the integration of market entry strategies with a sustainable supply chain environment.

Several market entry studies have focused on the relationship between market entry participants, emphasizing who will enter the new market. Scholars have investigated the competitive strategies of incumbents and entrants in the same market [1–7]. Shen and Villas-Boas [1] investigated a model of increasing demand to decide whether and when to enter the market. Considered the potential entrants, the strategic behavior will have effects on future entry. Kocak and Ozcan [2] explored how the presence of rivals affects firms' entry decisions, looking at economic and sociological explanations. The research's conclusion shows that the presence of rivals is seen as a signal that a particular market is suitable for entry. Narasimhan and Zhang [3] discussed whether an incumbent brick-and mortar retailer can deter the online entry of a pure-play e-tailer by strategically refraining from entering online. Tyagi [4] studied the effects of a new downstream retailer entry on consumer price and upstream suppliers' wholesale price. The relative strengths of the competition effect and the input cost effect may cause the profits of each incumbent downstream firm to change. On the other hand, Hauser et al. [5], Seade [6], and Amir [7] have all focused on the potential entrants' entry time, pricing, and innovation strategies under competition from existing firms. Entry into an oligopolistic industry may have some differences compared to competitive entry. In relation to that literature, this paper considers the entrants as the manufacturer and the retailer. Differing from what they mainly consider about the competition, we pay more attention to the entry decision-making of each of the two separately.

This paper can also be related to the literature on new technology industries' entry [8–27]. Yoo and Lee [8], when facing the Internet channel as a strategic choice for enterprises to enter the market, discussed how Internet channels affect the income of other channels, and analyzed the factors that influence Internet channels when entering new markets.

Faced with the entry of a pure online retailer, Liu [9] analyzed whether existing traditional retailers increased online retail channels. These documents focus on the market entry competition strategies and strategic influences of different companies offering same-sex products (laterally competitive companies). Cawley et al. [10] discussed the mode of emerging renewable energy companies based on their time of entry. Makarevich and Kim [11] considered the impact of different contracts on firms' entry decisions under the uncertain factors of an enterprise focusing on a new market. Ozalp and Kretschmer [12] focused on the US recording industry and analyzed the interactive impact of the industry's most popular revenue-sharing contract on incumbents and competitors. Lee et al. [13] studied the software system industry and analyzed the risks and opportunities faced by complementary products in market entry. Chen et al. [14], by observing an interesting phenomenon emerging with Internet service, did research on price discrimination. The analysis showed that referral infomediaries prefer market entry with geographical exclusivity to joining retailers. Ghose et al. [15] considered the Internet's impact on optimal contracts for different entities in the supply chain. Checking whether the contracts change will impact the entry of independent and referral services. Chintakananda and Mcintyre [17] took the same approach, paying attention to the network effect on market entry. Dunning [18], Ener [19], and Gawer [21] all set the product as the market entry key point. Simonsohn [22] observed eBay, discussing whether firms have neglected competition when making entry decisions. In relation to these literatures, the home appliance industry has a close relationship with all these new technologies. Such entry strategies [21–27] may shed light on what we are focused on.

Our paper considers the integration of market entry strategies with a sustainable supply chain environment. A few examples from the literature have considered this interaction before. Lieberman et al. [28] studied entry and exit through the whole marketing environment. Markman and Waldron [29] compared the size of entrant and incumbent, building a framework for micro-entry. Pierce [30] focused on ecosystem niches, considering the big losses driven by core firm decisions. Slade et al. [31] considered stigmatized markets as the environment to be entered. Stremersch et al. [32] discussed the indirect network effect on market entry.Regional logic was said to be an influencing factor in Vedula and Corbett's [33] study. Joshi et al. [34] checked the interaction between optimal entry timing in markets and social influence. The results show that leverage, backlash, and patience are three factors for the optimal strategy predicted. Caldieraro [35] investigated horizontally different brands and vertically different products. Findings revealed that the entrant's profits interact with the incumbent, and such a competitive supply chain environment may have a strategic effect. Zachary et al. [36] empirically studied firm-level and product-level entry timing under a supply chain environment. Further, there is research on international market entry, how the political will impact strategies of entry, and how enduring lessons impact entry timing [32–40]. These issues, although mentioned little in relation to the supply chain environment and market entry strategies, are relevant, as our research focuses on the entire sustainable supply chain environment and market entry together. Aldieri et al. [41] and Wang et al. [42] provided a good description of the sustainable natural environment, which can be extended to the sustainable market entry environment. As we can see above, this is the first time that we have studied market entry issues under a supply chain environment interacting with the overall sustainable marketing environment.

This era has endowed the whole market with richer colors, and the whole business environment has undergone unprecedented changes. Internet services, unilateral and bilateral platforms, smart home products, and other innovative elements have begun to occupy a place in the market, and these innovative elements in life are also constantly emerging. The shopping platforms for new products, the trading platforms for second-hand goods, the social platforms for sharing daily details, and the newly developed platforms for live broadcasting and delivering goods have occupied our lives. The development and integration of AI technology and the Internet also allow smart home products to gradually

penetrate. It is precisely these that scholars should pay attention to, and they should begin to pay more attention to the impact of these innovative elements on market entry. Platform entry, Internet service, complementary hardware product access, smart home product research, and development have also become hot and difficult research fields in market entry at the present stage. Existing research also fully proves that these innovation factors not only have an impact on the market entry decision, but also determine the market entry decision-making to a large extent, which is also the research objective and focus of this paper.

Gideon et al. [43] provided a good overview of the entire market entry research field, giving a summary of the who, where, what, how, and when of market entry. Following the basic concepts and models above, we have our innovative problem of determining what is a sustainable market entry strategy under a supply chain environment.

3. The Models

We built a supply chain system composed of a manufacturer and a retailer, assuming both parties are risk-neutral, and considering that the manufacturer may sell products through the retailer in the original market. Facing new market opportunities, this article studies the entry mode for the new market. In this paper, the basic demand function is derived from the standard economic model. On this basis, we extend part of the problem discussed in this paper, and then get our game theory model, which is different from the original market and the new market.

We assume that both the original market and the new market demand are independent. The demand function of the original market can be expressed as

$$D_o = \alpha_o - p_r \tag{1}$$

where D_o is the demand realized by the manufacturer and the retailer in the original market. α_o represents the largest potential market share in the original market. The retailer sells its products at price p_r. Alternatives between the two channels are denoted by $\theta(0 \leq \theta < 1)$. Mcguire and Staelin [44] specifically set $\theta(0 \leq \theta < 1)$, indicating the substitutability of the two channels in terms of changes in price. When we built the model of the original market and the new market, the current structure and game order are also obtained according to such considerations as the channel substitution rate.

Facing the new market, the manufacturer may enter exclusively, and so may the retailer. At this point, the demand realized by the manufacturer or the retailer in the new market is

$$D_{ni} = \alpha_n - p_{ni}, D_{nj} = 0, i, j = m, r, i \neq j \tag{2}$$

It is also possible that the manufacturer and the retailer may enter the new market together, and then the demands are

$$D_{ni} = \alpha_n - p_{ni} + \theta p_{nj}, i, j = m, r, i \neq j \tag{3}$$

As mentioned above, D_{nm} and D_{nr} are demands realized by the manufacturer and the retailer in the new market. α_n represents the largest potential market share in the new market. The manufacturer and the retailer sell their products at price $p_{ni}, i = m, r$. Note that it is often assumed in the literature (e.g., Chen et al. [14], Ghose et al. [15]) that to avoid channel conflicts, more retailers will execute the same retail price $p_{ni} = p_i, i = m, r$ in different markets. Therefore, we assume that the retailer has the same retail price in different markets.

In the retailer channel, the wholesale price from the manufacturer is equal in both markets—that is, $w_o = w_n = w$. Note that for analytical convenience, we also suppose there is no production cost for the manufacturer, which expressed as $c = 0$.

We study three types of market entry modes. MN indicates that the manufacturer enters the new market exclusively; RN indicates that the retailer enters the new market exclusively; and NN indicates that the manufacturer and the retailer enter the new market

together. At the same time, in order to examine the type of new market entry, we study a no entering benchmark situation, denoted as OO. Under various modes, the decision-making, decision sequence, and decision-making goals of the manufacturer and the retailer are as follows:

Scenario OO. The manufacturer only sells products through the retailer in the original market. The decision sequence and objective function are as follows:

$$\begin{array}{c} stage1: \max\limits_{w} \pi_m^{OO} = wD_o \\ stage2: \max\limits_{p_r} \pi_r^{OO} = (p_r - w)(D_o) \end{array} \quad \text{(OO)}$$

Scenario MN. The manufacturer sells products through the retailer in the original market and has exclusive access to the new market. The decision sequence and objective function are as follows:

$$stage1: \max_{w} \pi_m^{MN} = wD_o + p_m D_{nm}$$
$$stage2: \begin{cases} \max\limits_{p_r} \pi_r^{MN} = (p_r - w)(D_o) \\ \max\limits_{p_m} \pi_m^{MN} = wD_o + p_m D_{nm} \end{cases} \quad \text{(MN)}$$

Scenario RN. The manufacturer sells products through the retailer in the original market and the retailer enters the new market exclusively. The decision sequence and objective function are as follows:

$$\begin{array}{c} stage1: \max\limits_{w} \pi_m^{RN} = w(D_o + D_{nr}) \\ stage2: \max\limits_{p_r} \pi_r^{RN} = (p_r - w)(D_o + D_{nr}) \end{array} \quad \text{(RN)}$$

Scenario NN. The manufacturer sells products through the retailer in the original market and enters the new market together with the retailer. The decision sequence and objective function are as follows:

$$stage1: \max_{w} \pi_m^{NN} w(D_o + D_{nr}) + (p_m)(D_{nm})$$
$$stage2: \begin{cases} \max\limits_{p_m} \pi_m^{NN} = w(D_{or} + D_{nr}) + (p_m)(D_{nm}) \\ \max\limits_{p_r} \pi_r^{NN} = (p_r - w)(D_{or} + D_{nr}) \end{cases} \quad \text{(NN)}$$

Solving the games by backward induction and optimization conditions, we can get the equilibrium decision under various modes, and then get the equilibrium demand and profit. We take the model NN as an example to illustrate its derivation process. Under scenario NN, we have $\frac{\partial^2 \pi_r^{NN}}{\partial p_r^2} = -4$ and $\frac{\partial^2 \pi_m^{NN}}{\partial p_m^2} = -2$. It is obvious that π_m^{NN} and π_r^{NN} are concave functions about p_m and p_r. For any given w by the manufacturer, we can obtain the optimal retail price decision from the first order condition $p_r^{NN} = \frac{(4+\theta^2)\omega + (2+\theta^2)\alpha_n + 2\alpha_0}{8-\theta^2}$ and $p_m^{NN} = \frac{6\theta\omega + (4+\theta)\alpha_n + \theta\alpha_o}{8-\theta^2}$. Therefore, it can be concluded that the first stage problem of the manufacturer is

$$\pi_m^{NN}(w) = \frac{-2w^2(32 - 14\theta^2 - \theta^4) + w(32 + \theta^4)\alpha_t + (\omega(32 + 32\theta + 2\theta^3 + \theta^4) + 2\theta(4 + \theta)\alpha_t)\alpha_n + \theta^2\alpha_t^2 + (4 + \theta)^2\alpha_n^2}{(8 - \theta^2)^2}$$

As $\frac{\partial^2 \pi_m^{\mathrm{n}}}{\partial w^2} = \frac{-4(32-14\theta^2-\theta^4)}{(8-\theta^2)^2} < 0$, so the profit function of the manufacturer $\pi_m^{\mathrm{n}}(w)$ is a concave function about w. The manufacturer's optimal wholesale price is: $w^{NN} = \frac{(32+32\theta+2\theta^3+\theta^4)\alpha_n + (32+\theta^4)\alpha_o}{4(32-14\theta^2-\theta^4)}$. In turn, the optimal retail prices for the manufacturer, $p_r^{NN} = \frac{(48+32\theta-4\theta^2+2\theta^3-\theta^4)\alpha_n + (48-4\theta^2-\theta^4)\alpha_o}{4(32-14\theta^2-\theta^4)}$, and the retailer, $p_m^{NN} = \frac{(32+20\theta+2\theta^2-\theta^3)\alpha_n + \theta(20-\theta^2)\alpha_o}{2(32-14\theta^2-\theta^4)}$, can be obtained. To ensure that all the members of the supply chain obtain positive profits

in different markets, it is required that $D_o > 0$, $D_{\mathrm{nm}} > 0$, and $D_{nr} > 0$. The above is equivalent to $\frac{48+32\theta-4\theta^2+2\theta^3-\theta^4}{80-52\theta^2-3\theta^4} < \frac{\alpha_o}{\alpha_n} < \frac{80+32\theta-12\theta^2+2\theta^3-5\theta^4}{48-44\theta^2+\theta^4}$.

The profit of the manufacturer and the retailer can be obtained (see the NN column in Table 1). In RN mode, we need to meet the conditions $\frac{3}{5} < \frac{\alpha_o}{\alpha_n} < \frac{5}{3}$ to make the profits of supply chain members in different markets positive. Further, in order to ensure that the demand of the original market and the new market is non-negative, it is necessary to meet $\frac{48+32\theta-4\theta^2+2\theta^3-\theta^4}{80-52\theta^2-3\theta^4} < \frac{\alpha_o}{\alpha_n} < \frac{5}{3}$ and $0 < \theta < 0.823$. This means that the new market share is neither too large nor too small compared with the original market. In addition, because the manufacturer and the retailer both have their own advantages, the intensity of channel competition is within a certain range. These assumptions are in line with corporate practices.

Table 1. Equilibrium outcomes under the scenarios OO, MN, RN, and NN.

Notation	OO	MN	RN	NN
w	$\frac{\alpha_0}{2}$	$\frac{\alpha_0}{2}$	$\frac{\alpha_0+\alpha_n}{4}$	$\frac{(32+32\theta+2\theta^3+\theta^4)\alpha_n+(32+\theta^4)\alpha_o}{4(2-\theta^2)(16+\theta^2)}$
$p_r = p_{nr}$	$\frac{3\alpha_0}{4}$	$\frac{3\alpha_0}{4}$	$\frac{3(\alpha_0+\alpha_n)}{8}$	$\frac{(48+32\theta-4\theta^2+2\theta^3-\theta^4)\alpha_n+(48-4\theta^2-\theta^4)\alpha_o}{4(2-\theta^2)(16+\theta^2)}$
$p_m = p_{nm}$		$\frac{\alpha_n}{2}$		$\frac{(32+20\theta+2\theta^2-\theta^3)\alpha_n+\theta(20-\theta^2)\alpha_o}{2(2-\theta^2)(16+\theta^2)}$
π_{om}	$\frac{\alpha_0^2}{8}$	$\frac{\alpha_0^2}{8}$	$\frac{(\alpha_0+\alpha_n)(5\alpha_0-3\alpha_n)}{32}$	$\frac{(-1536-2560\theta-896\theta^2-32\theta^3-144\theta^4+8\theta^5+\theta^8){\alpha_n}^2}{16(2-\theta^2)^2(16+\theta^2)^2}$ $+\frac{2(512+768\theta-768\theta^2-783\theta^3-16\theta^4-116\theta^5-24\theta^6-4\theta^7-\theta^8)\alpha_n\alpha_o}{16(2-\theta^2)^2(16+\theta^2)^2}$ $+\frac{(32+\theta^4)(80-52\theta^2-3\theta^4){\alpha_o}^2}{16(2-\theta^2)^2(16+\theta^2)^2}$
π_{om}	$\frac{\alpha_0^2}{16}$	$\frac{\alpha_0^2}{16}$	$\frac{(\alpha_0+\alpha_n)(5\alpha_0-3\alpha_n)}{64}$	$\frac{(4+\theta^2)(\alpha_n+\alpha_o)((80-52\theta^2-3\theta^4)\alpha_o-(48+32\theta-4\theta^2+2\theta^3-\theta^4)\alpha_n)}{8(2-\theta^2)(16+\theta^2)^2}$
π_m	$\frac{\alpha_0^2}{8}$	$\frac{2\alpha_n^2+\alpha_0^2}{8}$	$\frac{(\alpha_0+\alpha_n)^2}{16}$	$\frac{(80+64\theta+12\theta^2+4\theta^3+\theta^4)\alpha_n^2+2(16+32\theta+8\theta^2+2\theta^3+\theta^4)\alpha_n\alpha_o+(4+\theta^2)^2\alpha_o^2}{8(2-\theta^2)(16+\theta^2)}$
π_r	$\frac{\alpha_0^2}{16}$	$\frac{\alpha_0^2}{16}$	$\frac{(\alpha_0+\alpha_n)^2}{32}$	$\frac{(4+\theta^2)^2(\alpha_n+\alpha_o)^2}{2(16+\theta^2)^2}$

4. The Optimal Mode of Market Entry

First, we compare the profits of the manufacturer and the retailer under various entry modes with the scenario of not entering a new market. The purpose is to answer whether entering a new market is necessarily beneficial.

Proposition 1.

1. $\pi_m^{MN} > \pi_m^{OO}$, $\pi_{\mathrm{r}}^{MN} = \pi_{\mathrm{r}}^{OO}$.
2. $\pi_m^{\mathrm{t}} > \pi_m^{OO}$ and $\pi_{\mathrm{r}}^{\mathrm{t}} > \pi_{\mathrm{r}}^{OO}, t = RN, NN$.

When the manufacturer enters the new market exclusively, compared with not entering the new market, the manufacturer will get more profits, and the retailer's profit will remain unchanged. This is mainly because the manufacturer will obtain monopoly profits in the new market while maintaining profits in the original market, while the retailer still only obtain profits in the original market. When the retailer enters the new market exclusively, the manufacturer and the retailer both get more profits compared to not entering the new market. As the calculation results shown in Table 1, $\frac{\partial p_r^{OO}}{\partial \alpha_0} = \frac{3}{4} > \frac{\partial \omega^{OO}}{\partial \alpha_0} = \frac{1}{2}$ and $\frac{\partial p_r^{RN}}{\partial \alpha_0(\alpha_n)} = \frac{3}{8} > \frac{\partial \omega^{RN}}{\partial \alpha_0(\alpha_n)} = \frac{1}{4}$. In other words, when the retailer enters the new market on its own, the "double marginal effect problem" can be reduced. At the same time, the entry into the new market will increase demand. Therefore, both the manufacturer and the retailer will get more benefits. When the manufacturer and the retailer enter the new market

together, they both gain more profits. From Table 1, we have $\frac{\partial p_r^{OO}}{\partial \alpha_0} - \frac{\partial \omega^{NN}}{\partial \alpha_0} = \frac{4+\theta^2}{2(16+\theta^2)}$ and $\frac{\partial p_r^{OO}}{\partial \alpha_n} - \frac{\partial \omega^{NN}}{\partial \alpha_n} = \frac{20+16\theta-\theta^2+\theta^3}{(2-\theta^2)(16+\theta^2)}$. Therefore, the double marginal effect becomes more serious as the market increases. At the same time, because $\frac{20+16\theta-\theta^2+\theta^3}{(2-\theta^2)(16+\theta^2)}$ and $\frac{4+\theta^2}{2(16+\theta^2)}$ increase with the increase of θ, the intensification of channel competition will aggravate the double marginal effect. Entering the new market together may exacerbate the double marginal effect, but the existence of channel competition enables the manufacturer and the retailer to set lower prices in order to increase demand and obtain higher profits.

From the above Proposition 1, exclusive entry of the manufacturer, exclusive entry of the retailer, and the joint entry all enable the manufacturer and the retailer to obtain higher profits. Next, we divide them into two types of entry based on the differences in the profits made by the manufacturer and the retailer in the original market.

Lemma 1. Under the circumstances $\pi_{oi}^t > \pi_{oi}^{OO}$ and $\pi_i^t \geq \pi_i^{OO}, i \in \{m, r\}, t \in \{MN, RN, NN\}$, after entering the new market, both the manufacturer and the retailer will obtain positive profits in the new market. However, their profits in the original market will remain unchanged or decline; that is, the profits gained after entering the new market will be sufficient for making up for the loss of its original market. The entry under this situation is called the "market development" entry mode.

Lemma 2. Under the circumstances $\pi_{oi}^j > \pi_{oi}^{OO}$ and $\pi_i^j > \pi_i^{OO}, i \in \{m, r\}, j \in \{MN, RN, NN\}$, after entering the new market, the profits will increase in both the original market and the new market for the manufacturer and the retailer. The entry under this situation is called the "dual benefit" entry mode.

Proposition 2. When the original market is direct channel:

1. The manufacturer entering the new market exclusively may see it as a "market development" entry mode.
2. The retailer enters the new markets exclusively. When $\frac{\alpha_o}{\alpha_n} > 1$, it was a "dual benefit" entry mode. On the contrary, it is now a "market development" entry mode.
3. The manufacturer and the retailer enter the new market together. When $0.564 < \theta < 0.823$ or $0 < \theta < 0.384$, and $\frac{\alpha_o}{\alpha_n} \leq \frac{\alpha_o}{\alpha_n}^{**}$, it is a "market development" entry mode; when $0 < \theta < 0.384$, and when $\frac{\alpha_o}{\alpha_n} > \frac{\alpha_o}{\alpha_n}^{*}$, it is a "dual benefit" entry mode. We set $\frac{\alpha_o}{\alpha_n}^{*} = \frac{2(4+\theta^2)(16\theta-16+24\theta^2+\theta^3+\theta^4)+(16+\theta^2)\sqrt{2(4+\theta^2)(32-32\theta^2+12\theta^3-6\theta^5+7\theta^6)}}{(8+5\theta^2)(16-18\theta^2+\theta^4)}$ and $\frac{\alpha_o}{\alpha_n}^{**} = \frac{-(512+768\theta-768\theta^2-783\theta^3-16\theta^4-116\theta^5-24\theta^6-4\theta^7-\theta^8)}{(8+5\theta^2)(64-24\theta^2-20\theta^4-\theta^6)} + \frac{(2-\theta^2)(16+\theta^2)-\sqrt{2(512+1024\theta+672\theta^2+96\theta^3+96\theta^4+120\theta^5+2\theta^6+4\theta^7+3\theta^8)}}{(8+5\theta^2)(64-24\theta^2-20\theta^4-\theta^6)}$

From Proposition 2, both the retailer's exclusive entry and the two firms' joint entry into the new market mode can achieve "dual benefit" entry. The manufacturer's exclusive entry can only achieve "market development" entry. Compared with the manufacturer's exclusive entry, the retailer's exclusive entry and the joint entry of both firms have more advantages. Specifically, when the original market is larger than the potential share of the new market, the retailer's exclusive entry is a "dual benefit" entry mode, and vice versa is a "market development" entry mode. When the manufacturer and the retailer enter together, the channel competition is not fierce. When the potential market share is small, it is the "dual benefit" entry mode (see Figures 1 and 2). If the potential market share of the new market is large, it is the "market development" entry mode; if the channel competition is fierce, regardless of the new potential market share, it is a "market development type" entry mode.

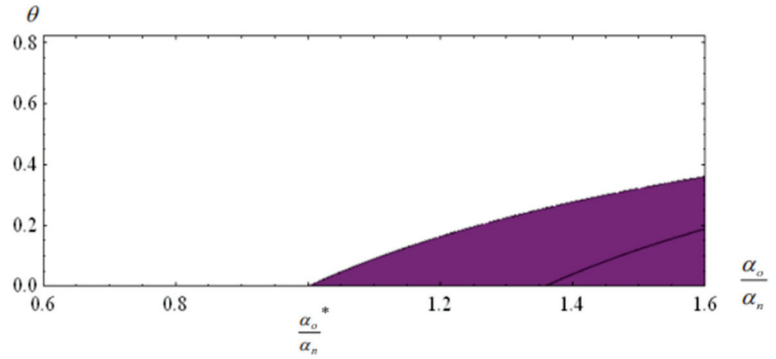

Figure 1. The retailer's profit dominance region for the NN model in the original market: $\pi_{or}^{NN} > \pi_{or}^{OO}$ (the shaded area).

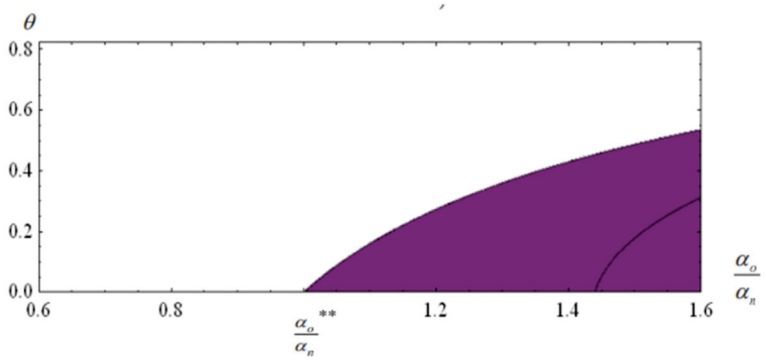

Figure 2. The manufacturer's profit dominance region for the NN model in the original market: $\pi_{om}^{NN} > \pi_{om}^{OO}$ (the shaded area).

5. Preference Analysis of New Market Entry Modes

In this section, we answer the following questions based on the above conclusions: (1) In which mode does the manufacturer prefer to enter the new market? (2) In which mode does the retailer prefer to enter the new market? (3) Which entry mode is market equilibrium? We compare the profits of the manufacturer and the retailer under different modes, then get the following propositions.

Proposition 3.

1. $\pi_m^{NN} > \pi_m^{MN} > \pi_m^{\mathrm{RN}}$
2. $\pi_r^{NN} > \pi_r^{\mathrm{RN}} > \pi_r^{MN}$

Whether the manufacturer or the retailer enter new markets exclusively or jointly, they will increase demand. Different entry modes bring different increases in demand. Generally speaking, the joint entry mode should bring more demand increase than exclusive entry, because consumers in the new market may have more choices. At the same time, channel competition will intensify the double marginal effect of the joint entry mode. Therefore, the manufacturer and the retailer have to weigh the impact of increased demand and the double marginal effect on profits. When only considering the exclusive entry mode, it can be seen from Proposition 3 that both the manufacturer and the retailer are willing to enter the new market just by themselves. This is because any party that enters alone may enjoy the monopoly profits of the new market. When considering the joint entry mode, both the manufacturer and the retailer are willing to choose joint entry.

This conclusion is counter-intuitive, because one might think that any firm wants to dominate the market and obtain monopoly profits. The above proposition tells us that both the manufacturer and the retailer are willing to compete in the new market. The reason

is that when entering a new market together, competition will bring about a decrease in prices, which in turn will increase demand. The advantage of high demand versus the disadvantage of double marginal effect will increase profits.

Proposition 3 analyzes preference for entry mode from the perspective of the manufacturer and the retailer. What kind of entry mode will become the market entry equilibrium? We will conclude on this issue in the following proposition. To study the entry equilibrium, we study the following market entry decision game, as shown in Table 2. In this game the manufacturer and the retailer simultaneously decide whether to enter a new market.

Table 2. The market entry game.

Notation	M	M
R	(π_m^{OO}, π_r^{OO})	(π_m^{MN}, π_r^{MN})
R	(π_m^{RN}, π_r^{RN})	(π_m^{NN}, π_r^{NN})

Proposition 4. The joint entry mode (NN) is the only Nash equilibrium.

Propositions 3 and 4 show that entering a new market together is the only Nash equilibrium strategy. This conclusion is consistent with the practice of the Chinese household appliance industry in developing the rural market. Surrounding the competition in the rural markets, household appliance companies and large channel retailers are racing to occupy the rural market.

Whether an enterprise chooses to enter a new market alone or together with other participants according to its own conditions, or through opening up new channels to enter a new market, or through different product strategies to enter a new market, these are all strategies and methods to consider entering the market. Usually, we think that retailers or manufacturers can be selected to enter a new market independently, so as to maximize the profits and advantages brought by the monopoly market. Will such one-party dominance bring the greatest benefit to the enterprise? From the results of the calculation, we can see different results. On the other hand, when some competitors enter a new market together, and when manufacturers and retailers enter a new market together, the double competition will lead to a certain degree of price decline, improve the quality of products and services, and increase the desire of consumers to purchase. The resulting increased sales will bring greater benefits to both sides of the business. Uniqlo, a Japanese fast fashion brand, has penetrated into the Chinese market by setting up a large number of direct-sale stores, and has meanwhile opened an official flagship store on a large e-commerce website. The stores are operated and managed by the brand itself; the initiative is better in its own hands. Uniqlo has become the main force in China's fast garment consumption industry, and its rapid penetration with the joint entry strategy and expansion also provide a certain reference for other brands to enter. By contrast, as mentioned above, the British fast fashion brand Topshop chose to enter the Chinese market through a completely unknown third-party retail platform, Shangpin.com. Instead of joint entry, setting up a large number of its own direct stores, it left the brand management and operation exclusively to the third-party retail platform. In this way, they lost the understanding and management of the market to a certain extent, and such an entry strategy also led to their failure to exit the Chinese market in the end. Only by choosing appropriate entry strategies suitable for the development of enterprises can they better adapt to and profit from a new market.

6. Extensions: Discriminatory Pricing

In the basic model, we assume that the manufacturer and the retailer cannot set discriminatory prices—that is, wholesale prices and retail prices are the same in different markets. In this section, we relax this assumption and allow the manufacturer and the retailer to discriminate in pricing. This section examines the impact of discriminatory prices on the above conclusions. Discriminating pricing in different markets will affect

the retailer's exclusive entry and joint entry mode in the basic model. The calculated equilibrium price and profit are shown in Table 3.

Table 3. The optimal decisions and profits in RN and NN under discriminatory pricing.

Notation	RN	NN
w_o	$\frac{\alpha_0}{2}$	$\frac{\alpha_0}{2}$
w_n	$\frac{\alpha_n}{2}$	$\frac{(8+\theta^3)\alpha_n}{2(1-\theta)(8+\theta^2)}$
p_r	$\frac{3\alpha_0}{4}$	$\frac{3\alpha_0}{4}$
p_{rn}	$\frac{3\alpha_n}{4}$	$\frac{(12-4\theta+2\theta^2-\theta^3)\alpha_n}{2(1-\theta)(8+\theta^2)}$
p_m		$\frac{(4-\theta)(2+\theta)\alpha_n}{2(1-\theta)(8+\theta^2)}$
π_{om}	$\frac{\alpha_0^2}{8}$	$\frac{\alpha_0^2}{8}$
π_{or}	$\frac{\alpha_0^2}{16}$	$\frac{\alpha_0^2}{16}$
$\pi_m = p_{nm}$	$\frac{\alpha_0^2+\alpha_n^2}{8}$	$\frac{2(12+4\theta+\theta^2+\theta^3)\alpha_n^2+(1-\theta)(8+\theta^2)\alpha_o^2}{8(1-\theta)(8+\theta^2)}$
π_r	$\frac{\alpha_0^2+\alpha_n^2}{16}$	$\frac{16(2+\theta^2)^2\alpha_n^2+(8+\theta^2)^2\alpha_o^2}{16(8+\theta^2)^2}$

Proposition 5. When the original market is dual channel, DEE is the best mode for choosing to enter the new market together for both the manufacturer and the retailer.

1. $\pi_m^t > \pi_m^{OO}, \pi_r^t > \pi_r^{OO}; \pi_{om}^t = \pi_{om}^{OO}, \pi_{or}^t = \pi_{or}^{OO}.t \in \{RN, NN\}$
2. $\pi_m^{NN} > \pi_m^{MN} > \pi_m^{RN}, \pi_r^{NN} > \pi_r^{RN} > \pi_r^{MN}$. The joint entry mode (NN) is the only Nash equilibrium.

Results from Proposition 5 show that when the manufacturer and the retailer can implement discriminatory pricing strategies, all entry modes are "market development" entry. The remaining conclusions remain unchanged.

7. Conclusions

Technological innovation and the growing complexity of globalization mean the whole business environment is constantly in a state of dynamic change. Even the problem of market entry is getting more and more attention from all kinds of enterprises around the world. Sustainable market entry has also received a lot of attention from researchers in a number of areas, especially regarding the supply chain environment. In this study, by analyzing a game-theoretic model that explicitly captures the differences under the supply chain environment, we have investigated the choice of new market entry. We plan an entire sustainable business path for companies by discussing their entry strategies for new markets. The conclusions of this paper are instructive for different types of enterprises to choose strategies in new market entry. Next, we will summarize the main conclusions and management insights of this article.

We first investigate the entry mode and entry type of new market, and by comparing the profits of supply chain members under various entry modes and non-entry scenarios, we conclude that any entry mode will increase the profits of supply chain members. However, the retailer entering alone or both parties entering together can achieve "dual benefit" entry, while the manufacturer entering alone can only be "market development" entry. Next, we examine the preference of supply chain members to choose an entry mode with market entry equilibrium. We conclude that both the manufacturer and the retailer are willing to choose joint entry, and their mode is the only market entry equilibrium. The important management insight is this: the monopoly profit obtained by the enterprise monopolizing the market is not necessarily profit; proper competition can bring about

a win-win situation. As a result, home appliance manufacturers and retailers are racing to open up the rural market. These enterprises are also constantly realizing their own sustainable development through the method of market entry.

In our model, we consider that in the original market, the manufacturer sells through the retailer. In the practice of the firm, the original market may be sold directly by the manufacturer, or the manufacturer not only sells directly, but also sells through the retailer. It can be further extended to the latter two scenarios, which we will analyze in detail in another article. At the same time, we assume that the demands of the new market and the old market are independent, so we can further analyze the market entry decision when the old market affects the new market. In addition, this paper studies certain market demand, which can be further extended to random demand. The research object of this paper is a supply chain system composed of a manufacturer and a retailer. In a competitive environment, such as manufacturer competition or retailer competition and supply chain competition, studying this problem will lead in a meaningful direction.

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Appendix A.

Appendix A.1. Proof of Proposition 1

(1) From Table 1, we can clearly get the following conclusions: $\pi_m^{NN} > \pi_m^{OO}$ and $\pi_r^{MN} = \pi_r^{OO}$.

(2) Continue to obtain the data in Table 1 that if $\pi_m^{RN} > \pi_m^{OO}$, if and only if $\sqrt{\pi_m^{RN}} - \sqrt{\pi_m^{OO}} = \frac{\sqrt{2}\alpha_n + (\sqrt{2}-2)\alpha_o}{4\sqrt{2}} > 0 \Leftrightarrow \frac{\alpha_o}{\alpha_n} < \sqrt{2}+1$. Same goes for if $\pi_r^{RN} > \pi_r^{OO}$, if and only if $\sqrt{\pi_r^{RN}} - \sqrt{\pi_r^{OO}} = \frac{\alpha_n + (1-\sqrt{2})\alpha_o}{4\sqrt{2}} > 0 \Leftrightarrow \frac{\alpha_o}{\alpha_n} < \sqrt{2}+1$. As $\frac{\alpha_o}{\alpha_n} < \frac{5}{3} < \sqrt{2}+1$, so the condition $\frac{\alpha_o}{\alpha_n} < \sqrt{2}+1$ is satisfied. It can also be obtained from Table 1 that if $\pi_r^{NN} > \pi_r^{OO}$, if and only if $\sqrt{\pi_r^{NN}} - \sqrt{\pi_r^{OO}} = \frac{4(4+\theta^2)\alpha_n - (\sqrt{2}(16+\theta^2) - 4(4+\theta^2))\alpha_o}{4\sqrt{2}(16+\theta^2)} > 0 \Leftrightarrow \frac{\alpha_o}{\alpha_n} < \frac{4(4+\theta^2)}{4\sqrt{2}(16+\theta^2)-4(4+\theta^2)}$. It is also because $\frac{4(4+\theta^2)}{4\sqrt{2}(16+\theta^2)-4(4+\theta^2)} - \frac{5}{3} > 0$, so $\pi_r^{NN} > \pi_r^{OO}$. When $\pi_m^{NN} > \pi_m^{OO}$, if and only if $\pi_m^{NN} - \pi_m^{OO} = \frac{f_1(\frac{\alpha_o}{\alpha_n})}{8(2-\theta^2)(16+\theta^2)} > 0$. Among them, $f_1(\frac{\alpha_o}{\alpha_n}) = (80 + 64\theta + 12\theta^2 + 4\theta^3 + \theta^4) + 2(16 + 32\theta + 8\theta^2 + 2\theta^3 + \theta^4)\frac{\alpha_o}{\alpha_n} - 2(8 - 11\theta^2 - \theta^4)(\frac{\alpha_o}{\alpha_n})^2$. There is no solution on the interval $\frac{48+32\theta-4\theta^2+2\theta^3-\theta^4}{80-52\theta^2-3\theta^4} < \frac{\alpha_o}{\alpha_n} < \frac{5}{3}$ and $0 < \theta < 0.823$. According to the nature of the quadratic equation in one unknown, if $8 - 11\theta^2 - \theta^4 > 0$, $f_1(\frac{\alpha_o}{\alpha_n}) > 0$ otherwise $f_1(\frac{\alpha_o}{\alpha_n}) < 0$. That is when $0 < \theta < 0.827$, we have $\pi_m^{NN} > \pi_m^{OO}$, otherwise $\pi_m^{NN} < \pi_m^{OO}$. We also have $0 < \theta < 0.823 < 0.827$, so we got the proof $\pi_m^{NN} > \pi_m^{OO}$. This completes the proof.

Appendix A.2. Proof of Proposition 2

We can obtain from Table 1 that $\pi_{oi}^{MN} = \pi_{oi}^{OO}, i \in \{m, r\}.$, $\pi_m^{MN} > \pi_m^{OO}$, and $\pi_r^{MN} = \pi_r^{OO}$. Thus, the result is obvious.

Continue to obtain the data in Table 1, and we have $\pi_{oi}^{MN} > \pi_{oi}^{OO}, i \in \{m, r\}$. The result can also be conducted form Proposition 1 that $\pi_i^{RN} > \pi_i^{OO}, i \in \{m, r\}$.

From Proposition 1, we got $\pi_r^{MN} > \pi_r^{OO}$ and $\pi_m^{MN} = \pi_m^{OO}$. Now we need to consider the changes in profits in the original market after the manufacturer and the retailer enter the new market together. Let us first analyze the changes in retailers' profits in the old market. It is obvious from Table 1, $\pi_{or}^{NN} - \pi_{or}^{OO} = \frac{f_2(\frac{\alpha_o}{\alpha_n})}{16(2-\theta^2)(16+\theta^2)}$. Among them $f_2(\frac{\alpha_o}{\alpha_n}) = 4(64 - 64\theta - 80\theta^2 - 20\theta^3 - 28\theta^4 - \theta^5 - \theta^6)\frac{\alpha_o}{\alpha_n} + (128 - 64\theta^2 - 98\theta^4 - 5\theta^6)(\frac{\alpha_o}{\alpha_n})^2 - (384 + 256\theta + 64\theta^2 + 80\theta^3 - 16\theta^4 + 4\theta^5 - 2\theta^6)$. When $\theta > 0.384$, $f_2(\frac{\alpha_o}{\alpha_n})$ has no solution. According to the nature of the quadratic equation in one unknown, if $128 - 64\theta^2 - 98\theta^4 - 5\theta^6 > 0$ that is $0 < \theta < 0.921$, $f_2(\frac{\alpha_o}{\alpha_n}) < 0$. If $128 - 64\theta^2 - 98\theta^4 - 5\theta^6 < 0$ that is $0.921 < \theta < 1$, $f_2(\frac{\alpha_o}{\alpha_n}) > 0$. It also as $0 < \theta < 0.823$ that we got when $0.384 < \theta < 823$, $f_2(\frac{\alpha_o}{\alpha_n}) < 0$. When $0 < \theta < 0.384$, $128 - 128\theta - 168\theta^2 - 88\theta^3 - 36\theta^4 - 12\theta^5 - \theta^6 - \theta^7 > 0$, $f_2(\frac{\alpha_o}{\alpha_n})$ has one root $\frac{\alpha_o}{\alpha_n}^* = \frac{2(4+\theta^2)(16\theta-16+24\theta^2+\theta^3+\theta^4)+(16+\theta^2)\sqrt{2(4+\theta^2)(32-32\theta^2+12\theta^3-6\theta^5+7\theta^6)}}{(8+5\theta^2)(16-18\theta^2+\theta^4)}$. According to the nature of the quadratic equation in one unknown, if $0 < \theta < 0.384$ and $\frac{\alpha_o}{\alpha_n} < \frac{\alpha_o}{\alpha_n}^*$, $f_2(\frac{\alpha_o}{\alpha_n}) < 0$. Thus if $0.384 < \theta < 823$ or $0 < \theta < 0.823$ and when $\frac{\alpha_o}{\alpha_n} < \frac{\alpha_o}{\alpha_n}^*$, $\pi_{or}^{NN} < \pi_{or}^{OO}$; if $0 < \theta < 0.384$ and when $\frac{\alpha_o}{\alpha_n} \geq \frac{\alpha_o}{\alpha_n}^*$, $\pi_{or}^{NN} > \pi_{or}^{OO}$. We can also get, $\pi_{om}^{NN} - \pi_{om}^{OO} = \frac{f_3(\frac{\alpha_o}{\alpha_n})}{(2-\theta^2)^2(16+\theta^2)^2}$. Among it,

$$f_3(\tfrac{\alpha_o}{\alpha_n}) = 2(512 + 768\theta - 768\theta^2 - 784\theta^3 - 16\theta^4 - 116\theta^5 - 24\theta^6 - 4\theta^7 - \theta^8)\tfrac{\alpha_o}{\alpha_n} + (512 + 128\theta^2 - 280\theta^4 - 108\theta^6 - 5\theta^8)(\tfrac{\alpha_o}{\alpha_n})^2$$

$-(1536 + 256\theta + 896\theta^2 + 32\theta^3 + 144\theta^4 - 8\theta^5 - \theta^8)$. When $\theta > 0.564$, $f_3(\frac{\alpha_o}{\alpha_n})$ has no solution. According to the nature of the quadratic equation in one unknown, $f_3(\frac{\alpha_o}{\alpha_n}) < 0$; when $0 < \theta < 0.564$, $f_3(\frac{\alpha_o}{\alpha_n})$ has only one root $\frac{\alpha_o}{\alpha_n}^{**} = \frac{-(512+768\theta-768\theta^2-783\theta^3-16\theta^4-116\theta^5-24\theta^6-4\theta^7-\theta^8)}{(8+5\theta^2)(64-24\theta^2-20\theta^4-\theta^6)}$ $+ \frac{(2-\theta^2)(16+\theta^2)-\sqrt{2(512+1024\theta+672\theta^2+96\theta^3+96\theta^4+120\theta^5+2\theta^6+4\theta^7+3\theta^8)}}{(8+5\theta^2)(64-24\theta^2-20\theta^4-\theta^6)}$. According to the nature of the quadratic equation in one unknown, if $0.564 < \theta < 0.823$ and $\frac{\alpha_o}{\alpha_n} < \frac{\alpha_o}{\alpha_n}^{**}$, $f_3(\frac{\alpha_o}{\alpha_n}) < 0$. Thus if $0.564 < \theta < 0.823$ or $0 < \theta < 0.564$ and when $\frac{\alpha_o}{\alpha_n} < \frac{\alpha_o}{\alpha_n}^{**}$, $\pi_{om}^{NN} < \pi_{om}^{OO}$ and $\pi_m^{NN} > \pi_m^{OO}$. When $0 < \theta < 0.564$ and when $\frac{\alpha_o}{\alpha_n} \geq \frac{\alpha_o}{\alpha_n}^{**}$, $\pi_{or}^{NN} > \pi_{or}^{OO}$ and $\pi_m^{NN} > \pi_m^{OO}$.

Appendix A.3. Proof of Proposition 3

(1) It can be obtained from Table 1 that $\pi_m^{MN} - \pi_m^{RN} = \frac{2\alpha_n^2+(\alpha_n-\alpha_o)^2}{16} > 0$. The same goes for that when $\pi_m^{NN} > \pi_m^{NN}$, if and only if $\pi_m^{NN} - \pi_m^{MN} = \frac{f_4(\frac{\alpha_o}{\alpha_n})}{8(2-\theta^2)(16+\theta^2)} > 0$. Among them, $f_4(\frac{\alpha_o}{\alpha_n}) = (16 + 64\theta + 40\theta^2 + 4\theta^3 + 3\theta^4) + 2(16 + 32\theta + 8\theta^2 + 2\theta^3 + \theta^4)\frac{\alpha_o}{\alpha_n} - 2(8 - 11\theta^2 - \theta^4)\frac{\alpha_o}{\alpha_n}^2$. Thus, there is no solution on the interval $\frac{48+32\theta-4\theta^2+2\theta^3-\theta^4}{80-52\theta^2-3\theta^4} < \frac{\alpha_o}{\alpha_n} < \frac{5}{3}$. According to the nature of the quadratic equation in one unknown, if $0 < \theta < 0.827$ and $8 - 11\theta^2 - \theta^4 > 0$, $f_4(\frac{\alpha_o}{\alpha_n}) > 0$. It is obvious that $\pi_m^{NN} > \pi_m^{MN}$.

(2) From Table 1, we have $\pi_r^{RN} - \pi_r^{MN} = \pi_r^{RN} - \pi_r^{OO}$. The result can also be conducted form Proposition 1 that $\pi_r^{RN} - \pi_r^{MN} > 0$; therefore, we got the proof. At the same time, when $\pi_r^{NN} > \pi_r^{RN}$, if and only if $\sqrt{\pi_r^{NN}} - \sqrt{\pi_r^{RN}} = \frac{3\theta^2(\alpha_o+\alpha_o)}{4\sqrt{2}(16+\theta^2)} > 0$, so we have $\pi_r^{NN} > \pi_r^{RN}$. This completes the proof.

Appendix A.4. Proof of Proposition 4

We obtain from Proposition 3 that $\pi_r^{NN} > \pi_r^{MN}$. After calculation from Table 1 we have $\pi_m^{NN} - \pi_m^{RN} = \frac{(128+128\theta+38\theta^2+8\theta^3+3\theta^4)\alpha_n^2+2\theta(64+30\theta+4\theta^2+3\theta^3)\alpha_n\alpha_o+3\theta^3(10+\theta^2)\alpha_o^2}{16(2-\theta^2)(16+\theta^2)} > 0$. Theereefore, we have $\pi_m^{NN} > \pi_m^{RN}$. The joint entry mode (NN) is the only Nash equilibrium.

This completes the proof.

Appendix A.5. Proof of Proposition 5

We obtain from Tables 1 and 3, $\pi_m^{MN} - \pi_m^{RN} = \frac{\alpha_n^2}{4} > 0$, $\pi_m^{NN} - \pi_m^{MN} = \frac{2+6\theta+\theta^3}{2(1-\theta)(8+\theta^2)} > 0$. Therefore, we have $\pi_m^{NN} > \pi_m^{MN} > \pi_m^{RN}$. Still from Tables 1 and 3, $\pi_r^{RN} - \pi_r^{MN} = \frac{\alpha_n^2}{16} > 0$, $\pi_r^{NN} - \pi_r^{RN} = \frac{3\theta^2(16+5\theta^2)\alpha_n^2}{16(8+\theta^2)^2} > 0$. We got $\pi_r^{NN} > \pi_r^{RN} > \pi_r^{MN}$.

Above all, we have $\pi_r^{NN} > \pi_r^{MN}$ and $\pi_m^{NN} > \pi_m^{RN}$.The joint entry mode (NN) is the only Nash equilibrium.

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Moderating Effect of the Continental Factor on the Business Strategy and M&A Performance in the Pharmaceutical Industry for Sustainable International Business

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Abstract: This research analyzed the moderating effects of the continental factor on the relation between the business strategies (cost advantage strategy and differentiation strategy) of the pharmaceutical industry and mergers and acquisitions (M&A) performance. A total of 1303 M&A cases were collected from the Bloomberg database between 1995 and 2016 for the sake of empirical analyses. The independent variables were represented by the cost advantage strategy and the differentiation strategy. The dependent variable was for the M&A performance, which was measured for the changes in ROA (return on assets). The results showed that the cost advantage strategy was advantageous when an Asian firm acquired one in either Asia or Europe. In contrast, when a European company received one in either Europe or Asia, M&A performance also was higher, although the cost was higher. On the other hand, the differentiation strategy was valid only when a European firm acquired one in Asia. The moderating effect of the continental factor was beneficial only in the relation between the cost advantage strategy and M&A performance. These results could help companies make decisions that maximize M&A performance based on continental factors from the perspective of the sustainable international business strategy establishment.

Keywords: pharmaceutical industry; cost advantage strategy; differentiation strategy; M&A performance; continental factors; sustainability in international business

1. Introduction

Since the mid-90s, mergers and acquisitions (M&A) in the pharmaceutical industry have been used as a way to transform multinational corporations into large companies with economies of scale and substantial synergies by combining the characteristics and strengths of each company in order to secure business sustainability in the international market [1–6]. The expansion has been primarily in the US, Europe, and Japan [7–11].

The finance and strategy literature took an early interest in identifying firm motives concerning M&A, such as increased scale and scope, efficiency, and increased market power [12–15]. Other goals were to identify managerial self-interest for free cash flow and diversification related or unrelated through acquisition and corresponding capital market outcomes of M&A activity [16–22]. Further, research in management has focused to a greater extent on whether an international acquisition is a strategy that increases or decreases value [23–25]. However, the findings from this work have been

equivocal [26,27], in that some researchers have found that the market values of the acquiring firms have increased [28], while others have spotted firms' lost market value [29–32].

Researchers have proposed several ideas of success factors for sustainability in diverse business settings, such as shared services, human resources, platform types, operational skills, and supply chains [33–37]. Meanwhile, Porter [38] suggested that cost leadership and differentiation strategy were the main strategies needed to secure a competitive advantage in the market, as shown in Figure 1. Previous studies have shown that the relation between strategy and performance can allow firms to achieve a competitive advantage and sustainable production for the profit and cash flow by executing the cost advantage strategy or differentiation strategy [39–42]. We argued that the choice between a cost advantage and differentiation strategy as a business level strategy could be a critical strategic choice that would influence post-M&A performance strongly.

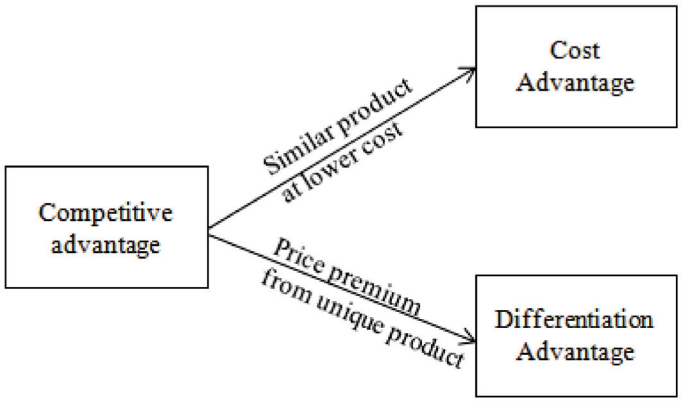

Figure 1. Source of competitive advantage [39].

However, there might also be some factors that could moderate the relationship between cost advantage/differentiation advantage and competitive advantage in the context of M&A. Likewise, researchers in the field of M&A study have argued that factors are affecting M&A. For example, Ahammad et al. [43] suggested that communication had a positive moderating impact on the cross-border M&A, while national cultural distance and organizational cultural difference negatively moderated it. Besides, Uzelac et al. [44] proposed that decision-making preferences had a significant moderating influence on M&A integration speed and performance. In addition, Gomes et al. [45] revealed the moderating effect of dynamic relationships between different perspectives on M&A. Other researchers have also conducted studies on the impact of geographical and location factors, such as continental and nation-specific differences. Mateev [46] compared Europe and the UK, while Bertrand and Madariaga [47] did inside and outside of the UK continent in the context of M&A. However, there is no research that reveals the moderating effect of factors across the continent, such as Asia versus Europe. Therefore, in this study, we focused on the continental element as a moderator to explain the mixed findings of business strategy, such as relationship cost advantage, differentiation strategy, such as R&D expenditures, and M&A performance with the moderating effect of the continental factors. By revealing the topic, this research aimed to fill the gap caused by the limitations from prior research that was unsuccessful in demonstrating consequences in the relations among cost advantage, differentiation advantage, and competitive advantage in the theory of Porter [38], using the continental factor as a moderator. In addition, this study would contribute to providing practical implications to the managers in the field of M&A for them to derive better M&A performance from the perspective of a sustainable international business strategy establishment.

The rest of this paper is formulated in the following way. First, we reviewed relevant literature and developed the research questions in the following section. Next, we provided the data sample used in this research, as well as the methodological approach we used for this research in the third section. In the fourth section, we presented the results from the analyses. The last chapter provides and

suggests academic/practical implications, limitations, and future research topics from the perspective of sustainability in international business.

2. Literature Review and Research Questions

A central issue in the M&A literature is whether acquisitions increase value for acquiring firms' shareholders and, if so, how [17,23,48]. The findings to date are mixed in both domestic [12,49] and international settings [27]. Some studies have shown that most international acquisitions decrease, rather than increase, a shareholder's value [50,51], while others have shown that certain such assets do increase the value [26,27]. However, previous studies have not examined continental differences as a moderating factor, which may help provide additional insight into the vital question of M&A value.

Therefore, as the conceptual diagram in Figure 2 shows, the research questions (RQs) proposed in this are pertinent to whether the cost advantage and differentiation strategy as a business-level strategy affect ROA (return on assets) as M&A performance. Accordingly, we examined whether there were differences between continents.

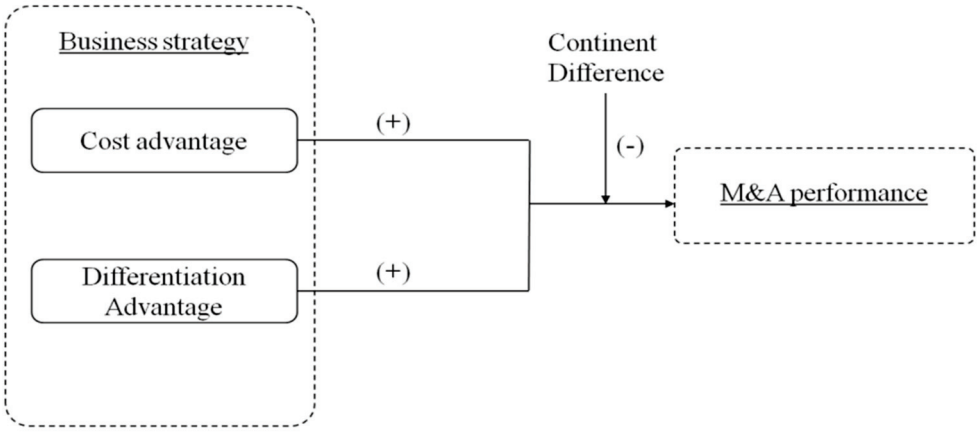

Figure 2. A conceptual framework for studying.

2.1. Cost Leadership Strategy and Differentiation Strategy in M&A Performance

Porter [38] proposed that the cost advantage and differentiation strategies were designed to maintain a competitive position in the industry in the long term. A cost advantage strategy is a method that secures a benefit by achieving a low cost with the underlying assumption of an experience curve that would strongly influence the sustainable business strategy of firms [42,52–55]. It is necessary to ensure a facility with an appropriate scale to realize economies of scale and strict cost control for R&D, service, and advertising [56]. According to the empirical evidence [39–57], firms that have implemented a cost advantage or a differentiation strategy have higher performance indicators, such as return on investment (ROI) or revenue.

A company's differentiation strategy is expressed as R&D cost, which is an investment that creates technical ability to increase the company's potential competitiveness that could also be directly aligned with the sustainability of the firms [58–60]. Generally, companies with a high proportion of R&D expenditures have been noted to have superior long-term management performance. When a company with a high investment in R&D acquires a foreign company, the stock market will be environmentally friendly. Companies with high R&D costs tend to be ahead of foreign companies in their technical skills, and the international M&A of such companies will increase the value of the company when the technical ability can be applied in the broader market [61,62]. Thus, we proposed the first research question:

RQ1. How do the cost leadership strategy and differentiation strategy affect firm performance in M&A in the pharmaceutical industry from the perspective of sustainability in international business?

2.2. Moderating Effect of the Continental Factor in International Business Strategy Success

If the continental factor moderates between business strategy and M&A performance, there will be differences in the relationship between business strategy and M&A performance by continents from the perspective of sustainability in international business. We used a moderation regression analysis to confirm this effect.

In the case of international M&A, cultural differences between countries/continents affect M&A performance significantly. Because cultural differences refer to a particular country's unique norms and values [28,63], these cultural differences impose costs on enterprises and organizational operations. Besides, because international M&As must integrate not only the national but the corporate culture as well, cultural differences have a significant influence on global M&A performance, and they are said to be significant factors in its failure [64,65].

Cultural differences have a negative effect on M&As [66–68] and result in cultural conflicts and increased integration costs. Thus, to achieve successful M&A, cultural differences must be effectively managed because they affect performance in the M&A process overall [28].

The higher the cultural difference, the more difficult it is to coordinate and integrate the two companies' operations, and the higher is the cost [63]. Employees also are stressed because of their different views and values attributable to cultural differences in mutual exchange and communication, which compromises employee loyalty, cooperation, satisfaction, and productivity. Thus, cultural differences in the international business setting between the acquiring and target companies have a negative effect on intercontinental M&As for the sustainable global business. Hence, we proposed the second research question:

RQ2: How does the continental factor moderate business strategy succeed in the context of the sustainable international business strategy establishment?

3. Method

3.1. Sampling and Data Collection

According to the literature, the duration of M&A long-term performance varies from 0 to 7 years, from –3 years to 3 years, from 0 to 5 years, from –5 years to 5 years, and from 1 year to 3 years, as Figure 3 shows [69,70]. In this study, to determine which event window appeared in the main findings, the numbers of all cases that could be considered five years after the completion of M&A were analyzed. Thus, we analyzed the timeline as −1 + 1, −1 + 2, −1 +3, −1 + 4, and −1 + 5.

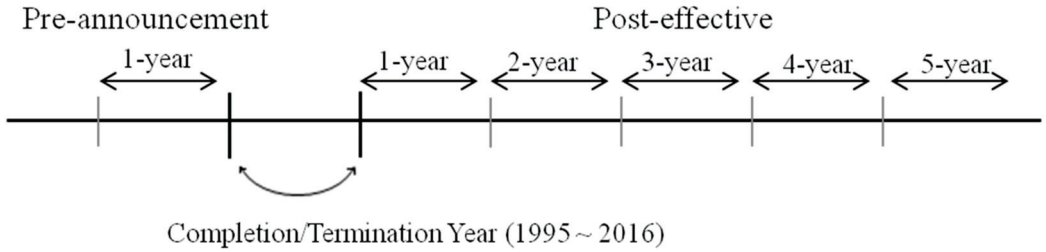

Figure 3. Merger timeline.

The M&A industry target was limited to the pharmaceutical industry because M&A performance varies by industry. For example, a study of 121 industrial and 108 non-industrial acquisitions has demonstrated a significant positive effect on ROA in industrial assets [71].

3.2. Data Collection and Descriptive Statistics

International acquisition data were collected from the Bloomberg database, the records in which provide not only real-time financial market data but also an extensive selection of M&A activities worldwide. We focused on acquiring firms listed publicly because their financial information is

accessible. Mergers, with announced acquisition dates between 1 January 1995 and 31 December 2016, were used, as, during this period, the number of international acquisitions in the pharmaceutical industry increased significantly.

We collected the acquiring firm's yearly company financials from COMPUSTAT (http://www.compustat.com), a database of financial, statistical, and market information on active and inactive companies throughout the world. Revenue, cost, R&D expenditure, and ROA data were collected. We consolidated the M&A deal list with the company financials, and the total sample comprised of 1303 deals. The technical statistics of the data collected are as follows in Table 1.

Table 1. Description statistic analysis of collected data.

Completion/Termination Date	A-A	A-E	E-A	E-E	Total
1995–1999	2	-	-	5	7
2000–2004	105	13	6	77	201
2005–2009	231	41	13	170	455
2010–2014	318	24	10	92	444
2015–2016	144	19	5	28	196
Total	800	97	34	372	1303

Note: A is Asia, E is Europe.

3.3. Methods

Multiple regression analysis was performed to examine the effects of the cost advantage and differentiation strategies on M&A performance [72]. In order to check multicollinearity between variables, the VIF (variable inflation factor) was calculated for each variable. In a previous study [73], there was no multicollinearity problem between the variables, and the hypothesis was tested when the VIF value was less than 10. The regression equation used in the analysis was as follows:

$$\triangle \text{EBIT} = \beta\_0 + \beta\_1 \text{ (cost ratio)} + \beta\_2 \text{ (R\&D expenditure ratio)} \quad (1)$$

$$\triangle \text{ROCE} = \beta\_0 + \beta\_1 \text{ (cost ratio)} + \beta\_2 \text{ (R\&D expenditure ratio)} \quad (2)$$

$$\triangle \text{ROA} = \beta\_0 + \beta\_1 \text{ (cost ratio)} + \beta\_2 \text{ (R\&D expenditure ratio)} \quad (3)$$

$$\triangle \text{ROC} = \beta\_0 + \beta\_1 \text{ (cost ratio)} + \beta\_2 \text{ (R\&D expenditure ratio)} \quad (4)$$

To determine whether the effect of the business strategy (independent variable) on M&A performance (dependent variable) differs depending on the continental factor, the moderating factor, a regression analysis was performed to analyze the R2 and F variation. Regression analysis is a method used to verify whether the newly-introduced regulatory variable term is statistically significant after applying the regression equation to the new multiplication term of the variables used as the independent variable and the moderating variable in the regression analysis [73].

3.4. Dependent Variable

The dependent variable is ROA, expressed as profitability ratios. ROA represents actual company performance measured by its assets and has been adopted as a measure of corporate performance in many studies because it is an excellent way to measure operational performance [74]. The formula used to evaluate the percentage change in performance divides the difference between the performance after M&A and the performance before M&A by the performance before M&A and is used in many studies. It is used not only for M&A but also as a measure of a firm's performance before and after the introduction of an ERP (enterprise resource planning) system [74,75]. The dependent variable was calculated as follows:

$$\triangle \text{ROA} = (\text{ROA\_post-ROA\_pre})/(\text{ROA\_pre}) \quad (5)$$

For example, when analyzing one year to four years later, the following calculation was performed:

$$\triangle ROA = (ROA\_(t + 4)\text{-}ROA\_(t\text{-}1))/(ROA\_(t\text{-}1)) \quad (6)$$

3.5. Independent Variable

3.5.1. Background of Independent Variable Selection

Porter's generic strategies describe how a company pursues competitive advantage across its chosen market scope. There are three/four generic strategies, either lower cost, differentiated, or focused. Porter claimed that a company must choose only one of the three, or risk wasting the business' valuable resources [38,76]. Porter [38] stressed the idea that a firm should adopt only one strategy, and failure to do so will result in the "stuck in the middle" scenario. He indicated that practicing more than one approach would lose the entire focus of the organization, and hence, a clear direction of the future trajectory could not be established. The argument is based on the fundamental principle that differentiation will incur costs, which clearly contradicts the basis of the low-cost strategy; on the other hand, relatively standardized products with features acceptable to many customers will not carry any differentiation. Hence, the cost leadership and differentiation strategy will be mutually exclusive. However, several commentators have questioned the use of generic strategies, claiming that they are limited and lack specificity and flexibility.

3.5.2. Cost Leadership

The cost advantage strategy measures a firm's cost divided by total sales [76–80]. Cost competitiveness as an independent variable was calculated as follows. The lower the value, the stronger the cost leadership, while the higher the value, the less the cost leadership:

$$\text{Cost Leadership} = (\text{Cost of Revenue}) / \text{Revenue} \quad (7)$$

3.5.3. Product Differentiation

The differentiation strategy measures corporate R&D costs divided by total sales [77–80]. Product differentiation is a business strategy that enables a firm to gain a competitive advantage when its customers are willing to pay more for its products or services. Product differentiation is a strategy that increases value by setting the cost of a product or service above the enterprise's average price. Companies that implement this strategy successfully are able to reduce environmental threats and capture various ecological opportunities. However, to secure a sustainable competitive advantage, it is necessary to increase values that are difficult to imitate [76]. Product differentiation, as an independent variable, was calculated as follows:

$$\text{Differentiation Strategy} = (\text{R\&D Cost})/\text{Revenue} \quad (8)$$

3.6. Moderators

Chikhouni et al. [81] used direction (emerging to emerging, emerging to developed, developed to emerging, developed to developed) as a moderator to determine the way in which the "direction" mitigated the relation between psychic distance and the choice of equity control in an international acquisition. Further, Malhotra [82] used geographic range as a moderator to determine how geographic distance moderated the relation between cultural distance and the choice of equity control in international acquisitions. However, the continental factor as a moderator has not yet been studied. The continental factor data as categorical data of international acquisition were collected from the Bloomberg database. We studied four sub-group moderators—Europe-Europe, Europe-Asia, Asia-Asia, and Asia-Europe.

3.7. Control Variables

As a control variable, the M&A industry target was limited to the pharmaceutical industry. In the case of international M&As, additional costs are incurred because of institutional and cultural differences in the industry by comparison to domestic M&As' transactions. Thus, some systems and cultures apply to each sector in each country, and this difference can be minimized if the acquiring firm and target company have high industrial similarity, in that it is possible to reduce the costs incurred in the integration process because the understanding of the industry is high. However, in the case of international M&As, if the acquiring and target firms are less similar, it is difficult to find commonalities between the two industries, and institutional and cultural differences are more significant. Therefore, the higher the similarity between acquiring and target companies, the greater the company's performance after M&A [71–83]. Thus, this study addressed only M&A transactions in the pharmaceutical industry.

4. Results

To analyze how the continental factor affects the relationship between business strategy and M&A performance, we assessed four subsamples: Europe-Europe, Europe-Asia, Asia-Asia, and Asia-Europe. The results showed that M&A performance responded differently, depending on the different business strategies as well as the continental factor.

RQ1 is about how the cost leadership strategy and differentiation strategy affect firm performance in M&A in the pharmaceutical industry from the perspective of sustainability in international business. Table 2 explains RQ1 by showing the correlations between business strategy and M&A performance for each subsample and the results of the multiple regression analysis.

Table 2. Multiple regression analysis results between business strategy and M&A performance in the 4 continent groups.

MV	IV	△ROA (−1,1)		△ROA (−1,2)		△ROA (−1,3)		△ROA (−1,4)		△ROA (−1,5)	
		Beta	Sig.	Beta	Sig.	Beta	Sig.	Beta	Sig.	Beta	Sig.
A−A	CR	−0.008	0.829	−0.113 **	0.007	−0.127 **	0.004	−0.134 **	0.004	−0.206 ***	0
	R&D	0.005	0.897	−0.029	0.490	−0.036	0.409	−0.040	0.386	−0.052	0.287
A-E	CR	−0.208 †	0.073	−0.211 †	0.086	−0.218 †	0.088	0.162	0.224	−0.248 †	0.070
	R&D	−0.070	0.540	−0.065	0.593	−0.061	0.629	0.050	0.708	−0.095	0.485
E-E	CR	0.025	0.680	0.027	0.675	0.642 ***	0.000	0.129 †	0.066	0.091	0.226
	R&D	−0.039	0.527	−0.040	0.524	−0.013	0.791	−0.014	0.837	−0.065	0.389
E-A	CR	0.421 *	0.039	0.463 *	0.029	0.270	0.190	0.086	0.685	0.367 †	0.090
	R&D	0.638 **	0.003	0.548 *	0.011	0.566 **	0.009	0.419 †	0.055	0.475 *	0.030

Note: A is Asia; E is Europe; MV is moderation variable; IV is independent variable; CR is cost ratio; R&D is R&D expenditure ratio; † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

As shown in the cost ratio of Asia-Asia, Asia-Europe, the beta of △ROA(−1,2), △ROA(−1,3), △ROA(−1,5) was negative and significant ($p < 0.05$ or 0.10). However, when a European company acquired another in Europe, the beta of △ROA(−1,3), △ROA(−1,4) was positive and significant ($p < 0.05$ or 0.10). Further, when a European company acquired an Asian company, the beta of △ROA(−1,1), △ROA(−1,2) was positive and significant ($p < 0.05$ or 0.10). On the other hand, as shown in the R&D expenditure ratio of Europe-Asia, the beta of △ROA(−1,1), △ROA(−1,2), △ROA(−1,3), △ROA(−1,4), △ROA(−1,5) was positive and significant ($p < 0.05$ or 0.10).

As Table 2 shows, when an Asian company acquired another in Asia or one in Europe, the relationship between the cost ratio and M&A performance was negative. In contrast, when a European company received one in Europe or Asia, the relationship between cost ratio and M&A performance was positive.

However, when an Asian firm acquired one in Europe and Europe acquired one in Asia, there was no relationship between R&D ratio and M&A performance. Only when a European company acquired

one in Asia, the R&D expenditure's beta of △ROA(−1,1), △ROA(−1,2), △ROA(−1,3), △ROA(−1,4), △ ROA(−1,5) was positive and significant ($p < 0.05$ or 0.10).

RQ2 is about how the continental factor moderates business strategy success in the context of the sustainable international business strategy establishment. Table 3 explains RQ2 by showing the moderation regression analysis results that evaluated the significance of the continental factor's moderating effect on the relationship between business strategy and M&A performance. As the table indicates, the impact of the cost ratio on △ROA (−1,5) was significant. The variation in the probability that F was less than 0.05 in models 2 and 3 indicated that there was a significant intercontinental difference.

Table 3. Moderation regression analysis results.

Statistics		Cost Ratio			R&D Expenditure Ratio		
		1	2	3	1	2	3
R		0.027	0.086	0.142	0.072	0.091	0.101
R-square		0.001	0.007	0.020	0.005	0.008	0.010
Adjusted R-square		−0.001	0.005	0.016	0.004	0.005	0.006
Std. error of the estimate		21.217	21.162	21.039	21.171	21.152	21.147
Change statistics	R-square change	0.001	0.007	0.013	0.005	0.003	0.002
	F change	0.518	4.656	9.206	3.611	2.224	1.335
	df1	1	1	1	1	1	1
	df2	700	699	698	700	699	698
	Sig. F change	0.472	0.031 *	0.003 **	0.058 †	0.136	0.248
Durbin–Watson			2.017			2.014	

Note: dependent variable is △ROA(-1,5), Model 1. Predictors: (constant), cost ratio, R&D expenditure; Model 2. Predictors: (constant), cost ratio, R&D expenditure, continent; Model 3. Predictors: (constant), cost ratio, R&D expenditure, continent, cost continent moderation, R&D expenditure moderation, † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$, df is degree of freedom

However, the variation in the significance of F in the effect of the R&D expenditure ratio on △ROA (−1,5) was insignificant in models 2 and 3. This result could be interpreted to indicate the difference in investment objectives of international M&As by continents. When a European firm acquired one in Asia, it could be construed that R&D investment cost had a positive effect on M&A performance because it strengthens competitiveness by securing the resources and technology of European companies. On the other hand, when an Asian company took over another in Asia or Europe, or when a European firm acquired another in Europe, R&D investment costs did not seem to have a synergistic association with M&A performance.

5. Conclusions

5.1. Discussion and Implications

This research conducted analyses on the impact of the continental factor on the relationship between business strategies, such as cost leadership and R&D investment, and M&A performance from the perspective of sustainability in international business. According to the results from evaluating these hypothetical interrogations with four subsamples (E-E, E-A, A-A, and A-E) as moderators, we could discover that M&A performance could be influenced by the diverse cost leadership and R&D investment strategies, as well as the continental factor. These results explained clearly RQ1 and RQ2.

Therefore, academic implications obtainable from the empirical results are as follows. First, this study addressed the limitations of previous studies that failed to show consistent results in the relations among cost ratio, R&D cost, and performance. This study made it possible to interpret the effect of business strategy on M&A performance by explaining the continental factor as one that moderates the relation between business strategy and M&A performance from the perspective of sustainability in international business settings.

Second, this study advanced the prior theoretical concept by demonstrating evidence of 'stuck in the middle' scenario of Porter [38]. According to the results, firms should adopt only one strategy to achieve successful M&A performance for sustainable international business. For example, when an Asian company acquires another in Asia or a European company, it should only adopt the cost leadership strategy to increase M&A performance. On the other hand, when a European company acquires one in Asia, it should also only adopt the differentiation strategy to enhance M&A performance. We found no evidence of successful firms that practiced a hybrid strategy that contained both the cost leadership strategy and the differentiation strategy [84].

Meanwhile, practical implications that contribute to the practitioners in the field of M&A for sustainable global business could be addressed as follows. First, this study could help establish successful M&A strategies based on business strategy and continental factors. Based on the results of this study, management could predict the factors and their effects on M&A performance, and firms could make successful M&A decisions based on these predictions. According to collated research and a recent Harvard Business Review report, the failure rate for M&As is between 70% and 90% [85]. Therefore, practical implications from the research would be fruitful as a guide for field managers of M&A to overcome the risk in M&A and acquire sustainability in international business.

Second, when an Asian company acquired an Asian or European company, the firm that based its competitive strategy on a low-cost approach could achieve significant M&A performance. On the other hand, a company that based its competitive strategy on a differentiation strategy could not perform effectively. These results were drawn because the nature of the pharmaceutical industry necessitates enormous investment in new product development and includes long development times. Thus, concentrating on the low-cost strategy would lead to better success than it would on the differentiation strategy from the perspective of sustainable international business.

Third, when a European company acquired an Asian company, the firm that based its competitive strategy on a differentiation strategy could achieve successful M&A performance even though costs increased. This result was probably because of the synergistic effect of merging the European companies' advanced technologies with that of Asian companies.

Fourth, when a European company acquired another in Europe, even if the costs increased, the performance increased; however, the differentiation strategy was ineffective. The reason for this result was thought to be the lack of synergistic effects in the M&A between European companies.

To summarize, we would like to emphasize that the main focus of our experiment was placed on finding those factors that affect the M&A performance of the pharmaceutical industry. Besides, we analyzed the effects of business strategy on M&A performance from a new perspective by applying the continental factor as a controlling factor in the context of sustainable global business. The results showed that business strategies responded differently to different continents. Asia-Asia and Asia-Europe performed better with a low-cost business strategy, while Europe-Europe and Europe-Asia yielded better results even though the cost was higher. On the other hand, Asia-Asia, Asia-Europe, and Europe-Europe had no significant effect on the differentiation strategy. Only Europe-Asia demonstrated a substantial impact on the differentiation advantage strategy.

These results could be interpreted as a result of the difference in investment objectives of international M&As attributable to the continental factors for business sustainability. When European companies acquired Asian companies, European resources and technology had a positive synergistic effect on the Asian acquisition, explaining these results. Besides, we presumed that European companies had been motivated to enter the local market quickly by acquiring Asian firms, which resulted in high M&A performance even if the costs increased.

5.2. Limitations and Suggestions for Future Studies

Despite the academic and practical implications as stated above, this research still has limitations, as well as the future suggestions for other scholars and experts in the field of M&A as follows.

First, we steered this research without the application of risk factors, such as a sudden global crisis like the recent COVID-19 pandemic. Given the fact that such global pandemics had profound impacts on the pharmaceutical industry, it seems necessary to apply variables that are related to disease-crisis to the research model.

Second, there is a need for a more in-depth understanding of the cases analyzed using the more diverse continental factors. This study only concentrated on Asia and Europe, although the pharmaceutical industry in the North American region also has several marketing-leading firms and large market shares. In addition to the above, concerning that the pharmaceutical industry has been continuously globalized to emerging markets, as well [86–90], other regions, such as South America, Africa, the Middle East should be considered as well in terms of sustainability in the complete global business setting.

Third, this research was limited to the pharmaceutical industry, rather than in various industries. Consequently, it would be necessary to expand the range of industry to embrace more general findings, which could be more fruitful implications to managers in the field for establishing enhanced M&A strategy from the perspective of sustainability in global business.

Hence, in future research, it should consider the diverse aspect of risk factors, various industries, and wider scope of the continental factors in order to derive more beneficial implications in M&A that could provide successful strategies for sustainability in international business.

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51 Flavors: Regional Resource Configurations and Foreign Multinational Market Entry in the U.S. Biopharmaceutical Industry

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Abstract: Creating a sustainable regional economy requires not only attracting new local ventures, but also foreign multinationals. In this regard, understanding which resources are influential in market entry decisions is crucial given that there are different resource needs between developed (DMNE) and emerging market (EMNE) multinationals. Answering calls for more neo-configurational studies in the literature, our study uses a fuzzy-set qualitative comparative analysis (fsQCA) approach to examine foreign multinational entry decisions in 51 regions of the U.S. We constructed a novel dataset comprised of 3287 foreign firms from 61 countries and territories operating in the biopharmaceutical industry. We find that there are substantial differences in the configuration of resources that attract DMNEs and EMNEs to regions. The resource configurations in our models account for over 80% of the factors influencing DMNE and EMNE market entry location decisions. Some resources played a more important role in these decisions, such as FDI stocks, cluster size, and manufacturing intensity. Our findings show that EMNEs seek out regions with a greater abundance of different resources than DMNEs. This study provides practical implications for firms entering foreign markets as well as for policy makers who want to attract these firms to bolster their regional economic development.

Keywords: MNE; EMNE; market entry; location decisions; resource configurations; fsQCA; regional development

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1. Introduction

In response to rising regional economic polarization around the globe, there is renewed interest among scholars and policy makers to advance research that examines what regions can do to enhance their prosperity and attractiveness e.g., [1]. Foreign market entry is largely acknowledged as a driving factor behind regional economic development [2–6] and national competitiveness e.g., [7]. Today's foreign multinationals, from developed (DMNEs) and emerging countries (EMNEs), are increasingly drawn to locate in strategic regions in search of new sources of innovation and knowledge [8–10]. EMNEs, in particular, are often constrained by limited resources at home [11], which may motivate them to establish in regions with a munificence of resource endowments. A good understanding of what combination of regional resource configurations make one region, within a country, more attractive to foreign multinationals than another remains elusive because of the heterogeneity of resources available across regions.

Given the disparities in knowledge and innovation across countries, industries, and regions e.g., [12,13], national and local governments have attempted to emulate the success of high-technology sectors, such as the Silicon Valley model, in the hopes of creating comparable high-growth entrepreneurial ecosystems that propel regional development and prosperity [14,15]. For instance, Brazil, recognizing its overreliance on a commodity-driven economy, invested over $300 million to develop competencies in micro-electronics, bio-fuels, and software in the State of Minas Gerais by building science parks, incubators,

and workforce training programs. Similarly, within the United States, there have been considerable efforts to reinvigorate declining industries (e.g., auto industry in Michigan), develop new industries (e.g., West Virginia's focus on biometrics), and build up growing regions (e.g., Research Triangle Park, North Carolina). To sustain the growth of these regions requires influxes of investment beyond that which domestic companies alone can provide, thus necessitating the need for these regions to attract foreign multinationals.

Much of the extant international business literature has addressed this important topic by using traditional empirical analytic techniques that assume linear or curvilinear relationships [16,17]. As a consequence, the majority of studies that examine why foreign multinationals are attracted to one region over another frequently provide an overly simplistic view of a rather complex foreign location decision. A recent review of the literature suggests that these methodological approaches may be inadequate to move beyond a *gestalt-like* view of regional development [16]. The emergence of the neo-configurational perspective has challenged extant theory and provided more actionable insights [18]. This approach is grounded in the use of fuzzy-set qualitative comparative analysis (fsQCA) [19,20]. While international business scholars have been slow to embrace this methodological approach [16], it is garnering increased attention and has been applied towards the study of a variety of business phenomena. There have been a mere handful of studies that have used this methodology within the context of location decisions. Of these, Pajunen [21] examines the combinations of institutions that attract foreign direct investors from DMNEs and EMNEs at the country level. Chen, Li, and Fan [22] examine configurations of political connections that facilitate EMNE international expansion. Ciravegna, Kuivalainen, Kundu, and Lopez [23] explore the antecedents of early internationalization. Recognizing the dearth of research in this context and the actionable insights that fsQCA can provide to scholars and practitioners interested in market entry and regional economic development, we adopt a configurational perspective.

In this context, we conjecture that foreign multinational location decisions do not ascribe to a one-size fits all approach, but rather are an exercise in finding the right fit between "pieces of a puzzle," whereby different locations are preferred over others because they offer resources that the firm lacks. When the right configurations of resources are identified, firms derive synergistic benefits from locating in a particular region. Our study addresses recent calls from the international business community for configurational approaches to studying business phenomena e.g., [16] and seeks to answer whether DMNEs and EMNEs are attracted to different regions based on the configuration of their resources.

We attempt to advance a better understanding of the different combinations of resources that attract DMNEs and EMNEs to each region within the United States, a key location known for innovative knowledge in biopharma R&D and advanced manufacturing. The U.S. biopharmaceutical industry offers a unique setting to study market entry since there are varying degrees of economic development across all regions within the country (i.e., 50 U.S. states and the District of Columbia). This context, therefore, allows for a more configurational approach, grounded in the neo-configurational perspective, to study foreign location decisions. We construct a dataset of 3287 foreign multinationals from 61 countries and territories in the biopharmaceutical industry that located to the U.S. in 2018. Using fsQCA, we uncovered some interesting findings regarding foreign multinational location decisions. In particular, we find that DMNEs and EMNEs are attracted to different regions based on their resource configurations. Our results elucidate how idiosyncratic regional resources can be configured to attract DMNEs and EMNEs to different regions. Interestingly, while we found some overlap between configurations that attract DMNEs and EMNEs, these configurations were associated with locating in different regions. Furthermore, we find that twice as many EMNE configurations include three or more resources at higher levels than DMNE configurations, which lends support to the idea that EMNEs seek out regions with a greater abundance of different resources than DMNEs.

Our study contributes to the extant international business and regional economic development literature in several ways. First, we answer calls for the application of the neo-configurational perspective to international business research e.g., [16] by applying a novel fsQCA methodological approach to the study of foreign multinational location decisions. This study elucidates how resource conditions collectively influence foreign multinational market entry strategies in the U.S., which allows for the development of new insights that are more representative of the actual complexities of international business decisions. Second, we add to the growing body of literature that recognizes the importance of examining the differences between DMNE and EMNE market entry decisions. The heterogeneity of initial resource endowments and motivations between DMNEs and EMNEs suggests that their strategic location decisions are idiosyncratic and, thus, need to be examined separately. As our results imply, there are significant differences between how regional resources can be configured to attract DMNEs and EMNEs.

2. Theoretical Background

2.1. Resources and Competitive Advantage

The resource-based view (RBV) suggests that firms can create and sustain a competitive advantage by building firm-specific, heterogeneous resources and capabilities and using these to develop superior resource positions [24,25]. In particular, resources that are valuable, rare, inimitable, and non-substitutable are viewed as sources of a firm's sustained competitive advantage [24]. Firms compete by making the best use of their tangible (e.g., equipment, manufacturing plants, and human resources) and intangible (e.g., manufacturing processes and trade secrets) resources based on decisions motivated by reasons of efficiency and competitiveness [26]. Maintaining a competitive advantage, however, can be a challenge, especially for firms in technology-intensive industries.

In the search for idiosyncratic resources, firms may look internally, such as by investing in R&D, or they may seek external opportunities, such as by relocating to resource-rich regions beyond their nation's borders. The search for new and unique resources to sustain a firm's competitive advantage has been a primary motivation behind foreign market entry e.g., [27,28]. Firms enter new markets in locations where they can apply their superior firm-specific capabilities and will choose to expand abroad in search of new resources that their home countries lack [29,30]. Research has also shown that foreign location decisions matter for innovation since there is considerable variation in a nation's resource advantages [29,31]. Thus, gaining access to new resources is a significant motivation for firms to expand globally [32–35].

2.2. Regional Economic Development

The phenomenon of globalization and its impact on regional economic development has long been an important topic of extensive research and debate e.g., [3,13]. While the practice of geographically dispersing firm activities in foreign locations has generally resulted in positive outcomes [31,32,34] it has also been negatively linked to an increase in regional economic polarization, e.g., [1]. In this regard, scholars caution that decades of globalization and economic deregulation have exacerbated the disparities in economic development between regions, resulting in the agglomeration of benefits in a relatively small number of regions worldwide [34,36], such as Silicon Valley in California and the route 128 belt outside of Boston, Massachusetts [37]. In response to these trends, national and local governments continue to search for effective policies that can jumpstart and, in due course, create a more level playing field of sustainable regional economic growth across regions [38–40]. Hence, there has been considerable worldwide effort to build-up high-tech industries in underdeveloped regions so that they become more attractive investments to domestic and foreign multinationals e.g., [14,15].

While there are a myriad of approaches and perspectives on how to tackle regional economic development challenges e.g., [1], there are commonly-held initiatives that include, for instance, heavy investment in R&D activities, manufacturing capabilities, workforce

training and skills, incubator/accelerator programs, high-quality and prestigious academic institutions, specialized incentives that are attractive for FDI, and access to early-stage venture capital financing, among others e.g., [41]. Such targeted initiatives are an attempt to close, or minimize, a particular region's resource gap, compared to its neighboring regions, thereby increasing the availability and attractiveness of existing and future vital resources in the region. In this regard, the composition and abundance of a region's resources can be viewed as complex, ever-evolving, and self-sustaining in that they act as a magnet that attracts or repels investment.

Attracting new foreign ventures to a region is initially dependent on having an abundant supply of resources e.g., [42]. Interestingly, research suggests that it is not necessarily the sheer number of resources offered in a region that impact its development per se, but it is rather about strategically matching the profile of a region and its needs with the investment activities of incoming foreign multinationals e.g., [43]. The practical implications, however, of moving beyond a one-size-fits-all market entry approach to the matching of multinationals to the most appropriate regions, based on their resource needs, remains problematic [43]. Put simply, since there is a great deal of heterogeneity of resource configurations available in regions, it obfuscates foreign multinational location decisions. Even when firms operate within the same industry, there are considerable variations among firm motivations for internationalization, size, resource endowments, capabilities, business activities, and knowledge stocks [43,44].

2.3. Location Resources and Differences in DMNE and EMNE Location Decisions

Building on the aforementioned rationale, foreign multinationals tend to be motivated to locate abroad in search of new, idiosyncratic resources [4,45]. The strategy literature highlights the importance of finding strategic fit between these resources and the firm's current and future needs. Configuration theory [46] represents a holistic systems perspective and suggests that firms represent constellations of interrelated resources that, when aligned, allow them to reap synergistic benefits. Conversely, when a strategic mismatch occurs, it can have a negative effect on firm outcomes e.g., [47].

By applying a configurational approach, we acknowledge that foreign multinationals need to locate where they can access unique resources that offer a competitive advantage [24,48]. Since not all locations possess the same resources, or to the same degree, as others, this gives rise to a great deal of heterogeneity in local resource configurations (e.g., venture capital, university research, skilled workforce, etc.). Consequently, each region will vary considerably in its resource endowments such that firms within the region will develop different capabilities and synergies [49].

Foreign multinationals locate their business activities in resource-rich regions abroad to overcome local resource limitations [50,51]. Research has shown that multinationals are attracted to some regions more than others [21,52]. Recent studies have drawn attention to the necessity to examine the differences between DMNE and EMNE location decisions [53]. According to Zaheer and Nachum [54], DMNEs have the distinct advantage of being able to create location capital from generic location resources. This may be a result of a multitude of factors, including the fact that DMNEs tend to have greater initial resource endowments and capabilities than EMNEs [11].

While the majority of studies are focused on DMNE location decisions, there is a dearth of research about where EMNEs locate. Given that nearly two-thirds of the research is focused on DMNEs [53], there has been a growing call in the literature to examine the rapid proliferation of EMNEs locating abroad [55]. In particular, EMNEs, compared to DMNEs, may have a greater need to acquire strategic resources that their home country lacks. For instance, studies have found that EMNEs are more attracted to regions that offer resources, such as knowledge, technological innovations, and skilled talent in science and technology [28]. For these reasons, it is likely that DMNEs and EMNEs will be drawn to different locations based upon the region's resource configurations.

3. Materials and Methods

3.1. Research Context

Since the introduction of Humulin in 1982, a synthesized insulin, the biopharmaceutical industry has seen rapid growth. By 2018, the demand for biopharmaceuticals grew to approximately $248 billion, led by demand for Monoclonal Antibodies (moAb) (33.2% share of the market) for the treatment of infectious diseases, such as Norovirus and Zika Virus [56]. The industry is projected to grow at 10.8% CAGR between 2018–2025 [56]. The potential for biopharmaceuticals to cure diseases, as opposed to treating its symptoms alone, has spurred the growth of the industry [56]. The United States is the global leader in this industry, but other countries outside of the U.S. are also becoming influential players, including Belgium, China, France, Germany, India, Israel, Japan, Switzerland, and the United Kingdom.

The biopharmaceutical industry tends to be tied to locations where firms can access either raw materials or market specificities [57]. The munificence of knowledge, capabilities, resources, and infrastructure associated with the U.S. biopharmaceutical market makes the U.S. an attractive target for foreign investment and, more specifically, for foreign biopharmaceutical firms to locate business operations within the U.S. The global value-chain of the industry employs over 811,000 individuals and indirectly supports over 3.2 million additional jobs in the U.S. [58]. The majority of these jobs offer high-quality employment opportunities in science, technology, engineering, and math (STEM) in all regions in the U.S. Its overall value-add to the U.S. economy accounts for nearly 3.2% of U.S. gross domestic product (GDP) [58].

3.2. Sample

We examine foreign location decisions in the largest global biopharmaceutical market: the United States. The U.S. represents a unique setting for this study as its regional development varies considerably across all regions (i.e., we measure regions at the state level, which includes all 50 U.S. states and the District of Columbia). We constructed a unique dataset comprised of 3287 foreign firms from 61 countries and territories (2604 DMNEs and 683 EMNEs) in 2018 along with their associated U.S. location data. We collected our data primarily from Medtrack. Additional data on U.S. regional economic characteristics was obtained from the U.S. Cluster Mapping Project database, U.S. Census Bureau, Bureau of Economic Analysis, VentureDeal, and the United States Patent and Trademark Office.

3.3. Estimation Method

To develop a better understanding of what attracts foreign multinationals to the U.S., it is important to consider various resource factors that may influence this investment decision. Unlike traditional linear regression approaches that seek to identify the causal effect of individual factors, our interest is in analyzing how the causal conditions collectively contribute to the outcome [20,59,60]. This was the motivation behind employing fuzzy-set qualitative comparative analysis (fsQCA) in this study. fsQCA is a case-oriented methodological approach that allows for systematic and formalized cross-case comparisons [20,61]. Using a "truth table," the fsQCA method analyzes the relationship between an outcome of interest and every possible Boolean combination of predictors and then uses algorithms to eliminate redundant configurations [62]. More specifically, fsQCA examines which combinations of predictors A and B, for example, are most likely to produce an outcome Y (e.g., Pr(Y | A · B), which can range anywhere between 0 (fully exclusive) and 1 (fully inclusive) [62]. Fuzzy sets are then combined into configurations by calculating the inclusion ratio $I_{XY} = \Sigma\min(x_i,y_i)/\Sigma x_i$ where X is the predictor configuration (e.g., A · B), Y is the outcome, x_i represents each case's membership in X, and y_i represents each case's membership in Y [62]. As I_{XY} approaches 1, there is increased confidence that the data is consistent with the assumption that X is a subset of Y [62]. We use the fuzzy program in Stata 16 to perform our fsQCA analysis, creating fuzzy sets by rank ordering each variable and then standardizing this ranking to range from 0 to 1. Consistent with prior studies, we

adopt a consistency cutoff of 0.8 at the 5% level (i.e., $I_{XY} > 0.8$) [20,62,63] and collapse the configurations into a final reduction set to account for overlapping configurations.

This fsQCA methodological approach has been gaining greater acceptance among business scholars, but is still in its infancy. The fsQCA method has been used to examine various business phenomena, including FDI [21], business model configurations [61], CEO and worker compensation [64], corporate social responsibility [65], innovation systems [66], export performance [67], and adaptation [68].

3.4. Model Specification: Outcome

Region

Our interest is on understanding foreign multinational location decisions in a region. The great geographic expanse of the U.S. gives rise to a great heterogeneity of resources within regions across the country. We measure 51 regions in the United States, which are comprised of 50 U.S. states and the District of Columbia (i.e., Washington, DC, USA).

3.5. Model Specification: Conditions

As mentioned above, there are a plethora of factors that influence multinational location decisions. Due to an overreliance on traditional empirical analytic techniques, there are inconsistent findings regarding which factors and/or combination of factors are behind why some foreign multinationals choose to locate in one region versus another [16,17]. Building upon prior studies and by applying a fuzzy-set analysis, we are able to examine the role of regional resources and how they are configured together in meaningful ways to attract foreign investment. Using the fsQCA methodology requires selecting a subset of the most influential factors to increase the interpretability of findings. Hence, we underwent a thorough examination of the theoretical and empirical research in the international business literature regarding foreign multinational location choice to ascertain guidance about the most influential resources of a region that have a positive, negative, and/or minor impact on the likelihood that it will be selected as a host country. To this end, we identified the following eight regional resources as playing the most critical role in attracting foreign multinationals to high-tech regions in the biopharmaceutical industry: a skilled workforce [13,34], proximity to state-of-the art knowledge and other innovative firms [13,69–71], university-industry collaboration opportunities [72–74], a stock of existing FDI [4,28,29], venture capital [75], and strong capabilities in R&D and manufacturing e.g., [41]. The relationships between these resources are illustrated in Figure 1 and provides greater context as to why these resources need to be considered conjointly to explain where biopharmaceutical DMNEs and EMNEs choose to locate in the U.S.

3.5.1. Skilled Workforce

The biopharmaceutical industry is dependent upon its ability employ a highly specialized workforce in terms of knowledge, skills, and capabilities. Studies have shed light on the growing shortage of properly skilled employees available to work in this industry, e.g., [76]. For instance, recent reports estimate that by 2030 the industry may experience a skilled workforce shortage of 85 million employees, which is approximately the size of Germany [77]. Given the necessity and growing scarcity of talent needed in this industry, we include a measure of the biopharmaceutical industry's skilled workforce by state. We measure *Skilled Workforce* as the state's Location Quotient (LQ), which is the ratio of an industry's share of total state employment relative to its share of total national employment [78,79].

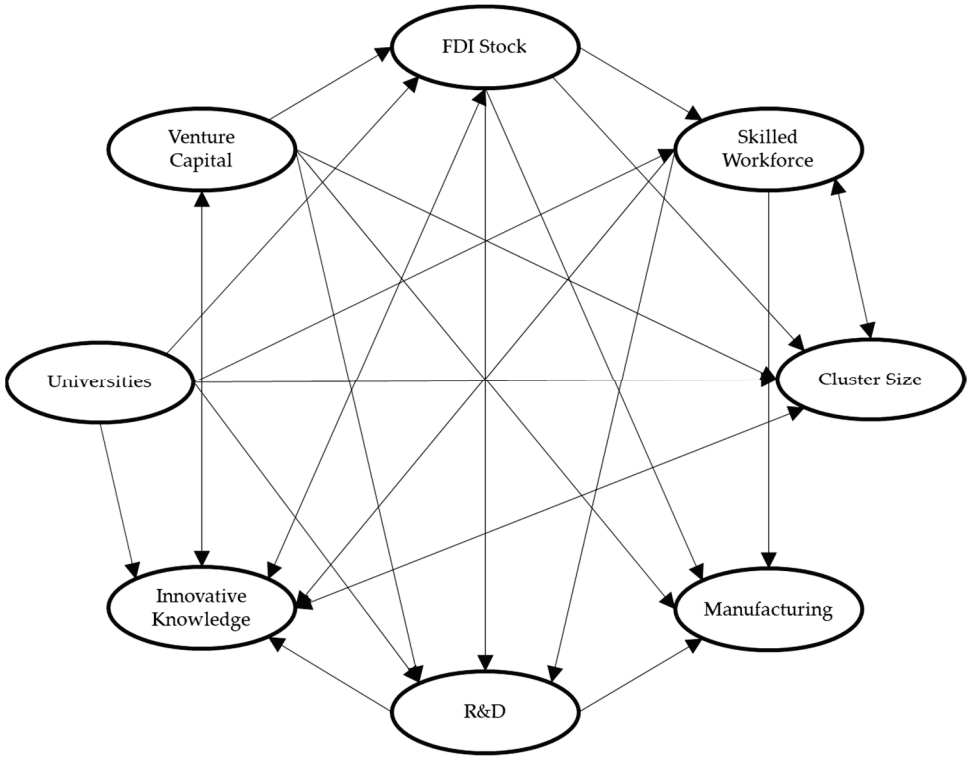

Figure 1. Inter-relationships between regional resources.

3.5.2. Innovative Knowledge

Access to state-of-the art innovative knowledge is paramount to the biopharmaceutical industry. The innovation process requires that the firm be able to recombine various types of knowledge with the intent to create new drugs that can treat important illnesses [80]. Innovation, however, is fraught with risk as less than one percent of drugs in the clinical development stage will be approved by the U.S. Food and Drug Administration for commercialization [81]. Patents have traditionally been used as a proxy for innovation output, e.g., [12], as they represent the codification of new knowledge. We measure *Innovative Knowledge* as the stock of granted biopharmaceutical utility patent within each U.S. state [78,79].

3.5.3. Cluster Size

Biotechnology firms frequently locate in regional clusters to take advantage of opportunities to collaborate with other innovative firms, e.g., [70]. The rapid growth of new ventures in a regional cluster is often a visible indication of its economic development. Research has shown that new ventures enhance the development of innovative products and services, which further stimulates the region's economic wellbeing (e.g., growth of high-quality jobs) [82] and promotes knowledge spillover effects [83]. Research on biotechnology regional clusters has shown that, over time, the size and structure of firms within a region shape and strengthen the cluster. Prior studies have found that clusters within this industry vary widely and that for the useful exchange of knowledge to occur, it must have a relatively large number of firms present [70,84]. In this context, we measure *Cluster Size* as the number of biopharmaceutical establishments (i.e., a single physical location where business operations are conducted) within each U.S. state [78,79].

3.5.4. Universities

Research has shown that universities have had a long-standing role in the scientific discovery process [74]. In knowledge-based economies, universities play an even more critical role in the economic development of their regional communities e.g., [85]. As purveyors of

the cutting-edge, they are a vital source of exploitable knowledge for firms [86] and, in turn, also significantly benefit from these university-industry partnership exchanges [87]. In this regard, a growing body of literature further describes biopharmaceutical innovation as systematic process involving key actors, including universities [88–90]. Prior studies have shown that multinationals are more likely to locate in regions with a higher proportion of top academic research institutions [74,91] in order to access higher quality talent and facilitate university-industry collaborations [72,73]. We measure *Universities* as a count of the number of top national 4-year colleges/universities in each U.S. state as defined by the U.S. News ranking of the best national universities.

3.5.5. FDI Stock

The inward stock of foreign direct investment (FDI) in a region can indicate its knowledge in new technologies, e.g., [92]. Research findings have shown that FDI-receiving regions tend to embody certain qualities and attributes, such as regional openness to international investment and scientific know-how, e.g., [92]. As regions grow through inflows from foreign direct investment, studies have shown that there is a positive spillover effect on domestic firms in the region [42]. Regions with a higher flow of FDI tend to become conduits of technological knowledge and other key intangible assets, which serve as a signal of their attractiveness. In this regard, prior studies have shown that foreign multinationals are more likely to locate in regions with greater stocks of FDI [91]. Since foreign multinationals may be prone to locate in regions that receive greater amounts of foreign direct investment, we include *FDI Stock* as measured by the number of jobs created per USD 10,000 of FDI at the state level [78,79].

3.5.6. Venture Capital

Venture capital has been a driving force behind regional economic development. Venture capital is the engine that fuels the growth of high-tech industries [93], such as semiconductors and biopharmaceuticals, as well as emerging technology sectors, such as artificial intelligence [94]. Venture capitalists are sources of working capital. Given the high costs associated with developing biopharmaceuticals, it is advantageous for firms to locate in regions where venture capital is abundant so that they may acquire financing for R&D and manufacturing activities. Thus, because proximity to venture capital may influence foreign multinational location decisions, we include *Venture Capital*, which we measure as the dollar amount of venture capital available per USD 10,000 GDP by state [78,79].

3.5.7. R&D

Biopharmaceutical R&D is the leader among U.S. R&D activities and investments and employs more workers than any other industry (e.g., aerospace, automotive, and semiconductor). In 2018, the industry alone invested over $102 billion into R&D in the U.S. [95]. These activities entail unknown outcomes and risks and require a significant amount of fixed capital (e.g., equipment to run tests, experiments, etc.). In the race to sustain a competitive advantage, establishing foreign R&D operations in the U.S. holds tremendous opportunities for knowledge-seeking firms. Hence, many firms have increasingly benefited from dispersing their R&D activities to such locations that can provide what their home countries lack, e.g., [29,33]. Prior studies have shown that foreign multinationals are more likely to locate in regions with a high R&D expenditure [91]. Since R&D expenditure has been shown to fuel investments in innovation, we include *R&D* as measured by a region's R&D expenditure per capita at the state level.

3.5.8. Manufacturing

Manufacturing, within the bio-pharmaceutical industry, has been identified as being as important as R&D and part of an "elite" group of manufacturing industries driven by cutting edge innovation e.g., [58]. The U.S. biopharmaceutical manufacturing industry is spread across nearly all U.S. states and is responsible for 38% of total employment in the

industry [58]. The manufacturing of a new biopharmaceutical drug provides a pathway between R&D and bringing a new drug to the market, which can cost anywhere between $30–$500 million [96]. The manufacturing of these drugs requires highly sophisticated knowledge in science and engineering in order to use and control high-tech equipment. It can take up to five years to construct a manufacturing facility [96]. Furthermore, operating one of these facilities is extremely costly (e.g., equipment, raw materials, etc.). While within the U.S., the manufacture of biopharmaceuticals tends to be distributed across regions, cost is an important consideration and firms look to regions where high costs can, at least partially, be alleviated. This gives rise to some regions of greater manufacturing intensity than others. We measure *Manufacturing* in terms of manufacturing intensity at the state level, which is the ratio of manufacturing value-added to manufacturing shipments.

4. Results

Tables 1 and 2 illustrate the results of our fsQCA analyses regarding the configurations of regional resources that attract DMNEs and EMNEs. The results are shown as three categories: a black filled circle, an open circle, or empty/blank. Following prior studies, e.g., [61], we denote the presence/high level of a resource condition with a black filled circle and the absence/low level of a resource condition with an open circle. Empty or blank cells represent resources which have "no impact" or, stated differently, the presence of a high or low resource condition is of no relevance to the DMNE's or EMNE's decision to locate in a particular region. The solution consistency (i.e., the percentage of similar causal configurations that result in the same outcome) was greater than 0.8 for all resource configurations, providing strong empirical support for their relevance.

Table 1. Regional Resource Configurations that Attract DMNEs.

Configuration	Skilled Workforce	Innovative Knowledge	Cluster Size	Universities	FDI Stock	Venture Capital	R&D	Manufacturing	Raw Coverage	Unique Coverage	Solution Consistency	Overall Solution Coverage	Overall Solution Consistency	Cases
Configuration 1	●	●	●		○	●	●	○	0.248	0.031	0.967			
Configuration 2		○	○		○		●	○	0.296	0.000	0.934			
Configuration 3			○	●	●	○	○		0.417	0.002	0.978			
Configuration 4		○	○		●		○		0.467	0.024	0.93			
Configuration 5		○			●		○	●	0.356	0.001	0.911			
Configuration 6			●		●	○		●	0.315	0.004	0.917			
Configuration 7				○	○		○		0.478	0.003	0.857			
Configuration 8				○	○			●	0.495	0.004	0.871	0.879	0.812	2604
Configuration 9				○	○	●			0.408	0.000	0.937			
Configuration 10		○			●	○			0.455	0.000	0.952			
Configuration 11			●	○	○				0.430	0.002	0.875			
Configuration 12			●	○				●	0.448	0.003	0.889			
Configuration 13		○		○					0.537	0.020	0.839			
Configuration 14	○				●	●	○		0.308	0.000	0.926			
Configuration 15	○		○	○					0.410	0.003	0.878			

● Presence/high level of a resource condition. ○ Absence/low level of a resource condition.

Table 2. Regional Resource Configurations that Attract EMNEs.

Configuration	Skilled Workforce	Innovative Knowledge	Cluster Size	Universities	FDI Stock	Venture Capital	R&D	Manufacturing	Raw Coverage	Unique Coverage	Solution Consistency	Overall Solution Coverage	Overall Solution Consistency	Cases
Configuration 1	●	●	●		○	●	●	○	0.254	0.022	0.975			
Configuration 2		○	○		○		●	○	0.373	0.013	0.932			
Configuration 3	○		○		●	○	○	○	0.280	0.001	0.937			
Configuration 4	○		●	○	●	●	○		0.259	0.000	0.954			
Configuration 5		○	●	●	●	○		●	0.296	0.000	0.946			
Configuration 6	○	●	●	●	○		○		0.183	0.008	1.000			
Configuration 7	○	○			●	○	○		0.340	0.000	0.947	0.820	0.893	683
Configuration 8		○	○		●		○	○	0.453	0.046	0.920			
Configuration 9	○	○			●	○		●	0.293	0.000	0.939			
Configuration 10	●	○	○	○				○	0.443	0.047	0.972			
Configuration 11	○	○		○				●	0.320	0.011	0.915			
Configuration 12	○	○	●	○				●	0.296	0.014	0.922			
Configuration 13	●			○	○			●	0.327	0.005	0.983			
Configuration 14	●		●	○	○				0.295	0.003	0.979			

● Presence/high level of a resource condition. ○ Absence/low level of a resource condition.

The fsQCA analyses identified 15 regional resource configurations for attracting DMNEs and 14 regional resource configurations for attracting EMNEs. As emphasized by the gray boxes, we identified an overlap among two configurations (i.e., DMNE configuration 1 → EMNE configuration 1; DMNE configuration 2 → EMNE configuration 2). The overlap in resource configurations 1 and 2 shows that, in some cases, the same resource configurations can attract DMNEs and EMNEs.

Referring to Tables 1 and 2, we begin by examining the eight resources. We find that a high level of FDI stock features prominently across six DMNE configurations (i.e., 3–6, 10, and 14) and six EMNE configurations (i.e., 3–5 and 7–9), suggesting that a region's FDI stocks are an important consideration for both DMNE and EMNE location decisions. A large cluster size also featured prominently across four DMNE configurations (i.e., 1, 6, 11, and 12) and six EMNE configurations (i.e., 1, 4–6, 12, and 14), suggesting that it is an even more important consideration for firms coming from less-developed nations, especially since it offers a larger pool of knowledge and human capital. A high level of manufacturing capability was associated with four DMNE configurations (i.e., 5, 6, 8, and 12) and five EMNE configurations (i.e., 5, 8, and 11–13), suggesting that regions with greater manufacturing intensity are attractive for both DMNEs and EMNEs. Compared to DMNEs, having access to a skilled workforce was a more important consideration for EMNEs as it was associated with four configurations (i.e., 1, 10, 13, and 14).

Turning now to the interplay between these different resources, we find that a greater number of EMNE configurations are the combination of higher resource levels, compared to DMNEs. In particular, there are twice as many EMNE configurations (i.e., 1, and 4–6) that include three or more resources at higher levels as DMNE configurations (i.e., 1 and 6). This lends support to the idea that, coming from less-developed nations, EMNEs seek out regions with a greater abundance of different resources that they lack.

Following standard practice, i.e., [20], Tables 1 and 2 also report several measures of solution consistency and coverage. Solution consistency refers to the degree to which cases that demonstrate a given configuration are consistently associated with the outcome of

interest (i.e., measured as the number of cases of a given configuration and the outcome divided by the number of cases with the same configuration but a different outcome) [20]. The overall solution consistency aggregates this measure across all of the identified configurations. Our results show consistency greater than the recommended threshold value of 0.8 [20]. However, since the configurations in Tables 1 and 2 only identify those configurations that meet the 0.8 consistency threshold, there may be other configurations that are associated with foreign multinational market entry strategies.

Tables 1 and 2 also report three measures of coverage: raw coverage, overall solution coverage, and unique coverage. Raw coverage represents the number of cases associated with the outcome of interest and a given configuration divided by the number of cases associated with only the outcome of interest [20]. Overall solution coverage aggregates this measure across all of the identified configurations [20]. The overall solution coverage for DMNE configurations identified in Table 1 was 0.879, which suggests that, at a minimum, these configurations account for 87.9% of the instances of the outcome (i.e., DMNEs locating in U.S. regions). Similarly, the overall solution coverage for EMNE configurations identified in Table 2 was 0.82, which suggests that, at a minimum, these configurations account for 82% of the instances of the outcome (i.e., EMNEs locating in U.S. regions). Therefore, the eight resources that we selected provide a good representation of those that are crucial to attracting foreign multinationals to the U.S. Unique coverage indicates the proportion of cases associated with the outcome of interest that are uniquely covered by a single configuration [20].

5. Discussion

In this study, we answer calls for the application of the neo-configurational perspective to study international business phenomenon e.g., [16]. We applied a novel fsQCA methodological approach to examine foreign multinational location decisions within the United States. The results of the fsQCA analysis demonstrate that resources can be configured in many different ways to attract DMNEs and EMNEs. More regularly than not, there are multiple resource configurations that are associated with attracting foreign multinationals. This is supported by the number of different resource configurations that we identified for DMNEs (15 configurations) and EMNEs (14 configurations).

Some resources stood out as being more common factors in foreign multinational market entry decisions. In particular, FDI stocks featured prominently in DMNE and EMNE location decisions. Locating in regions that are more open to foreign investment reduces the liability of foreignness [97] and facilitates knowledge spillovers. Cluster size was not only an important consideration for DMNEs, but even more so for EMNEs. Coming from less-developed nations, EMNEs appear to seek out larger clusters to benefit from agglomeration, which is consistent with the extant cluster literature e.g., [35,36]. A region's manufacturing intensity was another common factor that DMNEs and EMNEs considered, but EMNEs were also more interested in proximity to a skilled workforce.

There was great variety among the configurations for DMNEs and EMNEs. Only two of the configurations overlapped. However, this overlap does not suggest that these configurations attract DMNEs and EMNEs to the same regions. On the contrary, we find that Configuration 1, for example, attracts DMNEs to California, Massachusetts, and New Jersey while this same configuration will attract EMNEs to these same locations as well as Illinois, New York, Pennsylvania, and North Carolina. In general, we found that there were more EMNE configurations that included the combination of resources at higher levels, compared to DMNEs. This suggests that, given their initial resource endowments, EMNEs may seek out regions with a greater abundance of different resources to make up for those that they lack. Since DMNEs originate in more developed economies and have access to greater resource endowments than EMNEs, they may have more freedom to choose where they locate than EMNEs. By using a configurational approach, our insights provide a better understanding of how regional resources can be configured to attract foreign multinationals than traditional empirical approaches alone could provide.

The results of our study find support in the broader research on foreign multinational location choices that find that resource seeking is a primary motivation behind DMNE and EMNE location decisions [53]. Further, in the context of the biopharmaceutical industry, recent studies find that DMNEs and EMNEs exhibit different location patterns when entering the U.S. market (i.e., developed, growth, transitioning, and nascent regions), which are associated with the search for resources [98–100]. In general, DMNEs tend to have more options when locating outside of well-developed regions [98–100]. However, EMNEs are found to be more likely to locate in resource-rich regions [98–100], which also aligns well with our findings.

Our study makes several contributions to the extant international business and regional economic development literature. First, we answer calls for the application of the neo-configurational perspective to international business research e.g., [16]. We apply the fsQCA methodology to study foreign multinational location decisions. In doing so, this study elucidates how resource conditions collectively influence foreign multinational market entry decisions within all 51 regions in the U.S. Second, we add to the growing body of international business literature that recognizes DMNE and EMNE location decisions as being idiosyncratic and thus as needing to be examined separately. As our results imply, there are significant differences between how regional resources can be configured to attract DMNEs and EMNEs.

5.1. Practical Implications

This study's insights have important implications for policy makers. From a policy perspective, most countries have a strategy geared towards enhancing their regional economies. However, these policies are often focused on attracting local businesses and less on attracting foreign multinationals. Therefore, knowing what levers can be manipulated to attract foreign multinationals to a region is important to foster continued growth. Indeed, for policy makers, this study's findings suggest that local resources can be configured in different ways to attract DMNEs and EMNEs. These findings provide insight into how policy makers may improve configurations of resources to attract foreign multinationals. Our study provides some practical recommendations to that end. For instance, by drawing upon our fsQCA results, we find that Illinois, Iowa, Maine, Minnesota, Missouri, Oregon, Tennessee, and Utah can attract DMNEs to their locations by combining a high level of venture capital with a low level of FDI stock and universities (Configuration 9). This level of specificity is unfounded in prior studies of foreign multinational location decisions because it provides actionable recommendations for policy makers and allows them to make more efficient allocations of their scarce resources. Our fsQCA analysis also lends support to the notion that no single set of policies will be applicable to all regions. Instead, policies need to be targeted to the unique needs of each region. In this way, by adopting configurational approaches to international business location research, policy makers can develop realistic plans to attract foreign high-tech firms, thereby enhancing their region's economic prosperity.

While some regions can go it alone to try and attract foreign multinationals, we advocate for a more concerted approach that includes integration and alignment with federal programs. In this regard, we highlight one federal program that is helping to break down traditional barriers that hinder cooperation and is helping to improve regional development across multiple regions. Federal programs such as the National Institutes of Health (NIH) can play a large role in not only helping to build regional economies, but also improvingf healthcare. The Center for Advancing Point of Care Technologies (CAPCaT) is one example of a NIH-funded program that supports firms developing late-stage technologies from all around the U.S. and abroad. The Center leverages its combined expertise in business, engineering, and clinical knowledge from UMass Medical School and UMass Lowell. As a regional accelerator program, CAPCaT conducts a thorough evaluation and funds the most promising technologies, which results in companies receiving access to key resources, such as R&D funding, manufacturing capabilities, venture capital, industry-university

collaborations, and highly skilled experts. Finalists have raised nearly 2.5 times more money than what was originally awarded, received FDA approval, and commercialized products on the market today.

The impact of this program has been felt nationwide and is increasingly stimulating the development of less-developed regions. For instance, a recent cohort of finalists included companies located in Angola and Nigeria (emerging market countries) that also had established operations in Missouri, a less-developed region, and California, a more well-developed region. Other finalists located in developed countries, such as Spain, have operations in Texas, a growing region. Unlike traditional regional development programs that require companies to locate in a particular region (e.g., Startup New York), business accelerators such as CAPCaT offer a more flexible and sustainable model to increase regional development and innovation through foreign direct investment.

5.2. Limitations

Our fsQCA analysis highlights the importance of studying foreign market entry strategies by industry. While our results provide interesting insights into how different regional resources can be combined to influence foreign multinational location decisions, the specific empirical setting (i.e., the biopharmaceutical industry) warrants caution for over-generalizing our findings to low-tech industries, in particular. Thus, we suggest that future studies should explore how regional resource configurations may influence the location decisions of foreign multinationals in different high-tech industries, such as aerospace or nanotechnology, and low-tech industries, such as food and beverage. By doing so, research of this kind can help move policy makers beyond generalizing the Silicon Valley model to all industries and contexts. Future studies could also examine each region in greater depth by delving into the metropolitan statistical level (MSA), which may be of special interest for policy makers who want to make the least developed regions within a state more attractive to domestic and foreign investment.

6. Conclusions

Many international business studies that examine why foreign multinationals are attracted to one region over another tend to provide an overly simplistic view of a rather complex strategic market entry decision. This can be attributed to the frequent use of traditional empirical analytic techniques that assume linear or curvilinear relationships. We go beyond many existing studies by exploring foreign multinational location decisions in the U.S. from the neo-configurational perspective, which is grounded in the use of fuzzy-set qualitative comparative analysis. In doing so, we find support for the idea that foreign multinational location decisions are an exercise in finding the right fit between the resources that a region offers and those that the firm lacks. When the right configurations of resources are identified, firms derive synergistic benefits from locating in a particular region. Our study demonstrates that DMNEs and EMNEs are attracted to different regions based on the configuration of their resources. For example, FDI stocks and manufacturing intensity were common factors that featured prominently in both DMNE and EMNE location decisions, while proximity to a skilled workforce was a major consideration for EMNEs. We hope that this study sparks a new conversation about regional development and how regions can increase their attractiveness to foreign multinationals. We also encourage the adoption of non-traditional methodological approaches to study international business topics of great relevance, such as other market entry strategies.

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The Involvement of Sustainable Talent Management Practices on Employee's Job Satisfaction: Mediating Effect of Organizational Culture

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Abstract: As institutions operate in a competitive market, there are always unexpected changes and difficulties that complicate academic and administrative positions and achieve key organizational goals and objectives. This paper aimed to assess the link of sustainable talent management practices on employee job satisfaction in the higher education sector located in North Lebanon and to reinforce this relationship by taking into account the mediating effect of the organizational culture. A structured questionnaire has been distributed to study a research sample of 200 randomly selected workers from ten public and private Lebanese institutions. Structural equation modeling was used to assess the presented hypotheses. The findings indicated a strong and significant positive relationship between the sustainable talent management practices and employee's job satisfaction, whereas organizational culture had a mediation effect on the relationships between independent variables, with a statistically significant positive impact, and a statistically significant negative indirect effect relationship between knowledge sharing and employee's job satisfaction. The study engages a fit model to clarify the relationship between sustainable talent management practices and employee's job satisfaction. Hence, the study encourages organizations to take advantage of sustainable talent management practices within their institutions to further develop their competitive achievement along with the satisfaction of their employees.

Keywords: sustainable talent management; talent management practices; organizational culture; higher education sector; job satisfaction

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1. Introduction

Currently, Lebanon's education system is undergoing a huge and severe financial crisis, and various colleges have implemented austerity measures such as budget shrinking, reducing the number of personnel, salary freezes, and equipment limits. In such cases, the teachers and employees feel intimidated since they may lose their jobs, pay, or job satisfaction. It is consequently crucial to reassess how the financial crisis and organizational reaction will be inverted on the quality of higher education. The overall responsibility for all levels of education within Lebanon is directed and supervised by the Ministry of education and higher education. The Directorate General of higher education manages the licensing and distribution of recent educational activity institutions, the validation of the programs offered, as well as the recognition of degrees. All other responsibilities are within the hands of every institution's body. It has been represented by more than 60% of all students enrolled in higher education [1]. There are two sorts of institutions: the only public institution in the nation, Lebanese University, and the private institutions. In recent years, Lebanon has had the highest rate of university graduates in the Middle East. In 2018, the rate of tertiary graduates was predicted to be over 80% of the population. However, this high rate was on the edge of being drastically reduced. This is owing to the country suffering unparalleled financial and economic catastrophe, which began in 2019 [2].

As a result, universities, like other organizations, must rethink how they operate and build sustainable talent management practices in light of changing environmental dynamics and the rapid changes brought about by globalization, the knowledge-based economy, and the technological revolution, to cope with the rapid development of the twenty-first century [3–5]. Globally, numerous higher education organizations and institutions have shifted from student selection to highly competitive job recruiting. Pacuraru and Harrison-Walker [6] proposed that universities must manage the concurrent difficulties of expanding the undergraduate body, managing the required number of offices, staff, courses, and lectures, improving the quality of instructing, offices, and educational programs, acquiring practical subsidizing, improving understudy work market appeal, expanding administrative and staff limits, and ensuring innovation in both instructing and dealing. All of these are the problems that human resource managers at Lebanese universities confront to meet the growing need for a technologically driven environment replete with teaching-qualified frames. A successful talent management strategy necessitates the development of collaborative and open communication between "human resources" (HR) and other divisions and hierarchies [7]. This will allow for the formation of a suitable atmosphere, which is required for the development of the necessary framework for a sustainable talent management approach.

Sustainable talent management is an opportunity for the sector to provide a new vision focused on quality, equity, and long-term evolution to assist with the ongoing crises. Talent management methods assist higher education institutions in achieving higher rankings and profitability, as well as improved performance and productivity. Many explanations for talent management have been conducted; one of these definitions is that talent is a person's human capital, which includes skills, abilities, knowledge, and potential for future development [7]. In addition, talent management is not just a simple HR term you will come across; it is also a commitment to hire, manage, develop and retain the most talented and outstanding people in the company to meet the growing sustainability requirements of companies and to maintain a competitive advantage over the competition. Thus, companies are asked to carefully analyze their talent pool. Initially, talent management was characterized as an organization's foundational endeavor to expand leadership development and support individuals' skills [8]. It is the job of enterprises to gather the potential of their employees in such a way that they can lead them in improving their abilities and keep them satisfied to retain them.

In addition, a talent management system is the method of developing, rewarding, and training processes for talented employees [9]. Although there was a considerable body of scholarly research, a small number of studies have evaluated the connection between sustainable talent management practices and the employee's job satisfaction in Lebanese higher education.

Therefore, it is required for the framework to attract ability, as well as to oversee and hold the representatives to work more sincerely for the association and remain for an extended period, as long as the authoritative culture in each private organization has its qualities and vision with which to work. This process is intended to bind employees and promote their further development of skills and competencies to achieve the organization's immediate performance goals and long-term strategic goals [10]. The practices of sustainable talent management chosen for the study concerned: talent attraction, knowledge sharing, employee training, and career development. A successful organization in the market was required to include talent management strategies within organizational policies.

In other words, talent management refers to many activities performed by employees in the organization such as recruiting, retaining, motivating, training, and developing talented individuals for the institution to remain competitive in the market [11]. Having the voice and the opportunities to grow, talent management is the main foundation upon which to build an effective relationship between people along with their roles, as well as, developing a good place to work in, and to be treated fairly.

Lebanese universities were viewed as motors of progress in their general public, and they had a few intellectual and hierarchical highlights that empowered them to make various groundbreaking circumstances, where innovative thoughts were converted into values for work and creation. However, because of an absence of strategic planning, Lebanese institutions are still effectively chipping away at accepting scholarly capital and investing in human resources.

Even though reviews on talent management have been upheld in the literature, they have been done in both created and non-industrial countries; however, studies on a couple of establishments, especially those related to advanced education, have been completed in Lebanon.

Furthermore, no empirical studies that join the sustainable talent management practices (talent attraction, knowledge sharing, employee training, career developments) and explore their effect on employee's job satisfaction in an educational setting, for example, in Lebanese advanced education associations, have been conducted. To fill this gap in the current literature, this review is unique, expecting to provide proof on how the association of sustainable talent management practices will impact employee's job satisfaction in Lebanese colleges through an appraisal of the mediation effect of organizational culture.

This review came to reveal insight into a vital theme for the advanced education area in Lebanon, which is the subject of interest in human resources and sustainable talent management since they are quite possibly the main resource expected to develop performance and innovativeness, and to gain sustainable competitive advantages.

This study aims to help the education sector in Lebanon in retaining talented employees, and to assess the connection between sustainable talent management practices and employee's job satisfaction, regardless of whether sustainable talent management will impact the employee's job satisfaction in the institution, and regardless of whether the establishment of the organizational culture will mediate the relationship.

Hence, the connection between sustainable talent management practices and the job satisfaction of the employees, together with the influence of the organizational culture as a mediating variable in this connection, will be investigated. The theoretical background of the study and hypotheses developments will come in the second part of this article. The third section covers the methodology, data collection, and analytical method. The fourth section contains the data analysis and the results. The results of the work will enable Lebanese universities to develop efficient and sustainable talent management to achieve corporate goals. Finally, the last part contains the discussion and future recommendations.

2. Theoretical Background and Hypothesis Development

2.1. The Significance of Talent Management

Talent management has grown in importance through the years; it can be defined in several ways. Several points of view will be mentioned, so that, in the end, one definition on which the study is based can be generated. The influence of talent management and its objectives is a way of selecting the right definition that has been introduced in research and that gets the attention of academics. There are currently many practices in talent management, some of which are featured in the study, and it is an organized process to engage, select, develop, lead, and maintain the top-level talent required to advance talent within the organization, and to increase the productivity of the workforce [12].

Lately, the human resource management department was critical, as it was the primary component behind the organizational profits, productivity, and employee outcome effectiveness. For this reason, organizations rely on their workers to achieve their goals in the market [13]. A few problems that cannot be ignored can occur in any organization, such as loss of motivation, and decreased engagement due to the low-level of productivity. A solution for this problem is the implementation of a talent management strategy to improve the job description, the payment system, and the compensation model of the employees [14].

There are a great number of definitions for talent management. The word "talent" is an individual's skills, knowledge and experience, viewed in terms of his value in an organization [15]. The importance of talent management gives the organization a competitive advantage in two levels, the operational and the strategic.

As institutions are built to remain competitive and stay in the industry, they need to have a solid department to help them attract, retain, motivate training and develop talented people, i.e., talent managers. The global recession and the local economic crisis that Lebanon has been facing recently have affected Lebanese higher education, which has been graded at a low-level of performance. Not all Lebanese universities have implemented the talent management strategy, which is one reason to conduct this kind of study and explore the link between the components of talent management and employee job satisfaction and whether it will be affected positively or negatively [16].

Talent management can be defined as a tool to benefit the employee by developing their skills and abilities in order to meet particular needs, as well as by managing the development of the future. To retain the workers in the organization, it would be beneficial to help the employees to develop their skills and capabilities. A lot of reasons can help the company to exploit talent management. One of these reasons is motivation. For that reason, strategic talent management support organizations to keep employees satisfied.

Many studies have been conducted to study the effects of talent management and effective work outcomes; a new model will be set to study the impact of each component of talent management practices and its relationship on effective work satisfaction.

Every organization is considered healthy when the performance of its human capital provides effective service. Here comes the role of motivation and job satisfaction. That is why organizations are competing in the global labor market for talents that are called talent pools. The proposed framework includes four key practices: talent attraction, knowledge sharing, employee training, and career management. The proposed framework includes four practices of talent management: talent attraction, knowledge sharing, employee training, and career development.

The most important theory was the one that provided a theoretical boost to the examination of the connection between talent management and employee's job satisfaction, ability, motivation, and opportunity theory. The theory has been presented by three different functions. The first is performance, which is the ability of the employee, the second is motivation and the third is the opportunity to engage. According to the theory, in order for employees to properly succeed in the job, they have to own essential knowledge and capabilities; they must have the stimulation to work in a very effective way. In addition, they need to have the opportunity and the courage to become involved in the place in which they work [17]. Therefore, the implementation of talent management could have a favorable effect on the talented employee's behavior and position. From the point of view of this theory, any firm that has been conducting talent management benefits the talented employees through, e.g., motivation and productivity.

2.2. Talent Management and Sustainable Talent Management

The term "talent management" (TM) first appeared in the field of human resource practitioners around two decades ago, with the primary motivation dubbed "The War for Talent". The emphasis of talent management was a global–local effort to ensure that operational responsibilities and strategic choices of human resources operations were focused on achieving competitive advantage via employees. Many authors have defined talent management as "a set of sustainable organizational strategies that used human resources to the organization's competitive advantage", as well as "a portfolio of integrated HR operations that result in the placement of the appropriate people with the right skills in the right position, at the right place, and at the right cost [18]." TM is a blend of tactical and strategic components that draws on techniques and concepts created outside of HR. This includes marketing that focuses on "employer branding," "employee segmentation," and

"employee value proposition," for example, management science that focuses on advantage position and yield curves.

Operations management focuses on matching talent supply and demand to reduce uncertainty [19]; global management employs a globally integrated strategy. With a focus on the acquisition and performance of talent, as opposed to transactional operations, talent management has emerged as the cornerstone of strategic human resource practice.

As a consequence of the constant shifting of the business environment, the factor of sustainability in connection to people management has become a focal point. It is customary to associate sustainability with the environment. Whereas, from a business standpoint, sustainability is defined as an organization's capacity to assure long-term attainment of its business goals and improve shareholder value by incorporating economic, environmental, and social possibilities into its business strategy [20]. Sustainability in a talent management context refers to "organizations nurturing their future leaders, managers, and employees." The idea of sustainable talent management is already receiving attention in some companies that expect more than a paycheck and the desire to have a positive impact on society. This is an integral part, which is why it is not surprising that the commercial strategies of some successful companies around the world are geared towards sustainability, which, of course, is carried over to talent management [21]

The topic of sustainability in personnel management has not yet been conclusively investigated, especially concerning talent management. In the current generation, there is an awareness of their responsibility about the ecological and social aspects; thus, not only income and career opportunities, but also whether the company has the culture of a good corporate citizen who understands sustainability as part of its corporate culture, plays a decisive role in the selection of an employer.

2.3. Job Satisfaction

The relationship between job satisfaction and employee attraction and retention, insofar as it is relevant to organizational performance and success, has been studied by a number of researchers. The organizational and employee outcome has been guided by the study. The most important field to study was job satisfaction, about which a number of studies have been conducted, particularly in organizational research that considers employee behavior, such as performance, and outcome; satisfaction has been understood as "a pleasurable or positive emotional state resulting from one's job or job experience" [22]. The study about the relationship between talent management and job satisfaction is concerned with talented employees who have been hired and who work in high positions irrespective of the evolutions with the diversity of talent management practices.

In recent times, the link between talent management and job satisfaction has indicated a beneficial relationship. Many researchers from different domains, but especially those from management, business, and psychology, have been studying job satisfaction. It has been indicated as a positive sentimental condition produced by an employee's evaluation of their work [23]. Job satisfaction relies on many features, including career and job condition, i.e., the possibility for career development, rewards systems, the employee's connection with the administration, job security, and, finally, the environment for worker engagement. A delightful and positive sentimental situation of well-being at work was specified by different practices of human resource management, which is one of the components of organizational culture.

2.4. Organizational Culture as a Mediator

Authors have defined organizational culture as a collection of values used by the company management to manage and organize their work in order to achieve their goals. Organizational culture clarifies a group of predictable behavioral patterns that have appeared within the company. Norms and values have a major influence on the attitude of the employees. Organizational culture defines the path that every company takes into consideration in order to control its work, which, as an outcome, impacts its procedures. The reason that change is difficult in any organization is due to a certain culture, with

a deep-rooted nature, namely the resistance against letting something be changed, especially when it was working well before [24]. Many researchers have defined culture as the organization's "personality"; other researchers have suggested that organizational culture is the spirit, procedure, and foundation of the institution. Some researchers have defined organizational culture as a combination of trust and indirect assumptions with widespread acceptance, which are applied as references by all the people in the company. An organization will be distinguished from another organization through the personality of every member working in the company. This is what defines its organizational culture, based on the confidence and the values spread in the organization, and it is the guideline for all members. Many authors have stated that organizational culture is a collaborative system made by the members to be unique in the market and differentiated from other companies [25].

Job satisfaction, and its relationship with organizational culture, behavior, and professional phenomena, is one of the most important variables that has been studied. It is the major part of an employee's feeling about his/her work. The most considerably examined variables in organizational culture, aside from behavior and other professional events, is job satisfaction. Many different components have influenced job satisfaction internally and externally, for example, the person's values, rules, identity and anticipation and the job's quality, as well as the chances it provides. Many researchers have studied the relationship between employee's job satisfaction and organizational culture [26].

2.5. Hypothesis Development

2.5.1. Sustainable Talent Management Practices and Job Satisfaction

Talent Attraction and Job Satisfaction

The implementation of talent management techniques begins with recruiting and selection in the organization. Moreover, among all the ways to attract talented people, recruitment and selection is critical. To enroll a grouping of talent and select the possible people that will lead the company to success is the most difficult mission for any firm [27]. The type of talent attraction in recruitment is the essential stage of determining which employee will be the right person to assist the organization in the best and most effective way. As for selection, this is the explanation of which skills a worker requires in order to succeed in the job given to them and how best to employ the right person for the right task. Thus, recruitment and selection are needed by the firm to compete, and this is the primary mission of talent management strategies. The sustainability and creativity in the organization is best conveyed by recruiting talented employees who are right for the job [28]. Thus, the selection in the company will be completed depending on the candidate who is eligible to do the work required by the organization.

It is necessary for the type of firms that introduce talent acquisition strategies to specifically hire talent and construct competitive talent acquisition in order to conduct organizational productivity. Thus, the first hypothesis in the present study is:

Hypothesis 1 (H1). *Talent attraction has a positive and significant influence on employee's job satisfaction.*

Knowledge Sharing and Job Satisfaction

In every organization, there is a significant tactical resource called knowledge. The expression of knowledge indicates the truth, details, and proficiency acquired from experience or learning. Many definitions have been mentioned about knowledge sharing, which is the phenomena of engaging the other with information, experience, skills, and the way one believes through their interaction [29]. The cooperation between the employee and the firm is knowledge sharing. It allows an organization to retain its employees, informed and involved in the company. Two types of knowledge sharing are recognized: first, the knowledge contribution points to the person's readiness to provide information and their knowledge to others. Second, a knowledge group indicates capabilities to recognize

information from different people [30]. Knowledge sharing can be gained through social interaction. In a competitive industry, employers need to participate in knowledge sharing with other employees in order to gain experience and learn to promote their intention to stay with the organization.

Hypothesis 2 (H2). *Knowledge sharing has positively affected employees' job satisfaction with a significant relationship.*

Employee Training and Job Satisfaction

Many scholars have investigated training, which is critical in any business. One of the benefits of training is to empower employees and motivate them to provide high-quality services, as well as to become more proficient in the job given to them. Thus, it was concluded that employee training influences motivation, work engagement, and employee satisfaction [31]. The basic part of talent management has been employee training. For many years, it has been crucial to ensure that any firm has workers with proper capabilities, competitiveness, and motivation. For the organization to be effective, it must invest in employee training and development to produce talented workers and, subsequently, different creative ideas. The training in the company should include different kinds of training and development programs to develop new skills, knowledge, and advanced abilities for the organizational culture. Therefore, the researcher has proposed the third hypothesis:

Hypothesis 3 (H3). *Training and Development have positively influenced employees' job satisfaction and significant connection.*

Career Development and Job Satisfaction

Talent management and career development work at the same time, with some research showing that some solutions relate to talent management in the organization, and others relate to the career of the person in the first position [32]. The arrangement between the employees and the organization is called job career; it is also explained as a result of the request for employment and the chances that career management can provide. Various researchers have defined career development as the activity of the employee to support his or her future career planning in a particular organization so that both can develop optimally. The career development is the methods used by a company to boost the employee's abilities to stay in the anticipated career. A first-time applicant will have different knowledge in comparison to a person who has more experience and who has had the job for a long time [33]. For example, a veteran employee will already have respect from others and understand the competitiveness within the organization in addition to the experience previously gained. The fourth hypothesis is:

Hypothesis 4 (H4). *Career development has a positive and significant effect on employees' job satisfaction.*

Organizational Culture and Job Satisfaction

The implementation of job satisfaction and organizational objectives can be facilitated through organizational culture. The measurement of culture could be a starting point for the help of diagnosing and influencing the change in the organization. In every organization, the general culture appears to be the supposed culture of strength, which is the central origin of impact and power, either for one individual or for a group of people. Job satisfaction can be affected in different ways in terms of the working situation, for example, fellows, organization, and encouragement. The concluding goal of management is the organizational culture of strength, alongside the recognition of the purposes of the employees and those of the organization. For a long time, a parcel or analyst has examined the relationship between organizational culture and work fulfillment. For example, the

productive cooperative environment gives structure to a particular organizational culture, along with the involvement of employees' job satisfaction. Many authors have mentioned in their study that the culture is the beliefs and much more than those of the organization, another researcher has defined the organizational culture as the set of beliefs and values that the employee supports alongside the institution [34]. Beliefs and values manage the attitude of every person and team within the organization. With this method, workers interrelate, connect, and affiliate with the internal and external environmental variables. Here comes the role of talented professionals who feel they are valued and that their contribution provides a competitive advantage for the organization [35]. A good organizational culture needs to have a retention strategy, which is a subject for researchers to focus on [36]. An organization that has a well-defined and specific culture, along with combined objectives, can work more efficiently because employees will have the same ideas about how to be successful. Hypothesis five outlines the mediating impact of organizational qualities on the connection of talent management practices and the employee's job satisfaction as follows:

Hypothesis 5a (H5a). *Organizational culture has a partially significant mediating impact on the relationship between talent attraction and job satisfaction.*

Hypothesis 5b (H5b). *Organizational culture has a fully significant mediating impact on the relationship between knowledge sharing and job satisfaction.*

Hypothesis 5c (H5c). *Organizational culture has a partially significant mediating impact on the relationship between employee training and job satisfaction.*

Hypothesis 5d (H5d). *Organizational culture has a partially and significant mediating impact on the relationship between career development and job satisfaction.*

3. Methodology

This section describes the research methods used to carry out the study, allowing the researcher to achieve the paper's objective of assessing how sustainable talent management practices affect employee job satisfaction in Lebanese universities by estimating the mediation role of organizational culture. It also covers the study's measurements and variables, as well as the processes for collecting and interpreting data.

To achieve the paper's aims and answer its issues, the authors elected to take a quantitative method. The quantitative technique can reveal trends in the study, which can then be used to construct facts based on quantifiable evidence; hence, primary data was gathered through the use of a questionnaire. This technique is useful and widely used in managerial studies because it allows researchers to gain quantitative knowledge into the policies and practices that institutions apply and embrace, without having to alter changes on these policies and practices [37].

The recommended research model was developed based on the hypotheses and research questions. Using a quantitative method, questionnaires derived from prior research with high validity and reliability ratings were used in a pilot project to gather data and perform statistical analysis. Taking into consideration research methodologies, the hypothesis will be presented through the conceptual model proposed to be studied in.

Figure 1, which displays the relationships between various variables. The model proposes the inclusion of sustainable talent management strategies used by universities to improve employee job satisfaction through the mediation impact of organizational culture. It was assumed that whether institutions conduct sustainable talent management predicts how the institution might increase employee satisfaction, by hypothesizing that organizational culture will partially mediate this connection.

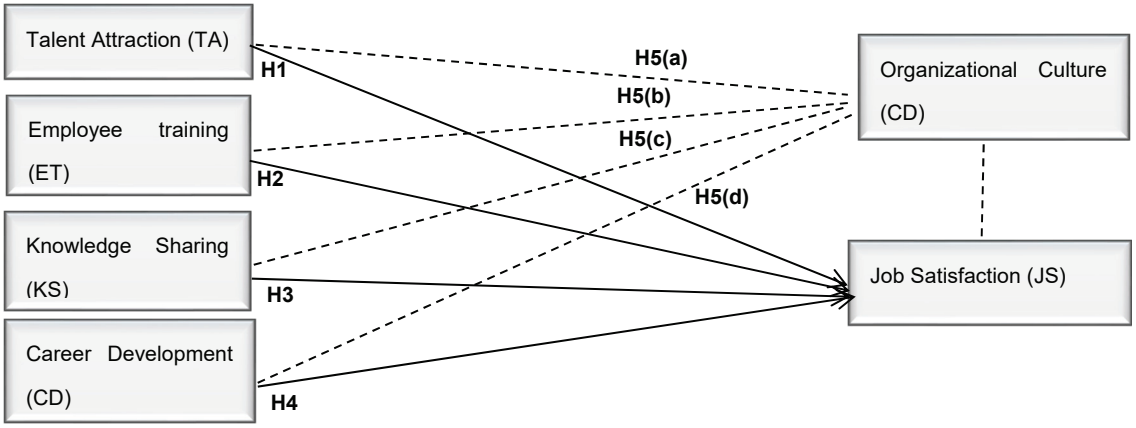

Figure 1. The model proposed to study.

According to the analytical report [38], Lebanon's higher education industry employs 19,186 academic personnel. Lebanese University employed 32.1 percent of these academic employees (6153 instructors) (LU) across Lebanon's higher education sector. The study's target demographic consisted of academic and administrative staff from ten private and one public institution, taking into consideration the margin error of 5%, 95% confidence levels. A sample size of 200 participants was drawn from university branches in the north. It is worth noting that there is no national guideline for the number of staff at any private university.

Hence, the research first examined employee's job satisfaction in terms of sustainable talent management practices in the Lebanese higher education sector. Organizational culture was then tested in the second part of the study as a mediator variable on the relationship between each practice of talent management and employee's job satisfaction.

3.1. Measures

The literature reviewed on the measurements of talent management practices was vast; however, the majority of research was in a different sector, such as the banking sector, and research conducted in the higher education sector was rare.

Hence, based on these studies, the questionnaire was designed involving three factors to be studied: sustainable talent management practices (STMP); employee's job satisfaction (JS); organizational culture (OC). Demographic questions were gathered to determine the respondent profile. In general, STMPs, along with the other variables in this study, were evaluated on a standard five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree): talent attraction (TA was measured by 8 items); knowledge sharing (KS was measured by utilizing 7 items); employee training (ET was measured by employing 6 items); career development (CD was measured utilizing 6 items); organizational culture (OC was measured by 10 items); employee's job satisfaction (JS was measured by 7 items). Therefore, the online questionnaire was used in the research as the main quantitative tool in collecting data. The constructed questionnaire, based on The Minnesota Satisfaction Questionnaire [39], included 44 items.

Random sampling based on a practical random sampling technique was used. This method is the most widely used by researchers because it is incredibly fast, easy and affordable. This type of sampling is characterized by the flexibility to get the specified and appropriate information quickly, and at an occasional price, which is why the researchers followed it, particularly due to the crisis of closures that the country was experiencing at the time of the study as a result of the coronavirus (COVID-19) pandemic.

The questionnaire includes a cover page. The respondents were informed about the purpose of the study. The survey was sent through emails to get permission to distribute the questionnaire by ensuring that no internal information was required concerning the university, or even the employees. Hence, the data was collected from September to

December 2020. A Google form link was sent to the Dean to different faculties in each university to obtain permission for distributing the questionnaire.

Although the researcher was sampling a large number of individuals among ten universities in North Lebanon, by the end of the period only 200 surveys were received, which was adequate for analysis.

3.2. Data Analysis

Pilot Study

This study recruited professionals and academics who work in the higher education sector in North Lebanon. The participants supervised in the quantitative study were executives at management level (specialist functions) or academic employees at a higher level. Although there were some difficulties in getting a sufficient number of answers in a large sample, large-scale surveys provide a good estimate of the target population [40]. Talented people working in the higher education industry in North Lebanon were recruited. Participant were scientific and professional staff with a bachelor's, master's or doctorate degree, who ranged in level of experience (scientific and professional staff under five to over 16 years) and technical qualifications (academic and professional staff). The researcher randomly selected participants from academic and professional staff who met the criteria for participation in the ten universities.

A pilot study was carried out with 25 talented people. The collected data were analyzed with the Cronbach α test to examine whether the correlation of the components will be acceptable, with at least 0.70 as a value [34]. The values of the Cronbach α coefficient were TA: 0.886, KS: 0.929, ET: 0.818, CD: 0.902, JS: 0.918, and OC: 0.904, all higher than 0.70, which shows the reliability of the global measurement and confirms the investigation. The corresponding results of the questionnaire survey could be evaluated in a larger sample at the universities of North Lebanon. Concerning the analysis of quantitative data, SPSS 23 used descriptive statistics to ensure or show if there were significant differences between populations, in addition to calculating the degree of consistency of the correlation of the data through the participation of the mean and the standard deviation [41].

From the descriptive analysis of the sample, which was well distributed, 200 samples, the participants in which were mostly between 36 and 45 years old (50.5%), with 127 females (63.5%) and 73 males (36.5%). Therefore, the number of females was higher. The number of respondents with a doctorate was highest at 113 (56.5%), followed by those with a master's degree, 71 (35.5%), and those with a bachelor's degree, 16 (8.0%). In terms of years of experience, the number of participants with more than 16 years at work was highest 74 (37.0%), while participants with 5 to 10 years of experience totalled 61 (30.5%), while the participants who had 11 to 15 years of experience totalled 51 (25.5%). Administration totalled 63 (31.5%), and the participants having both occupations totalled 20 (10.0%). Finally, the highest number of employees, which was 131 (65.5%), have been working full-time, while 69 (34.5%) were working part-time.

4. Results

In this paper, structural equation modeling (SEM) was utilized to analyze the data and test the suggested hypothesis in order to demonstrate the mediating role of organizational culture as it relates to sustainable talent management practices and employee job satisfaction. This procedure was carried out using AMOS 22. SEM is recognized as a model-fit method in which mediating factors or moderating variables exist [42,43].

This study was carried out in two steps: evaluating the overall path of the connection inside the model, and examining the mediation impact. A perfect mediation boost if the independent variable has no effect when the mediator is controlled. Confirmatory factor analysis (CFA), and the examination of connections among variables using SEM, were the two levels of analysis performed on the data [44].

4.1. Descriptive Statistics Results

To descriptively determine the presence of, and correlations among, variables in Lebanese universities, Table 1 displays standard deviations, and the correlation that exists inside the model's construct. As a result, the researcher found that the relationship between sustainable talent management practices and employee job satisfaction is statistically significant. On the other hand, the relationships between organizational culture and employee job satisfaction, as well as talent management methods, were investigated. It showed a statistically significant, *p*-value association between JS and OC (0.855) < 0.01, TA and OC (0.809) < 0.01, KS and OC (0.753) < 0.01, ET and OC (0.811) < 0.01, and lastly CD and OC (0.803) < 0.01 Sig. (2-tailed). As for means variance, the majority of the items proposed in the questionnaire were all greater than 3 or tended towards 3, indicating that there is a general tendency to a neutral level of agreement.

Table 1. Descriptive Statistics and correlation among variables.

	Mean	SD	TA	KS	ET	CD
Talent attraction	3.2092	0.90260	1			
Knowledge Sharing	3.4264	0.88127	0.789 **	1		
Employee Training	3.1867	0.93576	0.867 **	0.803 **	1	
Career development	3.0742	0.99856	0.827 **	0.824 **	0.859 **	1
Job Satisfaction	3.1771	1.00202	0.874 **	0.674 **	0.839 **	0.793 **
Organizational Culture	3.3915	1.01984	0.808 **	0.757 **	0.812 **	0.806 **

** Correlation is significant at the 0.01 level (2-tailed).

4.2. Measurement Findings

It is necessary to demonstrate the model's reliability while analyzing hypotheses. Cronbach's alpha techniques were used to determine reliability for this investigation. It was used to assess the structure's inherent consistency and dependability. Cronbach's alpha values of 0.7 or above are considered acceptable. According to Table 2, Cronbach's alpha ranged from 0.897 (due to employee training) to 0.962. (by organizational culture). Because they all exceed the rate of 0.7, these records have a high degree of practical reliability.

The significant levels of indicators were evaluated for validity. Their average variances extracted (AVE) and square roots were discovered to demonstrate convergence and discriminant validity. For this, each variable's indicator was scanned to see if it had enough weight within the significant ranges (loading 0.3; *p* 0.01) and if the associated AVE was equal to or more than 0.5 [45]. The composite reliability (CR) value presented in Table 2 was all above 0.7 which implicates the consistency of the scale's items. AVE values ranged between 0.936 and 0.965, which was higher than the cutoff level of 0.5. As a result, it is possible to conclude that the model passes the convergence validity test. Furthermore, the square root of AVE was used to indicate the discriminant validity.

4.3. Hypothesis Testing

AMOS 22 was used to examine the hypothesized relationships using structural equation modeling (SEM). Structural equation modeling (SEM), which employs various models to describe connections between variables, provided a quantitative evaluation of the theoretical model proposed by the researcher. More specifically, numerous theoretical models that postulate how sets of variables create constructs and how these constructs are connected may be evaluated in SEM. The findings of the analysis were given in two parts. Confirmatory factor analysis (CFA) was used to determine which of the hypothesized models better suited the model as a measurement. The results show a fit of χ^2 = 5485.6, D.F. = 899, CFI = 0.605, TLI = 0.565, RMSEA = 0.16, PCLOSE = 0. The mediation model of organizational culture shows a good fit of χ^2 = 360.6, D.F. = 2, CFI = 0.752, TLI = −1.606, RMSEA = 0.949, PCLOSE = 0. This demonstrates that corporate culture has mediated the link that exists between sustainable talent management practices (STMP) and employee job satisfaction (JS). The findings indicate that there is a positive and substantial relationship between each practice of sustainable talent management and employee job satisfaction, which supports H1, H3, and H4.

Table 2. Reliability test and convergent validity analysis.

	Weight	Load	Cronbach's Alpha	AVE	CR
Talent Attraction					
TA1	0.97	0.9409			
TA2	0.987	0.974169			
TA3	0.984	0.968256			
TA4	0.96	0.9216	0.903	0.954369875	0.994059
TA5	0.977	0.954529			
TA6	0.984	0.968256			
TA7	0.985	0.970225			
TA8	0.968	0.937024			
Knowledge Sharing					
KS1	0.976	0.952576			
KS2	0.988	0.976144			
KS3	0.967	0.935089	0.908	0.965506286	0.994922
KS4	0.99	0.9801			
KS5	0.989	0.978121			
KS6	0.983	0.966289			
KS7	0.985	0.970225			
Employee Training					
ET1	0.983	0.966289			
ET2	0.976	0.952576			
ET3	0.978	0.956484	0.897	0.959752	0.993059
ET4	0.979	0.958441			
ET5	0.981	0.962361			
ET6	0.981	0.962361			
Career Development					
CD1	0.961	0.923521			
CD2	0.99	0.9801	0.912	0.962131167	0.993482
CD3	0.991	0.982081			
CD4	0.981	0.962361			
CD5	0.982	0.964324			
CD6	0.98	0.9604			
Job Satisfaction					
JS1	0.979	0.958441			
JS2	0.965	0.931225			
JS3	0.968	0.937024	0.922	0.939037571	0.99081
JS4	0.974	0.948676			
JS5	0.96	0.9216			
JS6	0.956	0.913936			
JS7	0.981	0.962361			
Organizational Culture					
OC1	0.964	0.929296			
OC2	0.948	0.898704			
OC3	0.98	0.9604			
OC4	0.965	0.931225	0.962	0.9361781	0.993228
OC5	0.975	0.950625			
OC6	0.958	0.917764			
OC7	0.979	0.958441			
OC8	0.979	0.958441			
OC9	0.974	0.948676			
OC10	0.953	0.908209			

As previously indicated, the findings of assessing the mediation effect of organizational culture on the link between sustainable talent management methods and employee job satisfaction were included in the second stage. Furthermore, the organizational culture was revealed to have a full-fledged mediation impact. According to the findings presented

in Table 3 H5 (a), H5 (b), H5 (c), and H5 (d), this impact is also supported by the significance of the relationship between sustainable talent management and employee job satisfaction; however, the hypothesis H2 was negatively statistically significant.

Table 3. Mediation effect.

			Standardized Parameter Estimate
OC	←	TA	0.351
OC	←	KS	0.152
OC	←	ET	0.298
OC	←	CD	0.325
JS	←	TA	0.6
JS	←	OC	0.419
JS	←	KS	−0.358
JS	←	ET	0.277
JS	←	CD	0.119

In conclusion, the relationship between sustainable talent management practices and employee job satisfaction was positive, and the hypothesis testing was statistically significant. Moreover, the effect of organizational culture indicated partial mediation between a number of relationships, except for the full mediation of the organizational culture on the relationship between knowledge sharing and employee job satisfaction. The hypothesis was tested for model fit, as shown in Figure 2. The research model indicated that sustainable talent management methods accounted for 41% of the variability in employee job satisfaction when the mediation impact of organizational culture was taken into account.

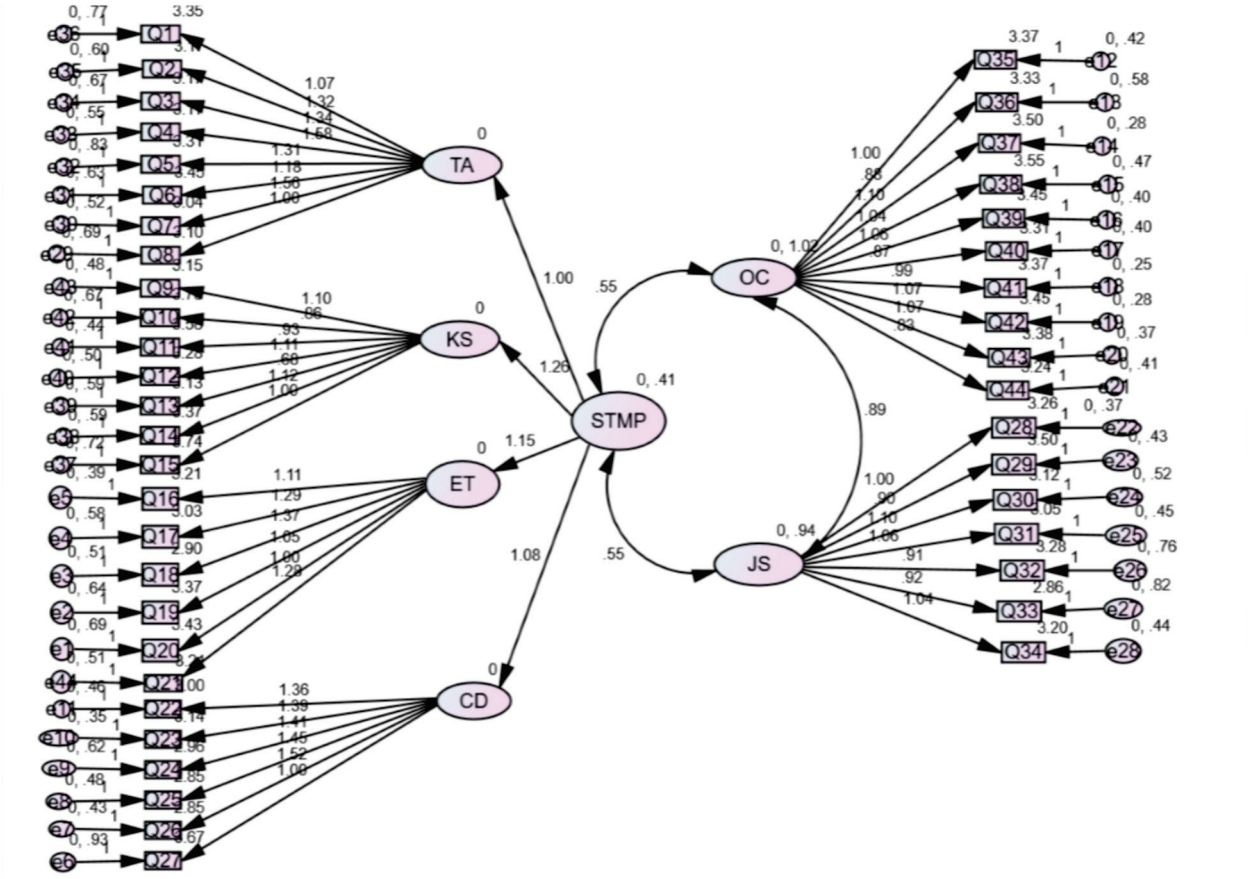

Figure 2. Structural Model.

5. Discussion and Conclusions

5.1. Discussion

In light of globalization, technology, and other factors that have affected the economy and management system, and because of the necessity to regulate and promote sustainable talent management systems in order to attain competitive advantages within the market, it has become increasingly important to review sustainable talent management in terms of its definition and how best it can be attained in institutions. Sustainable talent management entails not just acquiring talents from outside the firm, but also recognizing, promoting, and developing those who are already on staff. Many businesses now think that both sustainability and corporate responsibility are essential for attracting and retaining talent [46]. Previous research has assumed that talent recruitment and employee satisfaction have a beneficial impact on organizational success [47], with a substantial positive association between recruiting talent and work happiness. Such research has mainly focused on theoretical perception. Several studies have found that the better the job satisfaction, the greater the employee's goals and readiness to share information with others [48]. Employee training and development has a positive relationship with employee job satisfaction, as evidenced by prior studies showing that through training programs, employees become more confident at work, leading to job satisfaction [49].

Hence, this study seeks to contribute to the topic of sustainable talent management and employee job satisfaction by evaluating each practice and its impact on worker satisfaction, as well as the introduction of organizational culture as a mediator between them and employee job satisfaction, especially given the scarcity of empirical research in this field.

The purpose of this study was to investigate the impact of sustainable talent management practices, such as talent attraction, knowledge sharing, employee training, and career development, on employee job satisfaction in Lebanese universities, while also assessing the role of organizational culture as a mediator in this relationship. The developed theoretical model was empirically tested by collecting data from academic and administrative employees in public and private institutions to investigate the relationship between the independent variables and the dependent variable, as well as the impact of the mediator variable on them.

The findings of the study have improved the talent management literature by assessing the impact of sustainable talent management practices, i.e., talent acquisition, knowledge sharing, employee training, and career development, as well as by estimating the mediation impact of organizational culture between talent management practices and employee job satisfaction. Previous work in the talent management literature has shown the importance of various variables in retention, but have not examined the individual components that assess the organization's goals.

The empirical implementation of the study was carried out in the higher education sector in northern Lebanon and the study results confirmed a significant connection between the practices of talent management (talent acquisition, knowledge exchange, employee training, and professional development) and job satisfaction of employees, the relationship of which is strengthened by the mediation variables of organizational culture, except knowledge exchange, which was diminished in connection to organizational culture.

These results were aimed at the importance of the relationship between talent management practices and employee job satisfaction. First, talent attraction has positively influenced job satisfaction in the higher education sector. The second hypothesis tested the link between knowledge sharing and job satisfaction, which had a strong, positive relevance. Other studies, e.g., suggest that the higher the job satisfaction, the higher employees' intentions and willingness to share knowledge with others [50]; however, the finding of organizational culture as a mediator variable has weakened the connection between knowledge sharing and employee satisfaction. The third practice of sustainable talent management was employee training and development, which had a productive connection with employee job satisfaction; through training programs, employees will profit from confidence at work resulting in job satisfaction. The result of the paper additionally concurs

with researchers [51] who have shown that colleges, with their various offices, are one of the best settings to apply talent management. Finally, career development, which has been studied by other researchers [52], has a positive and significant effect on job satisfaction. The results of this study have strengthened the validity of this relationship, and institutions will benefit from taking procedures in their culture to achieve greater employee job satisfaction. Sustainable talent management practices have a positive relationship with employee outcomes, especially satisfaction. It will be a benefit for any institution to implement these practices in their culture.

However, the most important conclusions of this study, which distinguish it from other studies, are that there is a significant partial and indirect communication relationship between the practices of sustainable talent management and employee satisfaction and the existence of organizational culture as a mediator variable. The results of the organizational culture indicate a positive and significant connection between sustainable talent management methods and the job satisfaction of employees; hence, there is a strong, negative mediation of organizational culture between knowledge sharing and employee satisfaction.

5.2. Conclusions

Most institutions have recognized the importance of sustainable talent management practices in order to improve their performance in a given sector, to differentiate themselves from other institutions in the market and to create a potential competitive advantage. Sustainable talent management practices are primarily aimed at attracting talent, sharing knowledge, training employees, and developing themselves.

The aim of the research was to examine the influence of organizational culture as a mediating variable in the relationship between sustainable talent management practices (i.e., talent acquisition, knowledge sharing, staff training, and professional development) on the level of job satisfaction of staff in Lebanon's education sector. Our results demonstrated the positive and significant relationship between sustainable talent management practices and employee job satisfaction. This study reinforces that connection with organizational culture, with the exception of pointing out the poor effect of knowledge sharing and employee job satisfaction in the presence of organizational culture. If organizations in the higher education sector want to attract, develop and retain talent in order to increase employee satisfaction, they must shift their sustainable talent management practices in a changing environment. If they make the necessary changes, they will benefit from the skills of the employees and gain a competitive advantage.

6. Limitations and Future Studies Recommendation

The sample of the study was affected by the severe financial crisis, along with the immigration of young talented graduates, that Lebanon currently faces. The results of this study are based on universities in Northern Lebanon. The same constructs can be transferred to other universities and other cultures/countries. A quantitative research design was created. A mixed-method is recommended for future studies, for example, a qualitative method that utilizes interviews questionnaires as a quantitative method. The author also suggests research techniques such as open-ended questions and focus interviews with employees. The researcher recommends another future study to evaluate various talent management practices, such as mentoring.

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Institutional Review Board Statement: This study is carried out in accordance with the ethical guidelines of affiliated University. The name and affiliation of the researchers together with the contact information supplied on each survey form. Text explains in writing to the participant that there is no personal risk and discomfort as a result of their participation and it will be totally anonymous. Researchers also ensured the confidentiality of the information collected from the

survey, meaning that no information can be directly traced to their identity since no information whatsoever, related with the participant, neither requested nor recorded with the survey. Also it is emphasized that their participation is totally voluntary and they have the right to refuse to participate or leave the study anytime without penalty. Therefore, it is clarified that survey completion will be an indication of virtue of the consent of the participant. It has been cleared that no further permission was necessary for the conduct of this research.

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

Data Availability Statement: The data are available upon reasonable request from the corresponding author.

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Article

Linking Work-Family Conflict (WFC) and Talent Management: Insights from a Developing Country

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Abstract: Considering the profound societal change taking place in several developing countries, the objective of this paper is to reflect on work-family conflict (WFC) both as a concept and a social phenomenon. Given that WFC is a concept rooted in academic debate focusing on developments in Western, largely individualistic, societies, this paper reconsiders WFC's value added as applied in a context of a collectivist society in a developing country. The objective of this paper is thus threefold, i.e., (i) to assess WFC's applicability in a context of a collectivist society in a developing country, where the position and role of women gradually changes; (ii) to develop a culturally adjusted/sensitive scale to measure the scope of WFC in Pakistan, whereby the latter is treated here as a case study; and (iii) to reflect on the possibility of devising a set of good practices that would allow a smooth inclusion of women in the formal workforce, while at the same time mitigating the scope and scale of WFC. The value added of this paper stems from these three objectives.

Keywords: work family conflict; talent management; sustainability; best practice; developing country; modernization; women in society; women in formal workforce; collectivist societies; Pakistan

1. Introduction

Work-family conflict (WFC) is a concept well embedded in the academic literature [1–5]. In the burgeoning body of research on WFC, diverse facets of the challenge have been explored [6–8]. Essentially, the concept, and so the debate, have been born out of and revolve around the question of how to manage the increasingly demanding career and family life. Originating in academic debates in the Anglo-Saxon world, the WFC literature, to a great extent, mirrors developments specific to individualistic societies in the developed world. That is, traditionally, the WFC debate used to be concerned with the implications of progressive inclusion of women in the workforce for family life. For this reason, implicitly, especially early works on WFC exhibit a certain positive gender-bias, i.e., women, rather than men, and the strain women, rather than men, endure were at the center of researchers' attention. Importantly, over the years, a number of factors such as increasing number of dual career couples and the resultant decrease in single income families, the rise in single-parent households, as well as gradual decoupling of wage from gender rendered it necessary that new angles and new insights were added to the WFC debate. Indeed, the most recent works on WFC uphold issues as diverse as gender-equality, strain that men endure, and others, including questions of WFC in connection to the LGBT communities [9,10].

The value added and the application of research exploring diverse facets of WFC is multifold [11–13]. This paper looks specifically at WFC in connection to human resource management and, in this context, in connection to talent management in the workplace. Knowledge and understanding of WFC and the specificity of the multiple challenges it signifies are necessary for efficient talent management at a company/organization level. Research suggests that several tools, including flexible working time and place, task-oriented appraisal to mention such a few [14–17], prove efficient in mitigating WFC. Nevertheless, all too frequently employers tend to ignore these insights. This in turn affects productivity, efficiency, and as a result, sustainability of a given organization/business. To add a twist to this approach, this paper applies WFC in a less obvious context, i.e., that of a collectivist developing country undergoing a process of profound societal change that includes gradual inclusion of women in formal workforce. The objective here is (i) to assess WFC's applicability in a context of a collectivist society in a developing country, where the position and role of women gradually changes; (ii) to develop a culturally adjusted/sensitive scale to measure the scope of WFC in Pakistan, whereby the latter is treated as a case study; and (iii) to reflect on the possibility of devising a set of good practices that would allow a smooth inclusion of women in the workforce, while at the same time mitigating the scope and scale of WFC.

The argument in this paper is structured as follows. First, a structured literature review is conducted to make a case for the need of a more nuanced culturally sensitive approach to WFC. In what follows, by focusing on the case of Pakistan, a culturally adjusted, i.e., taking into account the collectivist nature of the society and its stage of development, scale to measure WFC is devised. It is then applied through surveys and semi-structured interviews. Quantitative and qualitative analysis of the survey outcomes follows. Discussion and recommendations complete the argument. The key message that this paper conveys is that the two-pronged process of empowering women and inducting them in the formal workforce has a price [18,19]. WFC is one of them. As in this respect, developing countries follow the path curved by others, it is important to use the opportunity to have everyone involved in the process of societal transition for the sake of mitigating the scale and scope of WFC as experienced by women, and increasingly also by other societal groups.

2. Literature Review: Work Family Conflict and Its Diverse Facets

Work, family and parenting hold the utmost psychological importance in one's life [20]. With the passage of time and the changing demographic in the workforce, the notion of work-family conflict (WFC) established itself as one of key topics of interest for researchers, experts and policy makers. This is due to the significant increase in the number of women in the labor force over the past decades [21]. A growing number of studies report that women find it extremely challenging to deal with the demands of both work and family life. As a result, WFC is on the rise. In the past, work and family were considered unrelated entities [22], however, the diverse number of empirical researches negated the notion as just a myth [23,24]. Work and family are two essential spheres of one's life, and they cannot be separated. Work is not only an essential source of income but also, ideally, a source of positive stimuli for one's self-esteem, empowerment, etc. Family, ideally, should be the source of love, affection, and contentment. Ideally, therefore, keeping work and family simultaneously in balance will have positive effects on individuals' well-being [25]. Reality suggests, however, that it is increasingly difficult for individuals/employees to maintain harmony between their respective family roles and professional responsibilities. Hence, the propensity of conflict between these two increases [26,27], which results in WFC.

In the academic debate on the issue, the theoretical backdrop used to explain the linkages between work and family has been the derived from role scarcity model [28] and role theory [29]. Both explicitly elucidate the relationship between work and family. The scarcity hypothesis posits that human energy resource is fixed and allocating resources to work and family simultaneously [28] produces negative affect [30], which undermines human health. Similarly, role theory [29] asserts that individuals in their life are confronted with multiple incompatible roles, and each role holds specific requirements

and expectations which might unavoidably conflict in some way. This sort of conflict has been called inter-role conflict.

On the basis of scarcity theory and inter-role theory, researchers defined WFC as "a form of multiple conflicts in which the role pressures of the work and family domains are mutually incompatible in some respects" [31]. To put it differently, WFC occurs when demands between the work and family roles are mismatched with each other and affect one's ability to deal with both roles. Elaborating further on WFC phenomena, researchers [31] proposed three types of pressures contribute to WFC: time, strain, and behavior-based pressures. Time-based pressure occurs in proportion to number of hours or time allocated in one role, making it arduous to allocate time to another role. Strain-based pressure occurs when strain resulting from one role negatively interferes in another role, e.g., being cranky and short tempered at home because of overload, maltreatment or bullying at workplace [15]. Behavior-based pressure occurs due to incompatibility of suitable or specific behavior required in work and family domains (e.g., being authoritative or strict at work may assist getting work done, but being strict at home may create tension at home).

Balancing work–family demands has become an increasingly exigent task for working personnel around the globe [16]. Work to family interference (WIF) factors tend to be related with job type, job involvement, job flexibility, work time commitment [17], inflexible working hours or schedules [32], overtime [33], and workplace bullying [34] considered as responsible of causing occupational stress among the workers [35]. A research conducted with working women reported that women tend to have a poor relationship with their spouses as a result of inflexible work schedule [36] and unfinished work [37]. On the other side of the coin, family to work interference factors involve the cultural role of parenting [38] predicted by the presence of younger children [39] or having more children [40], elderly care [41] marital tension or spending more time on household chores [42] unavailability of child care [43] family system [44] and spousal support [45] play an important role in family to work interference (FIW).

3. Is the WFC Still Relevant If Applied to the Case of Pakistan?

The objective of this section is to reflect on WFC and its applicability in the context of Pakistan. The latter is treated here as a case-study in 'Eastern' collectivist society, a developing country undergoing a process of profound societal change. Considering the fact that the WFC was coined to allow examination of processes and developments specific to Western, individualistic societies in developed world, the question is to what extent and how WFC can be applied in context of Pakistan.

Social and economic structure of the eastern society is quite complex as compared to Western societies [46]. Powell et al. [16] acknowledged that work family literature lacks insights into societal and cultural factors shaping individuals' experiences at the work-family interface. According to Hofstede [47] culture refers to "the collective programming of the human mind that distinguishes the members of one human group from those of another". With strong family orientation and deeply rooted traditional family relations, Pakistani culture considered family as a nucleus and is considered as a source of contentment and peace in life. However, with the passage of time and the changing economy in terms of increasing inflation, people started realizing the need to share financial responsibilities by the participation of women in the workforce. However, changing trends in the work force did not bring much change to Pakistani women's lives. That is, they still face culturally determined expectations and are expected to fulfill the traditional role of homemaker [48]. Pakistani women are still considered to be the only ones responsible for fulfilling the demands of children and family. In these circumstances, conflicts arise when the family, and especially the spouse, are not ready to cooperate in view of easing the burden endowed on women. This lack of readiness to support women results in strain among working women [46]. Therefore, it is important to address culturally related variables responsible for WFC. Moreover, literature [49] has suggested the fourth dimension of WFC, namely, psychologically based WFC. The latter depicts a situation of conflict that results from psychological preoccupation in one role domain, which then interferes with the ability to perform a role in another domain. Examples include being preoccupied or mentally distracted due to work responsibilities

and thus underperforming at home, or conversely, being stressed or thinking about a sick child, thus undermining performance at work.

The nature of demands encountered in the work and family domains as well as the resources available in these domains in collectivistic cultures may be different from those in individualistic cultures. Hofstede et al. [50] noted that in collectivistic societies, individuals are expected to maintain harmonious relationships with extended family members. In Pakistan, there is a commitment to maintaining a long-term relationship to their extended families [51]. As such, family obligations often extend beyond responsibilities toward one's own children and spouse; individuals often have financial and emotional obligations towards extended family relations [16]. Thus, extended family obligations may divert time and energy resources of employed parents in collectivistic societies. Literature suggests [52,53] that uneven or disproportionate domestic family duties and responsibilities are important factors that make it difficult for women to combine all their domestic responsibilities with their work life. A study conducted with Pakistani women reported that pressure from the employers and home roles put women under the burden of dual responsibilities, which resulted in mental, psychological, and emotional stress [54,55]. A study conducted with successful Pakistani professional women reported that participants had to work hard to balance their professional roles with the traditional demands of their culture, specifically their duties as wives and mothers [56,57]. Moreover, a similar study carried out with on Pakistani married female professionals concluded that working hours, inflexible schedule, high work demand, lack of spousal support and high family demands as contributing factor of WFC [58]. Furthermore, working women having younger children faced more distress over family issues and expressed more guilt for not giving proper time to their children, husbands, and family [58]. Moreover, a lack of social support, especially spousal support in the management of household responsibilities, could lead to FWC which further create stress and tension among working women [59].

4. How to Measure WFC in Context of Pakistan? Method and Methodology

Drawing on the discussion presented in the previous sections, this study makes a case for a culturally adjusted WFC sensitive to the specificities of Pakistan, i.e., a collectivist society in a developing country. To this end, in this section an indigenous scale to measure WFC, referred to as Work Family Conflict Strain Scale (WFCSS) is developed. The WFCSS is an indigenous tool designed to capture conflict that arises at the intersection of competing work and family obligations as experienced by married working women in Pakistan. The WFCSS is developed in Urdu language that has the suitable psychometric properties to account for nuanced, culturally-sensitive meanings.

The study consisted of four stages. In stage I, WFCSS items were generated through recommended combined method of inductive and deductive approaches [60]. In stage II, the exploratory factor analysis (EFA) was conducted on (N = 250) married working women aged ranged 25 to 60 years (M = 40.0, SD = 10.2). Using varimax rotation which yielded five factors (work interference with family, family interference with work, psychological spousal conflict, societal perception strain, and work strain) accounted for 60% of variance. In stage III, confirmatory factor analysis (CFA) was carried out to endorse the factors emerged through EFA. The CFA sample was consisted of an additional sample of married working women (N = 500) age ranged 25 to 60 years (M = 39.2, SD = 9.64) recruited through purposive sampling from Lahore city (Pakistan). Results of CFA showed a good fit with the data. The alpha coefficient for five factors ranged from 0.80 to 0.90 and 0.93 for the total WFCSS. In stage IV, the convergent (0.71) and discriminant validity (−0.64) was determined with the scores of psychological wellbeing and psychological distress subscales of Mental Health Inventory.

5. The Study and Its Results

5.1. Stage I—Item Generation of Work-Family Conflict Strain Scales (WFCSS) for Pakistani Women

The items were generated using an inductive as well as and deductive approach through relevant literature; five semi structured interviews; and three focus groups with working women, i.e., doctors,

nurses, lecturers, schoolteachers, and bankers. Review of existing scales (see Appendix A) was conducted, and items relevant to Pakistan's culture were highlighted. WFC factors are more or less similar among women globally. However, this study aimed to develop a more culturally sensitive scale. To this end, interviews were conducted and insights from focus groups were collected.

Informal interview protocol was prepared in coordination with the consultation of a psychology lecturer and psychologist to get in-depth, detailed, and comprehensive WFC variables. Semi structured interviews were carried out with five working women selected through purposive sampling strategy, with the age of respondents between 30 and 40 years (M = 34, SD = 3.4), working in a school, college, hospital or bank to elicit their experiences of WFC. The interviews were conducted in a one to one setting, and they were audiotaped with participant's permission and transcribed later. Detailed probing was done to elicit maximum factors responsible for WFC in our culture. Similarly, three separate focus groups were conducted to reach to many participants at once and to get a rich source of information from working women in different professions. Using purposive sampling, the first focus group was comprised of female teachers (N = 3) aged between 30 and 40 years (M = 33, SD = 1.2) working in the banking sector. The second focus group comprised of four women working in hospital, two doctors and two nurses aged between 25 and 60 years (M = 33, SD = 3.4). The third focus group was comprised of three working women from the school and university sector aged between 30 and 40 years (M = 34, SD = 1.0). Participants were encouraged to share their experiences of work family interaction in terms of work, family, and cultural antecedents and how conflict among these affects their health. A prior permission and written consent were taken for audiotaping the discussion; afterwards, that discussion was transcribed, and relevant information was extracted. In order to retain the most appropriate items for scale, 40 statements were grouped together for endorsements from five experts to established content validity.

5.1.1. Empirical Validation through Experts

In this step, content validity of WFCSS was established by approaching four experts (two psychologists and two social workers) having at least three years of professional experience. Content validity is the extent to which it is pertinent to construct the instrument [61]. Experts were asked to rate each item in terms of relevance to its construction, clarity, and readability on a 4 point rating scale ranging from 1 = Not relevant to 4 = Most highly relevant with the construct.

Expert rating served as basis to establish the content validity index (CVI) (Table 1). According to research findings, when the number of experts is equal to 5 or less, CVI should be not be less than 1 [62]. In order to calculate each item CVI (I-CVI) index, the rule of thumb is dividing the number of agreements by the total number of experts. The scale Content Validity Index (S-CVI) "Scale CVI = Total Item CVIs/Total No. of items". The WFCSS scale content validity is calculated as follows: S-CVI = 0.32/40 = 0.80.

Table 1. Experts (E) ratings, No. of agreements and I-CVIs for Work Family Conflict Strain Scale (WFCSS) for Pakistani women.

Sr#	E1	E2	E3	E4	E5	# of Agreements	I-CVI
1	4	3	4	4	4	5	1
2	4	4	4	4	4	5	1
3	4	4	4	4	4	5	1
4	3	4	4	4	4	5	1
5	4	2	4	3	4	5	1
6	4	4	3	3	3	5	1
7	4	4	4	4	4	5	1
8	3	4	4	4	4	5	1
9	4	3	3	4	3	5	1
10	3	4	3	4	4	5	1
11	4	4	4	4	4	5	1

Table 1. *Cont.*

Sr#	E1	E2	E3	E4	E5	# of Agreements	I-CVI
12	3	4	4	3	4	5	1
13	4	3	4	4	3	5	1
14	3	3	4	4	3	5	1
15	3	3	3	3	3	5	1
16	2	2	3	3	3	3	0.60
17	4	4	3	3	4	5	1
18	4	4	4	4	4	5	1
19	4	4	3	4	4	5	1
20	3	3	4	4	4	5	1
21	4	4	4	4	4	5	1
22	4	4	4	4	4	5	1
23	4	3	4	4	4	4	1
24	4	4	4	4	4	5	1
25	3	4	4	4	4	4	1
26	3	4	3	3	3	3	1
27	3	4	4	3	4	5	1
28	4	4	4	3	4	5	1
29	3	4	4	3	4	5	1
30	3	3	3	3	4	5	1
31	4	4	3	4	4	5	1
32	4	4	3	3	4	5	1
33	3	3	2	2	3	3	0.60
34	4	3	3	4	4	5	1
35	3	2	3	3	2	3	0.60
36	3	2	2	3	3	3	0.60
37	3	4	3	3	2	3	0.60
38	2	3	3	2	3	3	0.60
39	3	3	2	2	2	3	0.60
40	4	4	4	3	4	2	0.40

Note: I-CVI below 1 is not incorporated for S-CVI.

According to [62,63], acceptable criteria of S-CVI is 0.80 and above. Thus, indigenous WFCSS has acceptable scale content validity. The chosen items were closely scrutinized for their content as well. Suggestions from the participants on wording were incorporated, and rephrasing was done before presenting them in the final version of the questionnaire having 32 items.

5.1.2. Pilot Study

In order to determine the clarity and level of difficulty of WFCSS, a pilot study was carried out. Purposive sampling strategy was employed on (N = 30) working women in different professions with ages ranging between 25 and 60 years (M = 34, SD = 7.3). They were encouraged to report any ambiguity in understanding of items. However, none of them reported any ambiguity in terms of understanding the items content, and 32 items were listed for further analysis.

5.2. Stage II—Factor Structure, Construct Validity and Internal Consistency of the Scale

In Stage II, factor analysis was followed by a pilot study, which revealed no ambiguity in terms of items understandability and comprehensibility. To establish construct validity of the current scale, exploratory factor analysis (EFA) was carried out using Varimax rotation. An independent sample was taken through purposive sampling strategy (N = 250), and sample size was decided according to recommended criteria of at least five participants per item [64]. Sample comprised of working women from different professions (school, universities, hospitals, and banking) aged between 25 and 60 years (M = 40.0, SD = 10.2) The majority of women were from the medical profession (37%) and the school

sector (37%), whereas 22% belonged to higher education and 4% to the banking sector. Women facing challenges such as separation, divorce, and infertility were not included in the sample.

5.2.1. Procedure

Permission from concerned authorities (schools, hospitals, banks, and universities) were taken prior to administrating the present protocol. Adequate information regarding the purpose of the study was commutated and written consent was taken from the participants. Furthermore, instructions regarding filling the scale were clearly mentioned in writing as well as verbally. The confidentiality of information was assured, and completion of scale was followed by thanking the participants for their time and cooperation.

5.2.2. Results

EFA was run after examining the factor analysis assumptions. The varimax rotation method was used to extract Principal components. Analysis generated 5 mutually inclusive factors showing eigenvalue greater than 1 (see Table 2). All factors were clear, well defined, and selected on the basis of theoretical assumptions along with screen plot, and eigenvalue greater than 1.0. Moreover, significant amount of variance (60%) was accounted for 5 factors. Factor 1 comprised of seven items related to family variables' interference with work domain (responsibilities, children, unpleasant/tension at home); therefore, it was labeled as "family interference with work (FIW)". The items no. 9, 10, 11, 17, 18, 26, and 27 showed loadings on the first factor and explained 38% of the variance (Appendix B). Factor 2 comprised seven items related to work variables that interfere with the family domain (nature, time, responsibilities, etc.), and was therefore labeled as "work interference with family" (WIF). Items no. 1, 2, 3, 4, 19, 20, and 21) loaded on this factor and accounted for 7.65% of variance. Factor 3 comprised of six items (14, 15, 16, 28, 29, and 30) related to spousal conflict over managing work and family responsibilities encounter by working women which cause psychological strain on women (e.g., lack of appreciation, criticism for being an irresponsible wife, etc.) This factor was labeled as "psychological strain due to spouse" (PSS), which accounted for 5.54% of variance. Factor 4 composed of six items (5, 6, 7, 8, 12, and 13) related to societal perception and expectations from working women that cause strain in addition to WFC (e.g., eldercare, expected guests, traditional expectations etc.) Therefore, this factor was labeled "psychological strain due to societal perception strain" (PSSP) and accounted for 5.18% of variance. Factor 5 comprised six items (22, 23, 24, 25, 31, and 32) related to strain caused by work domain (e.g., bringing assignments home, senior attitudes, unequal distribution of work responsibilities, etc.), which cause additional strain on working women. Therefore, the fifth factor was labeled "psychological strain due to work" (PSW) which accounted for 4.38% of variance.

Table 2. Factor loading of 32 items of WFCSS (N = 250).

Item	1	2	3	4	5	Item Total Correlation
WIF1	-	0.74	0.20	-	0.10	0.30 **
WIF2	0.10	0.69	-	-	-	0.30 **
WIF3	0.13	0.76	-	0.12	0.14	0.50 **
WIF4	0.12	0.56	0.48	-	0.33	0.70 **
PSSP5	0.15	-	0.19	0.68	-	0.51 **
PSSP6	0.10	-	-	0.73	0.17	0.80 **
PSSP7	-	-	0.12	0.76	-	0.40 **
PSSP8	-	-	0.12	0.72	0.12	0.41 **
FIW9	0.66	0.26	0.16	0.13	0.33	0.52 **
FIW10	0.61	-	0.25	0.15	0.10	0.32 **
FIW11	0.65	-	0.14	0.13	0.20	0.61 **
PSSP12	-	0.16	-	0.73	-	0.60 **
PSSP13	-	0.13	0.13	0.69	-	0.58 **
PSS14	0.25	0.22	0.69	0.11	-	0.80 **

Table 2. *Cont.*

Item	1	2	3	4	5	Item Total Correlation
PSS15	-	0.19	0.77	0.25	0.20	0.51 **
PSS16	0.17	-	0.74	0.16	0.17	0.50 **
FIW17	0.72	-	0.18	-	0.32	0.62 **
FIW18	0.67	0.23	0.17	0.17	0.23	0.80 **
WIF19	0.12	0.62	-	-	0.27	0.53 **
WIF20	0.17	0.51	-	0.12	-	0.70 **
WIF21	0.30	0.69	0.28	-	0.46	0.70 **
PSW22	0.24	0.22	0.14	0.15	0.65	0.43 **
PSW23	0.30	0.11	0.18	0.12	0.65	0.60 **
PSW24	0.35	0.21	0.30	-	0.62	0.61 **
PSW25	0.29	0.37	0.21	0.14	0.65	0.32 **
FIW26	0.72	0.11	0.25	-	-	0.42 **
FIW27	0.74	0.13	0.27	-	0.19	0.61 **
PSS28	0.27	0.32	0.63	0.16	-	0.30 **
PSS29	0.19	0.12	0.69	0.11	-	0.50 **
PSS30	0.19	0.24	0.76	0.17	0.13	0.63 **
PSW31	0.22	0.13	-	0.18	0.69	0.30 **
PSW32	0.44	0.40	0.16	-	0.71	0.44 **

** $p < 0.01$ Note. Items less than 0.40 loading were excluded.

Table 3 showed that WFCSS is internally consistent measure, as all the subscales of WFCSS showed positive correlation with other and above all with total scores of WFCSS.

Table 3. Alpha coefficient, inter-correlations for five subscales, and total scores of work family conflict strain scale (N = 250).

Factors	1	2	3	4	5	6	α
1. FIW	-	0.52 **	0.53 **	0.30 **	0.62 **	0.81 **	0.90
2. WIF	-	-	0.50 **	0.30 **	0.74 **	0.83 **	0.83
3. PSS	-	-	-	0.50 **	0.60 **	0.81 **	0.87
4. PSSP	-	-	-	-	0.40 **	0.64 **	0.85
5. PSW	-	-	-	-	-	0.82 **	0.82
6. WFCSS TOTAL	-	-	-	-	-	-	0.93

** $p < 0.01$ Note. FIW = family interferences with work, WIF = work interference with family, PSS = psychological strain due to spouse, PSSP = psychological strain due to societal perception, PSW = psychological strain due to work.

5.3. Stage III-Confirmatory Analysis

5.3.1. Sample

Using purposive sampling strategy, an additional (N = 500) working women aged between 25 and 60 years (M = 39.2, SD = 9.64) were approached from different institutions and organizations (i.e., 3 schools, 3 colleges/universities, 3 hospitals, and 2 banks) where the majority of women participants could be found. Only married working women with at least one child were included in the sample.

5.3.2. Instrument

Work family conflict strain scale (WFCSS) developed in Stage I was used. The scale comprised five subscales named family interference in work, work interference with family, psychological strain due to spouse, psychological strain due to societal perception, and psychological strain due to work.

5.3.3. Procedure

Before administering the indigenously developed WCSS, permissions were taken from all institutions and organizations by explicitly communicating the purpose of the study. In the following step, the participants were informed about the scope and objectives of the research. Then participants were requested to fill the consent forms. The confidentiality of their personal details was assured. The completion of the questionnaire was followed by thanking the participants for their time and cooperation. A total of 650 questionnaires were distributed from which 550 questionnaires were returned. Among them, 50 forms were incomplete, while the rest of 500 questionnaires were retained for the CFA.

5.3.4. Results

In order to confirm the measurement model of WFCSS, confirmatory factor analysis was conducted. Furthermore, AMOS-21 was used to confirm the factors retained in the EFA. CFA showed a good fit to the data with Chi square = 1085.072, df = 485, p = 0.000, RMSEA = 0.050, CFI = 0.91, TLI = 0.90, and GFI = 0.93. In CFA, chi square value is recommended non-significant, but in a larger sample, it is usually significant. Therefore, it is generally recommended to divide the chi square by degree of freedom, and it should be less than 3, which represents a good model fit [65]. In the current CFA, chi square value is divided by degree of freedom yield 2.23, which is within recommended limit.

5.4. Stage IV—Convergent and Discriminant Validity

To further establish psychometric properties of the indigenously developed WFCSS, convergent and discriminant validities were assessed.

5.4.1. Sample

An additional sample of (N = 50) working women aged 25 to 60 years (M = 39.6, SD = 9.16) were approached through purposive sampling from different professions.

5.4.2. Instrument

Work Family Conflict Strain Scale for Pakistani Women (WFCSS)

Work Family Conflict Strain Scale for Pakistani Women was developed in Stage I of the current research. It is a 32-item, 7-point rating scale ranging from 1 (strongly disagreed) to 7 (strongly agreed). It comprises five subscales and has alpha Coefficient 0.93 (see Appendix B).

Mental Health Inventory (MHI)

Mental health inventory developed by Veit and Ware [66], Urdu version [67], was used to establish the convergent and discriminant validity. MHI is a 38-item inventory having a 6-point rating scale where all of the time is rated as 1 and none of the time as 6. MHI has two global scales, viz., psychological well-being and psychological distress. As WFCSS measures the strain and psychological stress encountered by the working women in balancing the work and family responsibilities, MHI was used for convergent and discriminant validity.

Psychological Distress Subscale

Psychological distress subscale of MHI [67] was used for convergent validity. Psychological Distress, which elucidates negative mental health condition, comprised 24 items, having 6-point rating format and scores ranging from 22 to 132. Moreover, the alpha coefficient of the psychological distress subscale is (α = 0.94). The hypothesis was that a positive association between WFCSS and psychological distress subscale of MHI exists. Furthermore, it was assumed that the correlation between the latent constructs of two scales was close or equal to the value of 1.00.

Psychological Wellbeing Subscale

Psychological well-being subscale of MHI [67] was used for discriminant validity. Psychological well-being elucidates positive mental health status, which measures emotional stability and life satisfaction. It comprised 14 items and scores ranging from 16 to 96. Overall alpha coefficient of psychological wellbeing is ($\alpha = 0.90$). The hypothesis was that a negative association between WFCSS and psychological wellbeing subscale of MHI exists. Moreover, it was assumed that the correlation between the latent constructs of two scales was less close to 1.00.

5.4.3. Procedure

The same procedural protocol used in Phase II and III was followed for validation study as well. WFCSS, along with psychological distress and psychological wellbeing subscales of MHI, was administered on the 50 working women. It took 12 to 18 minutes to complete the questionnaire protocol, and participants were acknowledged for their time and effort. To establish the convergent and discriminant validity, correlation analysis was calculated between WFCSS and MHI.

5.4.4. Results

In order to established convergent validity, positive correlation between WFCSS and psychological distress subscale of MHI was hypothesized. Using Pearson correlation findings revealed that total, and all subscales of MWFCC had positive significant correlation with psychological distress subscale. Similarly, for discriminant validity, negative correlation between WFCSS and psychological wellbeing subscale of MHI was hypothesized. Using Pearson correlation, findings revealed that total, and all subscales of MWFCC had negative significant correlation with psychological wellbeing subscale (see Table 4).

Table 4. Correlation matrix for the work family conflict stress strain (WFCSS), mental health inventory (MHI)-psychological distress and MHI-psychological wellbeing.

Sr. no.	Scales	1	2	3
1	WFCSS Total	-	0.71 **	−0.64 **
2	MHI-Psychological Distress			
3	MHI-Psychological Wellbeing			

** $p < 0.01$ Note. Work family conflict stress strain for Pakistani women (WFCSS).

6. Discussion

Numerous scales have been developed to capture WFC and its related types but, to our best knowledge, none of them appropriately measure the underlying cultural expectations related to the position and role of women in so called Eastern societies. According to Hofstede's cultural framework [46], Western societies practice individualism whereas collectivism is the most dominant culture of Pakistani society. Pakistani working women face multiple roles due to prevailing cultural expectations from them. They are not just an employee, a daughter, a wife, a mother but also a daughter in law, sister in law, etc. They are not only supposed to look after their children and spouse but also look after aging in-laws and other family members. Their responsibilities when compared to those of Western women are much broader, and consequently, their family-to-work conflict scenarios are very different from those in Western society. Therefore, keeping in view the dire need to have cultural coherent measure, the current study stepped forward to develop culturally appropriate and psychometrically sound scale capturing conflict and strain occurred due to interaction work and family related variables.

The present study yielded strong preliminary evidence for the validity and reliability of the WFCSS. The indigenously developed scale displayed a sound factorial structure, as well as satisfactory convergent, discriminant, and internal properties. The items for the WFCSS were thoroughly generated

and tested through content and construct validity. EFA using varimax rotation method was executed, which yielded five distinctive factors having 32 items. The alpha coefficient of overall and five factors showed high internal consistency and significant inter correlations among factors (see Table 3).

To cross validate the EFA results, CFA was undertaken on an additional sample (N = 500). The final model depicts excellent fit indices (see Figure 1) having 32 items. Together, these results offer strong support for the five discrete meaningful factor structure of the WFCSS (family interference with work, work interference with family, psychological strain due to spouse, psychological strain due to societal perception strain, and psychological strain due to work). The coefficient alpha was used to check the internal consistency of each of the five factors, and reliability of each factor was over the level of acceptance of 0.70 [68,69].

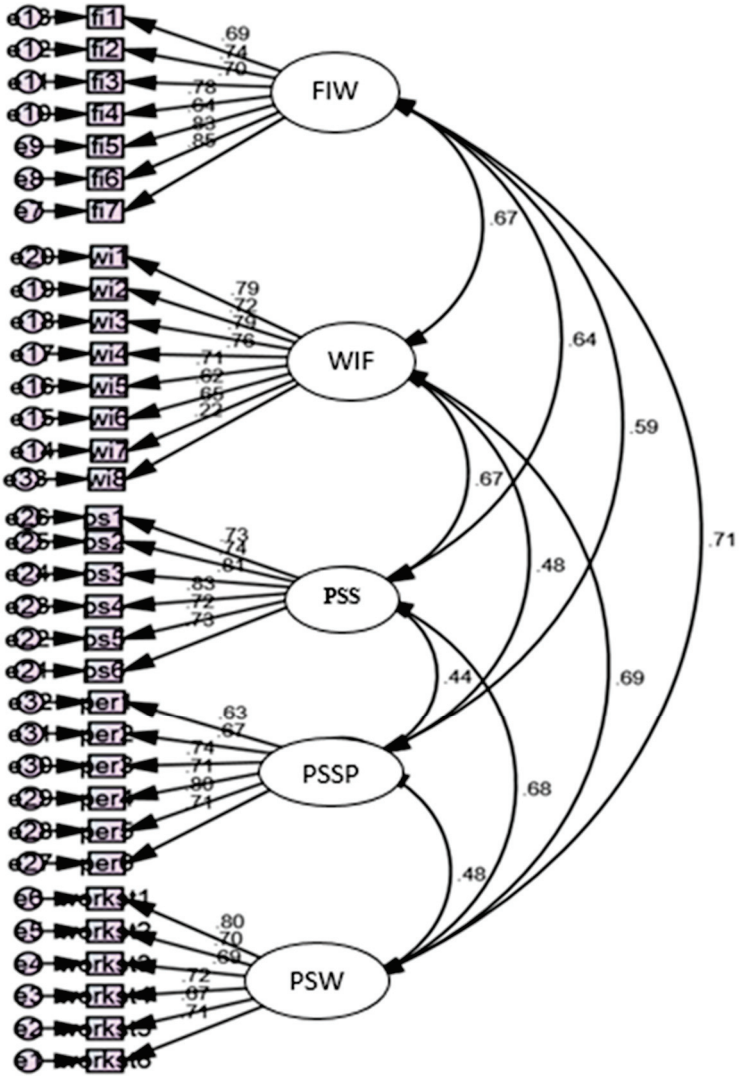

Figure 1. WFCSS Final Model.

Moreover, current study further highlights the convergent and discriminant validity of the indigenous WFCSS. As the current scale measures the conflict, and strain occurs as a result of interactions of work and family related variables mental health inventory was used which also measures distress and strain. The WFCSS total scores were correlated substantially with a psychological wellbeing and psychological distress subscales of mental health inventory. As hypothesized, positive meaningful associations were obtained among the subscale of the psychological distress subscale and WFCSS.

Similarly, negative association was found among the psychological wellbeing subscale and WFCSS. These findings further supported that indigenously developed WFCSS has strong construct validity.

7. Limitations

Notwithstanding the cultural uniqueness of the current study, limitations exist. First, the sample was selected randomly. Accordingly, since purposive sampling method was used, the generalizability of findings may be somewhat limited. Secondly, the scale has been particularly devised keeping in view the married working women WFC scenario. This may limit the generalizability of the scale to single, divorced, widowed, or childless women. Future research should incorporate Western scale WFC dimensions in the indigenous WFCSS in order to have magnified perspective on antecedents and consequences of the WFC.

8. Conclusions and Recommendations

Against the backdrop of profound societal change taking place in several developing countries, the objective of this paper was to reflect on work-family conflict (WFC) as a concept and a social phenomenon. Considering that WFC is a concept rooted in an academic debate focusing on developments in Western, largely individualistic, societies, this paper reconsidered WFC's value added as applied in a context of a developing country. The objective of this paper was threefold, i.e., (i) to assess WFC's applicability in a context of a collectivist society in a developing country, where the position and role of women gradually changes; (ii) to develop a culturally-adjusted, sensitive scale to measure the scope of WFC in Pakistan, treated as a case study; and (iii) to reflect on the possibility of devising a set of good practices that would allow a smooth inclusion of women in the formal workforce while at the same time mitigating the scope and scale of WFC.

The findings of research presented in this paper suggest that regardless of the few limitations mentioned earlier, an indigenously developed *WFCSS* for Pakistani women is culturally coherent. It holds reliable construct validity, which in turn proves helpful in assessing the effects of WFC comprehensively. WFCSS developed is a novel tool that has great application potential not only for researchers but also for experts, social workers, and human resource managers. This paper sought to highlight that developing countries follow a path of growth and development comparable, but not identical, to that of the developed economies. Therefore, a focus on and a thorough understanding of issues such as WFC in its nascent phase might allow to develop preventive measures. These might include measures, on the one hand, aimed at increasing the society's awareness of the phenomenon and, on the other hand, introduction of incentives for employers to allow certain measures known for reducing the WFC [14–17]. More work needs to be done to develop a set of recommendations that might eventually feed into the decision-making process with a view to promoting policies and best practices aimed at mitigating WFC. Indeed, this is the scope of research our team embarked on already. In this vein, we plan to extend this work by, on the one hand incorporating more textual and non-textual data [70–74] and, on the other hand, by applying the findings in diverse contexts [75]. Apart from offering direct insights into respective policy considerations, these might then also be the useful in context of natural language processing models [76–80] and optimization techniques [81,82].

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Appendix A

Table A1. Principal measures of work-life conflict.

Scource	Measure
Burke, Weir, & DuWors, 1979	General W-F (+ personal life)
Holahan & Gilbert, 1979	Role Conflict (job, conjugal, parental, personal in terms of self realization)
Boben & Viveros-Long, 1981	W→F and F→W, time and strain
Kopelman, Greenhaus & Connolly, 1983	W→F, time and strain
Wiley, 1987	W→F, strain
Loerch, Russel, & Rush, 1989	W→F, behavior
Small & Riley, 1990	W→F, spillover
Gutek et al., 1991	W→F e F→W, time and strain
Rice et al., 1992	W→F, strain
Frone, Russel, & Cooper, 1992	W→F and F→L, time
Matsui, Ohsava & Onglatco, 1995	W→F, time and strain
Netemeyer et al., 1996	W→F and F→W, time and strain
Stephens & Sommer, 1996	W→F, time, strain, and behavior
Carlson et al., 2000	W→F e F→W time, strain and behavior

Source: Adapted from Colombo, L. [69].

Appendix B

The following items have been seen as common conflicts due to work-family interaction. Carefully read the items and circle any number of points 1 to 7 that closely applied to you over the past year.

Table A2. Work Family Conflict Strain Scale for Pakistani Women (Translated into English).

Family Interference in work
1. Family related responsibilities keep me preoccupied during working (office) hours.
2. Thoughts about my children often distract my attention from work.
3. Despite extreme efforts, family responsibilities hinder my professional abilities.
4. Family responsibilities related to in-laws often get on my nerves to an extent that colleagues complain about my absent mindedness.
5. I often do not pay proper attention at work due to tension/unpleasantness at home.
6. During office hours, I often manage family responsibilities on phone (e.g., calling home/school, eldercare) due to which I feel distressed in front of others.
7. Family responsibilities holdback my professional progress.
Work interference in family
8. The nature of my job makes it difficult for me to spend time with my family.
9. My working hours (or work schedule) make it hard to spend sufficient time with family.
10. Due to job tasks, I often cannot fulfill my home responsibilities.
11. Responsibilities at work often make me feel physically drained to look after my family.
12. Job fatigue often creates stress between my husband and me.
13. Due to work commitments, I often ignore responsibilities towards in-laws, which results in tension between my husband and me.
14. I often ignore responsibilities towards my children while fulfilling job assignments.
Psychological strain due to spouse
Reason behind my psychological strain:
15. Husband criticism on giving priority to work over family responsibilities.
16. Being a working woman, husband often considers me an irresponsible wife.
17. Being a working woman, husband often complains about not giving sufficient time to in-laws.
18. An imbalance between work and family responsibilities often results in husband's criticism on my management skills.
19. My husband ignores my financial needs because of my earnings.
20. Lack of appreciation from husband over efforts to balance work and family responsibilities.

Table A2. *Cont.*

Psychological Strain due to societal perception
In our Society—Reason behind my psychological strain:
21. Working hours of women are considered a source of recreation.
22. Despite affordability, often families do not arrange house help for working women, which causes psychological strain on women.
23. Looking after an older person is an added responsibility, which results in psychological discomfort.
24. Working women are considered inefficient at household chores.
25. Our society holds traditional expectations in household chores from working women.
26. Inviting guests on weekends without informing, often disturbs a week's planning. This results in a psychological strain in working women.
Psychological strain due to work
27. My senior's unrealistic attitude often makes me feel disturbed throughout the day.
28. Inequitable responsibilities at work often make me feel agitated at home.
29. Due to workload, I often get bitter with my colleagues, which results in mental disconcertment/distress.
30. Work responsibilities often instigate melancholy/gloominess.
31. Work related thoughts often keep me worried at home.
32. My attitude is often aggressive at home due to job responsibilities.

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The Impact of Implementing Talent Management Practices on Sustainable Organizational Performance

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Abstract: As organizations operate in an inexorable marketplace, there are always new and unpredictable difficulties that make managerial roles harder and the achievement of organizational goals and objectives more critical. Recently, the implementation of talent management practices in achieving sustainable organizational performance that will match the firms' operational and strategic goals have been the concern of both academics and practitioners, but the issue has not been exhaustively investigated. Thus, the aim of this study is to investigate the effect of talent management practices on the sustainable organizational performance in real estate companies located in the United Arab Emirates. This paper seeks to make contributions through an empirical evaluation of talent management in the United Arab Emirates. A structured questionnaire was distributed to collect data from a study sample of 306 managers working in real estate companies. The proposed hypotheses were verified by structural equation modeling (SEM). The results of this study show that talent attraction and talent retention had no impact on the sustainable organizational performance, whereas learning and development and career management were found to have significantly positive impacts. The study suggests that learning and development, and employee career management, should be leveraged on by the management by concentrating on the coaching and training programs and job rotation so that the firm can achieve sustainable organizational performance.

Keywords: talent management; sustainability; sustainable organizational performance; structural equation modeling; United Arab Emirates (UAE)

1. Introduction

At present, organizations strive to sustain their presence in the global marketplace, due to related challenges such as globalization, stiff competition, and technological improvements. Organizations have shifted their patterns from only focusing on increasing their productivity and differentiating their products and services to focusing on their inimitable resources; namely, their human capital, as employees are the most important resource and asset in any organization [1]. Organizations that manage their human capital more effectively and efficiently are more likely to attain their organizational goals and objectives, and are more likely to have a sustainable organizational performance. According to Rop [2], the growth and success of any organization relies on positioning the right employees who possess the right skills in the right place at the right time, where talented employees are viewed as the main resources that lead to sustainable competitive advantages and prominent performance.

Organizations face challenges regarding talent limitations more than capital limitations [1]. In reference to the literature, talented employees form only 3–5% of all employees in an organization [3,4]. Talent is a key success factor for increasing and sustaining organizational performance [5,6], where talent consists of an individual's capabilities, experience, knowledge, intelligence, and qualifications, as well as their ability to learn and grow [7]. The significance of hiring talented employees is that

they can accomplish organizational goals efficiently and effectively with outstanding performance, and they are said to have more commitment to the organization as they are highly motivated to perform their tasks, which eventually provide a significant competitive advantage, as well as increases in productivity and profitability.

Organizations perceive talent as an important resource that supports a sustainable competitive advantage and outstanding performance [2]. For that reason, organizations have become concerned with finding and implementing a talent management strategy that matches the global market context [8]. The aim of talent management is to create a sustainable organizational performance, the outstanding performance of which matches its operational and strategic goals [9]. According to Miller et al. [10], the present unpredictable economic climate has made the issue of sustainability to be more important for organizations across all sectors. Sustainability in this sense refers to an organization's environmental, including financial, people, and societal, contribution over time. This view corroborates the position of Cheese et al. [11] and Towers Watson [12] who opined that sustainability is the key issue for HR and business across the world and the present climate has improved the need for firms to focus on how they will ensure long-term prosperity. A successful business strategy should consist of a methodology for improving its employees; by identifying the recruitment talent pool, setting a competitive compensation plan, training and developing talent, and assessing employee performance, an organization is able to boost its competitive advantage and sustain its business [13].

Previous studies have highlighted the significant relationship between "talent management" and "organizational performance" [14–17], but one of the issues that remains is how the talent management practices can be deployed for the achievement of sustainable organizational performance. In addition, most of these studies were conducted in the USA and Western Europe, where talent management is perceived as mature. These countries have realized the pivotal role of their human capital in the prosperity and evolution of their organizations as well as nations. These countries are characterized by the advancement of their civilizations, economies, technological infrastructure, and their openness to change, as well as their implementation of new techniques and practices. The advancement of the organizations in developed countries has made it easier for researchers to examine the concept of "talent management" and the impact of its implementation on "organizational performance". On the other hand, many organizations in developing countries—especially in the Middle East—have recently adopted talent management strategies similar to those in developed countries; however, some researchers have suggested that organizations in developing countries must not blindly follow the existing patterns of talent management executed in developed countries, as they may not give the same results due to some factors (e.g., culture, structural imbalances, conflicts due to cultural and religious issues, and underdeveloped financial markets), which will affect its implementation [18,19]. Meanwhile, Terpstra and Rozell [20] posit that there is variation in talent management (TM) across industries. Nevertheless, they all still share some similar traits. This position was corroborated in the study of Bergmann [21], in that there is an absence of a single solution for a firm's success through TM activities, hence the absence of clear transfer of TM activities in one single industry success into another.

Even though studies on TM are abound in the literature, which have been carried out in different countries and industries, and in both developed and developing countries [14,15,17,22], only a few have been conducted within a UAE context, specifically relating to real estate sector, which is one of the fastest growing industries in the UAE [23]. According to CEL & Associates [24], who is a management consulting firm in the real estate industry, there is a "talent crisis" in the industry owing to the reduction in available talent, a weak platform for outstanding talent retention, escalating employee turnover, and ineffective HR strategies, including compensation and benefits [25].

The UAE for over two decades has been recording an impressive economic growth primarily driven by non-oil sectors [23]. Among the non-oil sectors driving the economic growth was identified to be the real estate sector [23]. Dahan [23] revealed that the oil sector contributes a paltry 6% of Dubai's GDP, for instance, while as at 2016, real estate and construction accounts for about 13% of the country's

GDP [23]. Owing to this growth, there has been a pronouncement of improved conditions; with market confidence returning, occupancy rates are increasing, which hotels and the retail segments also benefiting from an upswing in tourist numbers [23]. The real estate sector in the United Arab Emirates is considered to be fundamental to study the talent management concept, as this sector is subject to some challenges, such as talent scarcity, a high turnover rate, weak implementation of human resource strategies, and weak practices for retaining talented employees. The United Arab Emirates has become one of the top countries considered as a destination by different nationalities, either for tourism or for living, which has resulted in a renaissance of the real estate sector; thus, stressing the importance of talented employees in dealing with this flourishing sector may lead to the successful implementation of talent management practices. Therefore, the demand for housing in the UAE will be increasing and that will translate to more business for the industry, which thus necessitates the industry to develop its human resources so that a growing demand for housing can be met to ensure their sustainable organizational performance.

In this respect, TM practice can be effective; hence, the aim of this study is to investigate the current stance of the TM practices in the real estate industry in relation to the sustainable organizational performance. However, prior studies that have been conducted in the UAE to investigate talent management in various sectors have been in the aluminum industry [26], the oil and gas industry in Abu Dhabi [27], and the Abu Dhabi Police [28], as well as the banking industry [29]. While research settings in the UAE and real estate are different, to date little research has been conducted to examine the effect of talent management on the sustainable organizational performance [30,31]. Thus, the study aimed to fill the gap. The findings of this study will enable the players in the real estate industry in UAE to formulate an effective strategy on their talent management towards the achievement of sustainable organizational performance. In addition, the finding from this study will be a foundation of future studies in other developing countries like the UAE, with a similar booming real estate industry.

The remainder of the paper is structured as follows: Section 2 consists of the theoretical background and review of previous studies that led to the development of our hypotheses. Section 3 consists of the methodology—the instrument development, data collection, sample and sampling procedure, and method of analysis. The data and analysis and findings are provided in Section 4, while the paper is rounded up with the discussion and conclusion in Section 5.

2. Theoretical Background and Hypotheses Development

2.1. Theoretical Background

2.1.1. Sustainable Organizational Performance

Organizations play an important role in the wealth of their countries and, so, successful managers are always exploring for new ways to develop, improve, and sustain their organizations, especially in bad economic situations. Successful managers know how to help their organizations to survive and overcome any obstacle, as well how to look forward to achieve improvement, prosperity, and long-term sustainability. For that purpose, in the literature of the management field, it can be found that there is always an increasing concern to research the organizational performance aspect, considering it an essential dependent variable [32]. Various approaches have been researched, such as human resources, strategies, and operations. The undertaken studies aimed to figure out the effect of such approaches on the sustainable organizational performance and their relation to it, whether in negative or positive ways.

Performance has been illustrated and defined in many ways; for example, "to accomplish something with a specific intention", "the results of an action", "the ability to accomplish or the potential for creating a result", or "a surprising result compared to expectations", as well as "performance can be understood differently depending on the person involved in the assessment of the organizational performance" [33]. Performance has been alluded to as action-oriented, the results that yield from this action, and the successes accomplished in comparison to competitors [34]. Organizational

performance can be measured using both financial and non-financial indicators [35]. As classified by Maltz et al. [36], there are five key factors utilized for the assessment of performance, which are financial performance, market/customer, people development, process, and the future. With respect to Richard et al. [32], the approaches that are observed, measured, and evaluated are the financial, product market, and the shareholder outcomes; these approaches are evaluated to study the performance of an organization and the attainment of its goals and objectives. Nevertheless, Dyer and Reeves [37] classified three different results for organizational performance, which are (1) financial results (profit and market share); (2) organizational results (efficiency, quality, and productivity); and (3) human resources results (satisfaction, attitudes and behaviors, and commitment).

A sustainable organization performance is said to be the capability of the foundation to attain the requirements of its stakeholders while, at the same time, constantly increasing investment and managerial policies and strategies to guarantee future profitability, social welfare, and environmental responsibility [38]. An organization performance is considered sustainable when executives are able to plan strategies aimed at increasing market share, talent, and profits of stakeholders, while decreasing both costs and employee turnover [39]. Moreover, an organization is sustainable when it strives to exist with negligible external threats and internal change [39].

2.1.2. Talent Management

The talent management concept was introduced by McKinsey Consultants, in the book titled *The War for Talent* in 1998 [40,41]. *The War for Talent* is another notion of talent management; the study done by the McKinsey group included a contextual analysis, in which twenty organizations out of seventy-seven were considered abundant in talent [40]. Battling for better talent is worth it, as organizations find it hard to bring and keep quality individuals, especially when the requirement for eminent talent is expanding. Winning a talent war is not impossible, as stated by the authors. However, organizations must raise and consider talent management with precedence. Researchers have called for studying the relationship between talent management and organizational performance, due to the scarcity in empirical evidence, which can be explained by the scarcity of talent management theory [42].

The scarcity and ambiguity in the precise understanding of "talent management" can be related to the ambiguity in the definition of talent, which connotes different meanings to different people when applied to various fields of study. Talent is considered as an outstanding mastery of systematically developed abilities (or competences) and knowledge, in at least one domain of human activity, to a place or a degree that sets the individual at the top 10% of peers who are said to be active in the same field [43]. Talent has been perceived as the capacity to create ingenious works and not only being able to successfully accomplish a task; it is the permanence and development of competences [44]. From the perspective of the authors of *The War of Talent*, talent can be perceived as the sum of an employee's abilities, constituting their intrinsic gifts, competences, knowledge, intelligence, experience, personality, and behavior, which confirms that the concept of talent constitutes the ability of an individual to learn and develop [41].

Talent management has been perceived as part of human resource management strategies, where it consists of the implementation of integrated strategies that are executed to improve and sustain the organizational performance by improving procedures for attracting, retaining, developing, and profiting from individuals with the necessary qualifications and skills to achieve present and future business requirements [45].

Defining the concept of talent management differs among organizations, where it may mean concentrating on the sustainability in one organization while, according to another organization, it might mean concentrating on identifying employees with high potential. Talent management can mean on-boarding, identifying, evaluating, and/or developing the organization's internal talent [46].

The idea of talent management has gained the attention of authors and practitioners, with more studies and articles released and published within the literature of talent management; although it is

still considered scarce, the academic interest in it has increased over the last five years and it is said to be in a growing state [47].

Generally, publications in the talent management literature lack evidence and empirical studies [48]; it has been observed that the focus of this subject has mainly been based in the USA [49,50], followed by the UK, Ireland, Netherlands, and Australia (overall, publications were from 35 different countries). Data were also collected from countries such as India, China, and Belgium, while only a few studies have been conducted in Middle Eastern countries [47].

The interest in studying talent management has grown, due to the increased importance of and urgent need for talented employees, where organizations are having difficulty and struggling to discover suitable talent [41]. Studies by the World Economic Forum, the Boston Consulting Group [51], and the Manpower Group [52] have uncovered that the lack of talent is a worldwide issue; it affects a wide range of positions in numerous areas and nations of the world. Heidrick and Struggles [53] published a research article called Strategic Talent Management. They claimed that "The cumulative impact of global demographic trends, combined with on-going economic uncertainty and aggravated by a critical skills shortage creates a powerful talent triple whammy facing business. In response, forward-looking companies are bringing talent, particularly leadership talent, to the top of the agenda and are assigning responsibility for aligning business and talent imperatives to a senior talent executive. We are beginning to see the steady emergence of a new discipline of Strategic Talent Management, led by a Head of Talent or a similarly titled role."

In the literature, a specific definition of "talent management" has not been provided by authors and researchers. Therefore, the academic scope for the conceptualization of talent management suffers from a scarcity of formal definitions, theoretical frameworks, and empirical studies [16,17,54,55]. According to Thunnisen et al. [48], talent management is defined "as a process that consists of a complete and related set of organizational procedures such as identifying, selecting, developing and retaining the outstanding employees and improving their abilities and potential for the important strategic positions", which helps employees to utilize their productivity effectively and efficiently to engage with and contribute to the success of the organization [55].

Talent management has been expressed in terms of a systematic perception for attracting, screening, and selecting convenient talent, as well as engaging, developing, leading, and retaining talented and high-performing employees, in order to ensure a persistent talent stream that may result in nourishing their productivity [56,57]. Talent management has been defined as "Systematic identification of key positions, the development of talent pool of high potential and high performing incumbents and the development of a differentiated Human Resources architecture" [58]. According to Keller and Cappelli [59], talent management is "the process through which employers anticipate and meet their need for human capital. It is about getting the right people, with the right skills into the right jobs at the right time".

Talent management sustains organizational performance by providing essential knowledge and strategies for improvement and change; it helps organizations to recognize the most talented employees to become the potential future leaders, whenever there is a vacant position. The objective of talent management is not only to recognize and focus on talented employees, but also guarantees that the developmental and growth strategies are associated with the organizational mission and vision, resulting in the prosperity and sustainability of the organization. Most researchers who have investigated the effect of talent management have confirmed that talent management has a significant impact on the sustainability of organizational performance [5,15,60–62]. These researchers reinforced the assumption of a positive significant relationship between talent management and organizational performance [63–65]; additionally, talent management improves the effective performance of employees and productivity in the organization [1,66,67].

Furthermore, talent management practices result in sustainable competitive advantages, whereas technologies, new products, and services can be easily copied by competitors, leading only to temporary competitive advantages. The practices of attracting, developing, retaining, and motivating,

as well as rewarding talented employees, have been perceived as the talent management practices that result in sustainable competitive advantages. "Talent attraction", "talent retention", "learning and development", and "career management" are the elements of talent management which are intended to meet the strategic necessities of the organization [68].

2.2. Hypothesis Development

Management researchers generally agree that competitive advantage comes from the internal talents and abilities that cannot be easily imitated, in contrast to the company's products and services. According to the resource-based view and the knowledge-based view, human capital is recognized as the company's main asset to achieve a sustainable competitive advantage.

According to Heinen and O'Neill [69], talent management can be considered as the best way to establish a long-term competitive advantage, where the sustainable competitive advantage originates from the valued company resources that are hard to imitate or replace by competitors. Pattan [70] argued that strategic talent management strategies permit companies to identify managerial tasks and performance principles, guarantee stability in management activities, recognize talented employees for senior and critical positions, and fulfill the objectives of employees for career development.

Ultimately, implementing talent management practices in an effective and efficient way leads to the development of talented employees [71], and can lead to a constructive and sustainable organizational performance. Based on the above argument, the hypotheses for this study were established.

Talent attraction consists of recruitment and selection, employer branding, employee value proposition, and employer of choice [2,72], where various procedures are required for the purpose of selecting suitable talent that matches the organizational values and culture [72]. Talent attraction aims to attract prospective employees with the right qualifications and the right fit for the vacancies [73]. According to Phillips and Roper [25], it becomes imperative for organizations to be creative when developing a recruitment strategy and should avoid as much as possible the traditional methods of recruiting when attempting to attract "Generation Y" [25]. "Generation of younger workers" or "Generation Y" are those born between 1980 and 2001, who enter a workplace with a new and different set of expectations [25]. Philips and Roper [25] posit that one way to attract this talent, especially in a real estate company, is to offer them a competitive or above-market compensation packages, which include better benefits than other players in the same market they are operating. Though some executives in the real estate industry observed there could be an increase in the cost involved, the initial investment to attract this top-tier talent pays huge dividends [25].

Rastgoo [74] and Moghtadaie and Taji [75] conducted research to study the relationships between TM practices and organizational performance, the findings of which emphasized the significant impact that talent attraction has on organizational performance. Organizations should attract employees who have the suitable qualifications, which will lead to the enhancement and sustainability of organizational performance [76]. Furthermore, Aposporia et al. [77] undertook a study on human resource management and organizational performance in Southern and Northern Europe, in which the findings revealed a positive relationship between talent attraction and organizational performance. Based on the above, the following hypothesis was proposed:

Hypothesis 1 (H1). *Talent attraction will positively influence sustainable organizational performance.*

The main focus of "Talent Retention" is to encourage talented employees to stay in the organization for a longer period [78], which is considered a strategic procedure to sustain talented employees [79]. It is a great challenge for organizations to sustain their talented and out-performing employees [80]. Talent retention can be accomplished based on motivation, training, career advancement, benefits, and compensation [55]. According to Hauskenckt et al. [81], retaining talented and high-performing employees has a great impact on both the financial and operational performance of organizations, due to the possessed knowledge and qualifications.

The success, profitability, and sustainability of any organization are influenced by the organization's ability to retain and sustain their top talent [79]. The main challenge of most firms is how to keep the talented employee after training them. Becker et al. [82] suggested that "a compensation package that clearly stipulates expectations of performance, skill requirements, experience, and behavior" should be put in place. The author stressed further that the system should be designed to promote high performance at every skill level within the firm, and suggested that the compensation and reward support the overall goals of the firm, not just in recruitment and retention, but also in addition to the business performance [82]. According to Dychtwald et al. [83], "performance management systems" (PMS) should in addition to its objectives address how the different generations' employees perceive feedback and the determinants of employee retention. While Boomers generally assume they may spend one to five years in a position before being promoted, Generation Y want to know where they are going to be next month [83]. This view was corroborated by Cappelli [84], who found that 71% of top performers who received regular feedback tend to remain on the job against the 43% who did not receive regular feedback. These statistics indicate the significance of feedback in an employee's decision to remain in their job [84].

According to the research undertaken by Kontoghiorghes and Frangou [85], a positive correlation between "talent retention" and organizational performance was shown. Thus, the correlation between talent retention and organizational performance was concluded to be positive and significant, which means that organizations need to implement retention practices to be effective [68]. In line with the above, Hypothesis 2 (H2) was proposed:

Hypothesis 2 (H2). *Talent retention will positively influence sustainable organizational performance.*

Continuous implementation of learning and development practices is essential, where organizations are encouraged to have new procedures to achieve their tasks, provide new technologies, and have up-to-date skills and knowledge. These can be used to assess the ability of an organization to adapt in a changing environment, to have a sustainable competitive advantage, and to successfully compete with other rivals [86]. For this purpose, organizations should first identify employees who have deficiencies in qualifications and, then, identify the level and time needed to execute the process of learning and development [87]. Owing to the distinct traits that exist within each generation, Phillips and Roper [25] suggested that strategies formulation should be tailored specifically for each generation in order to engage them. This corroborates the position of Gostick and Elton [88], who stated that employees will remain in a firm where there is a "quality relationship with his or her manager", "an opportunity for personal growth and professional development", "work–life balance", "a feeling of making a difference; meaningful work", and "adequate training".

Learning and development is considered to be the basis of a company's success, in which improving performance is said to be difficult without learning [89], the objective of which is to decrease leadership deficiencies at the higher levels. According to Phillips and Roper [25], employees at all job levels appreciates learning; but, there is an indication that the employees of small companies appreciate learning more than those in large firms, and those people that work above 50 h per week exhibit above-average preference for learning. Wagner and Harter [90] concluded in their study that "it's better for an organization over the long haul to have employees trained and have supervisors and mentors dedicated to talking to employees about their performance". Tracy Bowers thus suggested the development of "multi-generational teams" [25]. Tracy stated further that "we have found the older generation enjoys working with the younger ones. The younger ones bring the energy and the younger generation likes to work with experienced older generation" [25].

The research undertaken by Taleghani et al. [91] and Gorozidis and Papaioannou [92] proposed that talent development has a positive impact on organizational performance. It also has a positive effect in sustaining the organizational competitive advantage [93]. Considering the above, the following hypothesis was proposed:

Hypothesis 3 (H3). *Learning and development will positively influence organizational performance.*

Career management involves collecting information illustrating the "interests, norms, strengths and weaknesses of a skill, indicating career objectives, and integrating in career strategies that aim at increasing the prospect of career goals to be attained" [94]. Career management consists of formal and informal activities, such as job rotation, employee seminars, and career development, as well as providing practices for self-improvement [95]. The study conducted by Dargham [95] about career management concluded that there exists a positive effect of career management on increasing both organizational performance and employee commitment. Furthermore, the findings of the study undertaken by Lyria et al. [96] highlighted the significant relationship between career management and organizational performance in companies operating in Nairobi. Considering the above arguments, Hypothesis 4 (H4) was proposed:

Hypothesis 4 (H4). *Career management will positively influence organizational performance.*

3. Methodology

The UAE real estate sector is becoming more transparent, which encourages purchasers and sellers to make wiser decisions with regards to their investment. For that purpose, real estate firms keep on hoisting the significance of "getting the right people in the right spot at the right time". Motivating, rewarding, and retaining extraordinary talent have turned out to be some of a real estate CEO's top needs, who are presently creating formal talent policies, which consist of new recruitment strategies, core competency hiring practices, mentorship, inclusive training programs, career development, performance score card, employee recognition, as well as up-to-date compensation practices. It is critical for real estate firms to take into consideration that nothing in the real estate industry is attained without incredible talent. Following the interest of real estate companies, the objective of our study is to investigate the effect of talent management practices on sustainable organizational performance in real estate companies located in the United Arab Emirates, specifically, to investigate the implementation of talent attraction, talent retention, learning and development, and career management. In our study, the research model shown in Figure 1 illustrates the relationships among our variables.

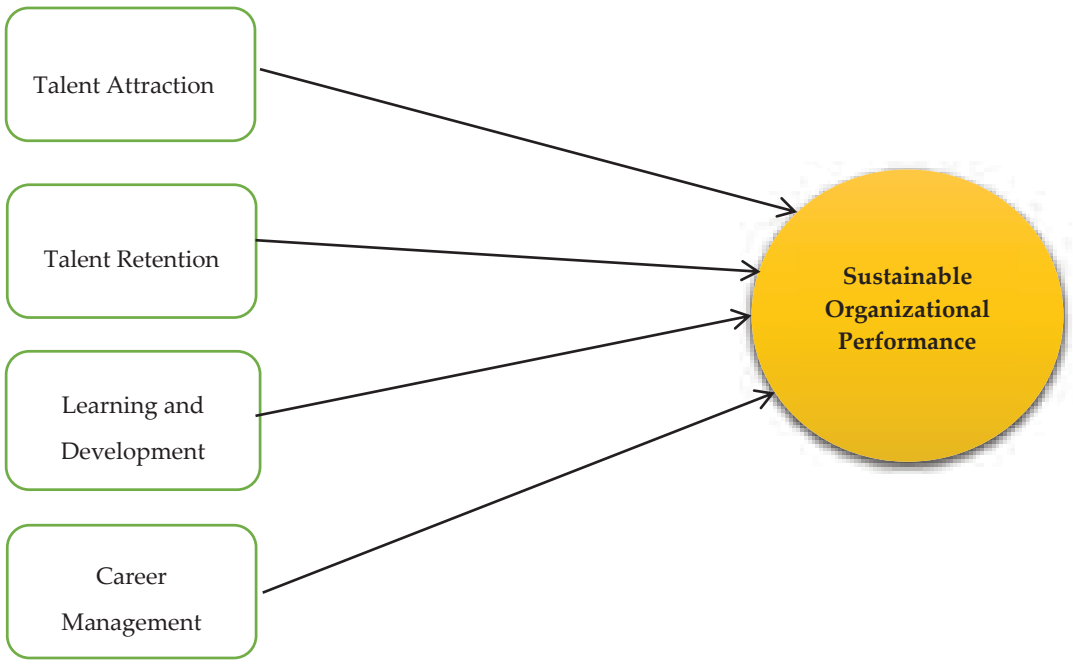

Figure 1. The research model.

Data Source, Collection, and Method of Analysis

The measurement items for "talent attraction" (TA), "talent retention" (TR), "learning and development" (LD), "career management" (CM), and "sustainable organizational performance" (PE) were taken from a previous study [97]. TA, TR, LD, CM, and PE were measured with 8, 5, 8, 6, and 5 items, respectively, out of which 3, 1, 4, and 2 items were found to have a loading value below the threshold in TA, TR, LD, and CM and were subsequently deleted from further analysis (see Appendix A). The participants were requested to rate their level of agreement with several statements relating to the main variables in this study, which were "Talent Attraction", "Talent Retention", "Learning and Development", "Career Management", and "Sustainable Organizational Performance". The statements were scaled based on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The target population of this study is the top manager working in real estate companies across the United Arab Emirates. In choosing the sample size, owing the time and resources constraints, Dubai and Abu Dhabi were first randomly selected out of the seven emirates in UAE. Thereafter, the lists of real estate companies in these two cities were sourced from the "Yellow Pages". The pages show that 639 and 242 real estate companies are available in Dubai and Abu Dhabi, respectively, totaling 881 real estate companies. Subsequently, the "Raosoft" sample size calculator was used to determine the actual sample size, considering a 5% margin error, 95% confidence level, and a 50% response distribution. The sample size was calculated to be 268. The sample size was then shared between the two cities in ratio 73:27 in proportion to the available number of real estate companies available. Finally, 277 and 103 real estate companies were randomly selected in the Dubai and Abu Dhabi emirates, respectively. The companies were contacted and a questionnaire was given to the top manager in the company. Out of the 380 questionnaires administered in the two cities, 233 (81.1%) and 83 (80.58%), totaling 306 questionnaires, were retrieved from the Dubai and Abu Dhabi real estate companies selected, respectively. The demographic characteristics of the participant show that 62% were male, while 38% were female. In respect of the age of the respondents, the data revealed the larger proportion of the participant to be between the age of 41 and 50 years old (42.5%), 37.8% between 31 and 40 years old, 11.6% above 50 years old, and 8.1% below 30 years old. The educational background of the respondents shows that 4.9% had high school, 24.7% a diploma, 44.7% a B.Sc., 22.5% a Masters, and 3.2% a PhD. In addition, the descriptive analysis of the main variables and correlations are presented in Table 1.

Table 1. Descriptive statistics and the correlation matrix.

Construct	Mean	Std. Deviation	(1)	(2)	(3)	(4)	(5)
Career Management (1)	4.06	0.558	1				
Learning and Development (2)	3.67	0.574	0.636	1			
Talent Retention (3)	3.93	0.535	0.741	0.694	1		
Talent Attraction (4)	3.46	0.416	0.844	0.686	0.851	1	
Sustainable Organizational Performance (5)	2.69	0.449	0.758	0.618	0.542	0.701	1

For the data analysis, we applied the Structural Equation Modeling (SEM) procedure to examine whether our proposed hypothesized model as stated in Figure 1 was appropriate. We first conducted a Confirmatory Factor Analysis (CFA) to evaluate both the reliability and validity of our proposed model. We then estimated the full structural model, which was then used to test the hypotheses.

The descriptive statistics of the main research variables are presented in Table 1.

4. Data Analysis and Results

A Structure Equation Model (SEM) with AMOS was utilized to test the proposed hypotheses. SEM is a covariance technique that evaluates the structured relationships between the observed and latent variables in the model and controls the measurement error while evaluating the relationship [98–101]. We implemented the two-step approach of Anderson and Gerbing [102] for model analysis. First, we reviewed the measurement model by executing a confirmatory factor analysis and analyzing the validity and reliability of this study. We also scrutinized the adequacy of the model for the data observed. Secondly, we evaluated the conceptual framework by evaluating the standardized coefficients of the structural relationship and their significance and, then, validated the findings and test hypotheses, accordingly.

4.1. Measurement Model

The measurement model was assessed during Confirmatory Factor Analysis (CFA). The modification indices and residual matrix indicate that three items from TA, one item from TR, four items from LD, and two items from CM should be trimmed in order to improve the model fit. This may be because there is a repetition in the items used to measure these constructs. Moreover, the modification indices indicate some covariance between the measurement errors should be constrained to improve the model fit. We believe this is because talent management practices are highly correlated, and thus should share some covariance in the measurement errors.

Before evaluating the hypotheses, the measurement model should demonstrate a reasonable degree of reliability and validity. In this analysis, the reliability of the measures was tested using Cronbach's alpha and composite reliability (CR), which are the standard parameters for determining the reliability of the measures [85,86]. Both the Cronbach's alpha and composite reliability of each variable should be 0.7 or above, in order to show adequate reliability [103,104]. As shown in Table 2, the Cronbach's alpha values ranged from 0.71 (for learning and development) to 0.96 (for sustainable organizational performance). Furthermore, the composite reliability values ranged from 0.75 (for learning and development) to 0.96 (for organizational performance). These statistics indicate a reasonable degree of reliability, because they were all above the value of 0.7.

Table 2. Reliability and convergent validity assessment.

Variable Name	Cronbach's Alpha	CR	AVE	Item	Weights
Talent Attraction	0.841	0.835	0.558	TA2	0.734 ***
				TA4	0.773 ***
				TA6	0.718 ***
				TA8	0.763 ***
Talent Retention	0.806	0.820	0.534	TR1	0.776 ***
				TR3	0.666 ***
				TR4	0.702 ***
				TR5	0.773 ***
Learning and Development	0.713	0.755	0.521	LD4	0.784 ***
				LD5	0.855 ***
				LD8	0.465 ***
Career Management	0.835	0.859	0.604	CM2	0.833 ***
				CM4	0.742 ***
				CM5	0.733 ***
				CM6	0.797 ***
Sustainable Organizational Performance	0.96	0.969	0.861	PE1	0.725 ***
				PE2	0.985 ***
				PE3	0.984 ***
				PE4	0.967 ***
				PE5	0.951 ***

*** Significant at 0.01.

In terms of validity, item loadings, their levels of significance, and "average variance extracted" (AVE) were utilized to determine the "convergent validity" of the test [105]. Each element should have a sufficient weight (loading ≥ 0.3) and a significant value (t-value ≥ 1.96) for its postulated structure, in order to demonstrate reasonable convergent validity [102]. In addition, the AVE should be equal to 0.5 or above [105]. As shown in Table 2, the weights of the items ranged from 0.46 to 0.98 and were significant at the 0.01 level, indicating that each item was weighted correctly and significantly on its hypothesized structure. The AVE values ranged from 0.52 to 0.86, which were far above the proposed threshold of 0.5. We may, therefore, deduce that the measurement model had accurate convergent validity.

For differential validity, the chi-square (χ^2) difference test was used to compare two "nested models", in which the covariance between a pair of variables in a single model is limited to zero [106]. The discriminant validity is formed once there is a considerable difference between the uncontrolled and controlled models. We checked all ten pairwise combinations of the five constructs. As shown in Table 3, the χ^2 difference tests for all pairs of constructs were significant at the 0.001 level, suggesting that each construct in the model varied significantly from the other constructs in the model.

Table 3. Chi-square (χ2) difference between the unconstrained and constrained models.

Construct Scale Pairs		Chi-Square (χ2) Difference	*p*-Value
Talent Attraction	Talent Retention	298.034	0.000
	Learning and Development	271.523	0.000
	Career Management	298.893	0.000
	Sustainable Organizational Performance	287.941	0.000
Talent Retention	Learning and Development	273.787	0.000
	Career Management	282.774	0.000
	Sustainable Organizational Performance	271.836	0.000
Learning and Development	Career Management	271.553	0.000
	Sustainable Organizational Performance	275.263	0.000
Career Management	Sustainable Organizational Performance	304.181	0.000

We used fit indices like chi-square (χ^2), "comparative fit index (CFI)", and "root mean square approximation effort (RMSEA)" to examine the fit of the proposed model to the experimental results. Such indices have been proposed to be the most comprehensive model fit indices [107]. The findings of the CFA provided proof of a good model fit (χ^2 = 248.703; d.f. = 156; χ^2/d.f. = 1.594; CFI = 0.939; RMSEA = 0.08; SRMR = 0.08).

4.2. Common Method Bias (CMB)

This research used perceptual data obtained from a single source and was, thus, vulnerable to potential common bias (CMB) [108]. To analyze this problem, we used the rigorous test proposed by Lindell and Whitney [109], which is a correlation-based marker variable tool. Within this approach, the common method bias is controlled for by partialling out the smallest correlation (which was 0.542 in this study) from the correlation between all the substantial variables. The significance level was, then, estimated for the adjusted correlations by evaluating the t statistic [109,110]. Following these practices, the results (shown in Table 4) suggested that none of the significant correlations had become non-significant when modified for common method bias, indicating that the method bias was not satisfactory for the bias of the observations in this survey.

Table 4. Common bias (CMB)-adjusted correlation.

Construct Pairs		Uncorrected Correlation	Adjusted Correlation	t-Statistic of the Adjusted Correlation
Career Management	Learning and Development	0.636 ***	0.636	7.817
	Talent Retention	0.741 ***	0.741	10.468
	Talent Attraction	0.844 ***	0.844	14.902
	Sustainable Organizational Performance	0.758 ***	0.758	11.020
Learning and Development	Talent Retention	0.694 ***	0.694	9.135
	Talent Attraction	0.686 ***	0.686	8.949
	Sustainable Organizational Performance	0.618 ***	0.618	7.458
Talent Retention	Talent Attraction	0.851 ***	0.851	15.374
	Sustainable Organizational Performance	0.542 ***	0.542	6.119
Talent Attraction	Sustainable Organizational Performance	0.701 ***	0.701	9.314

*** Significant at 0.01.

4.3. Structural Model Testing

In order to analyze our hypotheses, evaluation of the structural model was conducted using the maximum likelihood approach of AMOS. The t-value of the path coefficients and the squared multiple correlations were used to clarify the full structural equation model. The model estimation is shown in Figure 2. The analysis demonstrated that talent management strategies accounted for 58.2% of the variation in organizational performance. Table 5 shows the estimation of the path coefficients and their levels of significance. These findings show that neither Talent Attraction (coefficient = 0.260, $p = 0.181$) nor Talent Retention (coefficient = −0.186, $p = 0.247$) had a major impact on sustainable organizational performance. Therefore, hypotheses H1 and H2 were rejected. On the other hand, learning and development strategies had a significant and positive impact on sustainable organizational performance (coefficient = 0.237, $p = 0.04$). This means that, as learning and development practices improve, sustainable organizational performance also improves. Correspondingly, career management had a positive and significant impact on sustainable organizational performance (coefficient = 0.517, $p = 0.002$), indicating that career management is a silent predictor of sustainable organizational performance. The proposed model showed a strong model fit ($\chi^2 = 248.703$; d.f. = 156; χ^2/d.f. = 1.594; CFI = 0.939; RMSEA = 0.08; SRMR = 0.08), suggesting that the data matched our structural model well.

Table 5. Estimation of the model.

Construct	Coefficient	Std. Deviation	t-Value	*p*-Value
Talent Attraction	0.260	0.197	1.337	0.181
Talent Retention	−0.186	0.128	−1.157	0.247
Learning and Development	0.237	0.086	1.984	0.047
Career Management	0.517	0.126	3.153	0.002

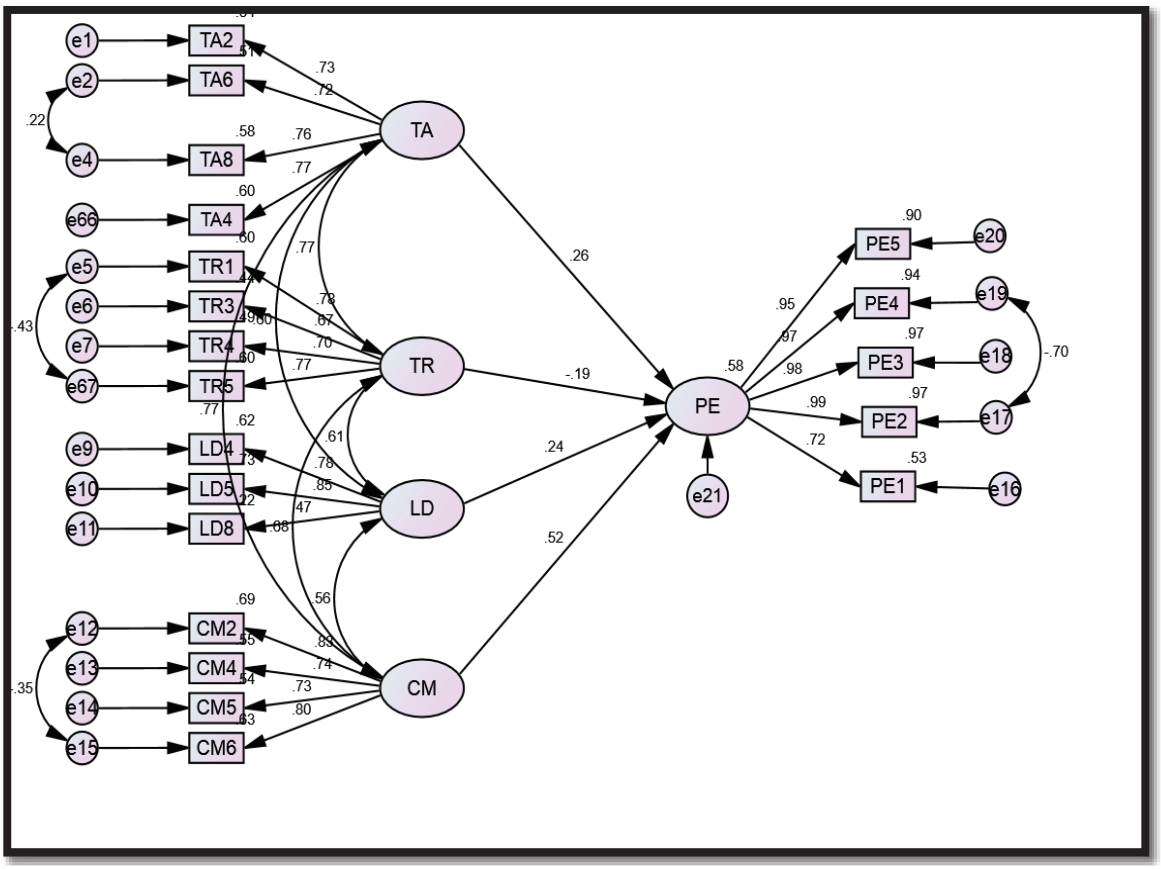

Figure 2. Full model estimation. **TA**: Talent Attraction; **TR**: Talent Retention; **LD**: Learning and Development; **CM**: Career Management; **PE**: Sustainable Organizational Performance.

5. Discussion and Conclusions

5.1. Discussion

Interest in studying the talent management concept, in terms of its definition, importance, and literature review, has increased, especially for academics and researchers. Talent management focuses on positioning the right person in the right place, encouraging employees to develop their qualifications and talent which, in return, serves to enrich and sustain the success of the organization [111,112]. Prior research undertaken to study talent management has mainly concentrated on the conceptualization of talent and talent management, as well as talent management practices. These studies generally highlighted the positive and significant relationship between talent management and organizational performance. Our research can be considered as an important contribution to the literature of the talent management concept, due to the scarcity of empirical research.

We conducted this research to study the impact of talent management on the sustainability of organizational performance; more precisely, to study the impact of talent management practices (i.e., attraction, retention, learning and development, and career management) on organizational performance. We empirically tested the developed theoretical model by gathering data from managers working in the human resources departments of small- and medium-sized real estate companies, in order to examine the relationships between the independent and dependent variables.

The findings of our study showed that there was no significant relationship between talent attraction and organizational performance, which contradicts most of the previous studies concluded that have stated that there exists a positive and significant relationship between the two variables [74,113,114]. The reason behind our findings refers to the idea that many organizations in the United Arab Emirates execute talent management practices without having a clear perspective of talent management.

Moreover, our findings indicate that there is no sign of attraction policies and practices, in disagreement with the literature review, which stressed the idea that small- and medium-sized companies are subjected to challenges in attracting talented employees more than large companies [115]. Thus, the finding of our study proves that the real estate companies in the UAE do not identify talent at the early stage of attraction practices.

Furthermore, the findings of our study demonstrate that talent retention had no significant impact on the dependent variable, which means that real estate companies in the UAE do not emphasize the implementation of talent retention policies, as they have little or no concern about them. This result is in contrast with the study undertaken by Auranzeb and Bhutto [116], which stressed the significant relationship between talent retention and organizational performance in service-sector firms; this positive and significant relationship has been supported by most empirical studies [68,114,117–119]. The increase in the resignation percentage may allude to the fact that most talented and qualified individuals tend to search for better opportunities that help them to learn and grow, as they believe that, in their current organizations, they have reached a point where they cannot improve their skills and, so, they cannot add anything new to the interest of the organization.

Moreover, the findings of our research were consistent with the study undertaken by Shaheen et al. [120], where the results of our study highlighted the significant and positive impact that learning and development has on sustainable organizational performance in real estate firms. Furthermore, the study of Poorhossienzadeh and Subramaniam [119] regarding MNCs in Malaysia revealed that improving talent is the most important factor to attain success; this outcome was supported by the research of both Lyria [97] and Johansson and Adams [121]. Learning and development provides great opportunities for talented employees to work on developing their skills that best fit prospective vacancies, such that they are ready and available once a vacant position opens up [122].

Furthermore, the results of our study indicate the significant and positive impact of career management on sustaining organizational performance, which was also confirmed by previous research [123,124]. The result stressed the importance of career management, which supports improving qualifications at the individual level and, consequently, sustainability and development at the organizational level, which implies that career management practices have the utmost impact on the sustainability and improvement of organizational performance [113]. This is why executives must recognize key positions, and the best-matching talented employees for such positions once the current in-charge person decides to leave the organization. This idea has been supported by the perspective of Collings and Mellahi [58] on talent management, who stressed the urge to recognize talent capabilities for critical positions.

Implications

Our study makes a significant contribution to both the theory and practices for sustainable organizational performance. The study empirically tests the model investigating the positive impacts of talent attraction, retention, learning and development, and career management on sustainable organizational performance. The study demonstrates that, in the real estate sector, sustainable organizational performance can be achieved through learning and development as well as career management of the employees. This indicates that the proposed model is a step forward in better understanding sustainable organizational performance. This will serve as a foundation study for future research to test the model in different contexts.

The results of this research have some managerial implications, which can help managers to effectively attain their organizational objectives. It is evident from the findings that the management is not paying the required attention to the talent attraction and retention in the industry, hence the need for the management to overhaul their strategy on the talent attraction and retention, as these will improve the explanation variations of talent management practices in the achievement of sustainable organizational performance. Managers should focus their attention on implementing talent management practices that emphasize the importance of human capital value in enriching sustainable organizational

performance that will enable them to have a competitive advantage in the market where they operate. Talent management should be considered more than simply a theoretical concept; managers should divert their mind-set from discussing talent management practices informally to their strategic implementation and integration using decision-making processes.

In addition, our findings may assist real estate companies to intensity efforts on the learning and development and career management of their employees, as they both have demonstrated to be a significant determinant of achieving sustainable organizational performance. Once talent management practices have been implemented, the different stakeholders should have clear information about their talent, as the absence of talent management awareness among managers may result in undesirable organizational performance. In order to ensure successful results from the implementation of talent management practices, managers should have full information regarding their talented employees, capturing the details of individual job roles, their contributions, their qualifications, career development, and so on. This information should always be updated, according to talent attraction, talent retention, learning and development, and career management practices.

Meanwhile, it is worthy to note that "Industry 4.0" is gaining an increased attention from both academics and practitioner in business [125,126], owing to its novel approach to how industry can collaborate with new technologies to get maximum output with minimum resource utilization. Kamble et al. [126] noted that "Industry 4.0" has the potential for realizing a sustainable industry value creation in the social dimension, aside from economic and environmental sustainability. Thus, the stakeholders in the real estate industry can look towards "Industry 4.0" for sustainable performance.

5.2. Conclusions

Most organizations recognize the importance of implementing talent management strategies and practices, in order to improve their performance and to create a sustainable competitive advantage that will permit them to stand out in the market. Talent management practices mainly focus on talent attraction, talent retention, learning and development, and career management.

The purpose behind this research was to study the impact of talent management practices (i.e., attraction, retention, learning and development, and career management) on sustainable organizational performance in real estate companies in the UAE. Our findings revealed that both talent attraction and talent retention practices had no impact on the dependent variable, as the surveyed organizations were classified as small- to medium-sized organizations, which have little awareness about attracting and retaining talent, in terms of enhancing and sustaining organizational performance. In contrast, the research demonstrated that both learning and development and career management practices had significant and positive impacts on the sustainable organizational performance of real estate companies, stressing the impact of career management—which is considered a silent predictor—and emphasizing the significance of improving qualifications, career coaching, identifying career goals, and identifying the deficiencies that hinder the reaching of career objectives. Furthermore, the significance of the learning and development practices are not limited to the size of the organization, where managers should concentrate on coaching and training programs, as well as job rotation experience, in order to leverage the performance of the organization regardless of the company size.

5.3. Limitations and Further Research

The study limitation lies in the restriction to the real estate sector in the two emirates in the UAE, making the generalization of the findings from this study to be limited, due to the differences in organizational context. Thus, the scope of the cities and industry covered can be extended in future studies. Although talent management is a recent research concept that has attracted the attention of both practitioners and academics, there is still much room for further research in this area. The study could be conducted in different industries in the UAE that have not been researched previously. Furthermore, other researchers could draw comparisons between the governmental and private sectors, in order to investigate the respective differences in impact of implementing talent management practices.

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Appendix A

Table A1. Items measurements and source.

Constructs	Items	Source
Talent Attraction (TA)	This company's good working conditions and fair wages have enabled it to attract the right talent	Lyria [97]
	In this company, we support employee training and career progression	
	Work-life balance, as well as social networking facilities, in this company are motivating factors for our employees	
	We ensure a good organizational climate, in order to attract the right talent	
Talent Retention (TR)	We use an effective leadership style and are careful with how we handle employee issues	
	My company has a competitive compensation system, in comparison to other organizations in the same industry, which is a motivating factor for our employees	
	We have an internal recruitment policy that helps to raise the loyalty and morale of our employees	
	My company has flexible working hours as a motivating factor for our employees	
Learning and Development (LD)	In our company, an in-house development program is commonly used	
	Coaching by the line managers is carried out in this company	
	We believe E-learning is of great importance in our company	
Career Management (CM)	This company believes career planning facilitates the expansion and growth of this company	
	My company plans on employee growth and progression	
	My company strives to establish career paths and families of jobs in every department	
	In my company, we develop programs and initiatives that enhance employee development	
Sustainable Organizational Performance (SOP)	In this company, we believe talent managementincreases our competitiveness	
	My company's talent retention strategy has led to an increase of sales	
	Talent management in the organization leads to increased employee productivity.	
	This company's internal recruitment policy helps to uplift employee morale	
	This company's formal succession planning has contributed to a high return on investment.	

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Problem-Focused Coping Strategies, Workplace Bullying, and Sustainability of HEIs

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Abstract: Amid the strain related to the necessity of distance learning and related organizational adjustments in higher education institutions (HEIs), this paper re-examines the problem-focused coping strategy and its efficiency in addressing work-related strain. A case for the centrality of a problem-focused coping strategy in maintaining sustainability and resilience of HEIs is made. To this end, the spotlight is directed at workplace bullying in HEIs, which—due to its implications for absenteeism, turnover, and productivity—represents one of the most challenging issues in talent management in HEIs. What is termed here "hidden cost of workplace bullying" constitutes a direct challenge for HEIs sustainability and resilience. The discussion and the findings elaborated in this paper are based on a survey (n = 400) conducted across HEIs in Pakistan. It is argued that the findings are generalizable, which makes this paper an important addition to the literature on sustainability and resilience in HEIs.

Keywords: talent management; HEI sustainability; bullying; coping strategies; problem-focused coping strategies; managerial implications; the hidden cost of workplace bullying

1. Introduction

Higher education institutions (HEIs) worldwide are in the process of transition. They need to adapt to the twin-challenge of the changing political and economic environment in which they operate [1,2] and to the evolving demands, expectations, and capacities of the student body [3]. This twin-challenge means that HEIs worldwide struggle with acquiring finance and transforming their organizational structure and their business model, while at the same time seeking to develop a curriculum that meets the demands and expectations of both the student body and the market. Talent management in this context is not considered a priority. Moreover, more frequently than not, the bulk share of the burden of this multi-scalar transition the HEIs undergo is moved on the shoulders of the faculty [4]. As argued elsewhere, the faculty—for the sake of keeping their promotion options open—is expected to and agrees to engage in additional non-paid "service" activities. As a result, the workload the faculty already has may even double [2]. The COVID-19 pandemic, and the necessity to switch to online distance learning nearly overnight, created an additional source of strain for the faculty as well as for the HEI administration [5,6]. The situation of a continued escalation of challenges and burden that the faculty and the administration are exposed to frequently exacerbates pre-existing problems pertinent to the group dynamics, collaboration, equality, fairness, and bullying in a given

HEI. Research dealing with these issues is still nascent [7]. By focusing on bullying in HEIs, this paper inserts itself in this debate to argue that, especially today, an effective problem-focused coping strategy might be the best way of navigating challenges and issues, of which bullying is but one representation.

The debate on bullying in academia is not new, and yet regrettably the problem persists, and relating research maintains its relevance [8–14]. Diverse forms of bullying exist. The thrust of the phenomenon lies in "the infliction of various forms of abuse (e.g., verbal, emotional, psychological) against a colleague or subordinate by one or more other members of a workplace" [8]. Details about which forms of action bullying can take are redundant at this point. Clearly, several detailed accounts of bullying and its forms exist in the literature [8,10,12,13]. The case that this paper seeks to make is that there is a direct correlation between the scale and scope of bullying in HEIs, the ways of coping with bullying and its implications, and the sustainability of HEIs. In other words, considering that bullying in HEIs results in increased absenteeism, increased turnover intention, and decreased productivity, it represents one of the most salient challenges HEIs face today. Its gravity is exacerbated by the fact that workplace bullying in HEIs is underreported.

Given that sustainability and resilience of HEIs, and so quality education [15], are the key goals all societies strive for, this paper re-examines the problem-focused coping strategy in connection to workplace bullying in HEIs. Drawing from the findings of a survey conducted among 400 respondents, faculty members in HEIs in Pakistan, a positive relationship between a problem-focused coping strategy and the degree of individual strain and turnover intention is evidenced. It is argued that the findings elaborated in this paper are generalizable, at least as regards the recommendations and suggestions for HEI administration, which makes this paper an important addition to the literature on talent management and sustainability. The argument in this paper is structured as follows. The following section sheds light on the debate on coping strategies, bullying, and strain in HEIs and links them to the issue of organizational performance of HEIs, including questions of sustainability and resilience. Section 3 elaborates on the methods and methodology applied for this study, including detailed insights into the specific scales applied for the examination and the outcomes of the examination themselves. Discussion and conclusions follow.

2. Bullying, Problem-Focused Coping Strategy, and Sustainability in HEI

The discussion on diverse styles of coping strategies and their efficiency in navigating specific situations of stress in an individual's private and professional lives have been thoroughly discussed in the literature [15–20]. In a similar manner, the discussion on bullying in the workplace maintains its momentum [8–14,21–23]. In this context, bullying in HEIs establishes itself as an important and self-standing challenge [24–26]. Bullying in HEIs is a multi-scalar problem [8–10] that affects an individual's well-being and takes such forms as anxiety, insomnia, indigestion, lack of appetite, and others. It also affects an individual's family and family life because the stress and strain are "imported" into the household [27]. Finally, it has an adverse impact on an individual's performance at work. It manifests itself through absenteeism, decreased productivity driven by dwindling motivation, intention to leave, and others [28,29]. As a result, the overall performance of a given HEI falls, and an avalanche of adverse implications follows [30–36]. In the extant research on strategies aimed at coping with stressful work-related situations, the value of problem-focused strategies was frequently stressed [37]. The essence of problem-focused coping strategies rests in a conscious attempt by the victim to resolve the problem by confronting those who are responsible for the situation of strain. This may include direct and instrumentalized forms of action.

Relatively little has been written so far on the correlation between bullying-related strain and efficient coping strategies [38–40]. Even less, however, has been written about the efficient ways of navigating bullying-related strain and implications of bullying in the context of HEIs [41,42]. It remains yet to be determined whether it is valid to consider the context of an HEI on the same par with any other business organization and whether, accordingly, comparisons with and experiences gained in the business sector, especially as regards bullying, can be applied in HEIs [43,44]. In several respects, HEIs,

always on average because exceptions exist, do not stand the comparisons and standards applicable in the business sector [45] and, for instance, are considered as the late adopters of certain organizational, human resources (HR), and leadership solutions [35]. In addition, as research suggests [45,46], there is a certain qualitative specificity to the HEI environments, which may not be applicable to a regular business setting. The key factors that are at play here include the individual personality traits of the faculty that led them to pursue research and teaching, the usually non-profit orientation, the increasingly sensitive and unresolved issue of student seen as the customer, frequently subjective, open-ended, and grossly unfair promotion requirements, and many more. As outlined in the introduction, the case that this paper seeks to make is that there is a direct correlation between the scale and scope of bullying in HEIs, the ways of coping with bullying and its implications, and the sustainability of HEIs. In this view, it is mandatory to examine the intersection of bullying in HEIs and the effectiveness of coping strategies with a view to proposing a few recommendations for the faculty and the administration, including the deans and the human resource management department. This paper does that by evidencing that a problem-focused coping strategy is the most efficient in view of addressing some of the implications of workplace bullying in HEIs. Accordingly, the question is how to exploit this finding and apply it in the context of HEIs worldwide.

3. Methodology, Methods, and Materials

The objective of this section is to provide evidence that a positive direct correlation exists between a problem-focused coping strategy and bullying and bullying-related strain in HEIs. The discussion builds on the assumption that bullying-related strain generates a variety of physical and emotional implications for the victims of bullying, which leads to diverse, prolonged, and frequently hidden costs and related losses in productivity in HEIs. By evidencing the said positive correlation, a case is made that, with regards to bullying in HEIs, problem-focused coping strategies represent the most efficient way of dealing with bullying and bullying-related strain. Therefore, a positive correlation exists between problem-focused coping strategies and the sustainability of HEIs. The argument evidencing that draws from the outcomes of a survey (n = 400) conducted across HEIs in Pakistan.

3.1. About the Survey

For the sake of this research, a survey was conducted. The sample consisted of 400 faculty members (men = 200, women = 200) recruited from 12 public universities in Pakistan. The age range of the sample was 24 to 60 years (M = 33.85, SD = 8.0). A purposive sampling technique was used to collect the sample. The demographic information forms, the Workplace Bullying Scale (WBS), the Workplace Bullying Strain Inventory (WBSI), the Brief Cope Inventory Scale (BCIS), and the Turnover Intention Scale (TIS) questionnaires were individually administered to and completed by all study participants. Each scale was accompanied by a set of written guidelines explaining how the questionnaire should be responded to. All questionnaires were collected personally. The present study was conducted in a manner that respects the dignity, right, and welfare of all the participants of the research. Participants were informed that all the information provided by them would be kept confidential. They were also informed that they could withdraw from the study at any time. The data collected were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0 and the Analysis of Moment Structures (AMOS) version 22.0. To assess the internal consistency of the scales, reliability analyses were run, and Cronbach's alphas of all scales were obtained. Regression analyses were employed to identify the role of the independent variable (workplace bullying) on dependent variables (workplace bullying strain) and turnover. The mediation role of problem-focused coping strategies between workplace bullying and bullying strains and turnover was investigated using structural equation modeling (SEM) through AMOS.

3.2. The Sample

There is no statistically systematic record about the faculty in Pakistani HEIs, which could be accessed and adopted as the target population. Furthermore, workplace bullying is a culturally and socially inhibited issue and thus its scale tends to be underreported [47,48]. For these two reasons, it was not acceptable to employ any method of probability sampling strategy. Accordingly, following a cross-sectional design, the purposive sampling approach was employed. A total of 521 faculty members from 12 HEIs in Pakistan were invited to respond to the survey. Of these potential participants, 400 respondents (men = 200, women = 200) completed the questionnaires. This sets the response rate at 76%. The age range of the survey participants was 24–60 years (M = 33.55, SD = 8.0). The baseline of academic qualification of the sample was sixteen years of education with a minimum of one year of teaching experience. Non-teaching staff was not included in the present study.

3.3. The Scales (Measures)

For the sake of the examination in this study, the following scales were employed: the Workplace Bullying Scale (WBS) to assess the respondents' exposure to bullying; the Workplace Bullying Strain Inventory (WBSI) to assess the strain caused by bullying; the Brief Cope Inventory Scale (BCIS) to assess the respondents' preferred strategies to cope with stressful situations; and the Turnover Intention Scale (TIS-6) to assess the respondent's intention to leave the organization in near future as a result of bullying. The following paragraphs offer an insight into these scales and how they were applied in this study.

The Workplace Bullying Scale (WBS) [49] was used to assess the participants' exposure to bullying. Participants were asked to point out how often over the past six months they had been exposed to negative behaviors associated with bullying; a list of behaviors was listed. This scale consisted of 21 items. All items in the scale were written in a behavioral form. Not a single item of the WBS used the word "bullying". The scale consisted of two subscales. The first subscale, consisting of 10 items, focused on work-related bullying, e.g., withholding necessary information affecting the respondent's professional progress and setting unrealistic goals and deadlines. The second subscale, comprised of 11 items and examined person-related bullying, e.g., spreading rumors, social exclusion, and others. The Cronbach's alphas acquired in the present study are $\alpha = 0.77$ and 0.87 for work-related bullying and person-related forms of bullying, respectively, and 0.94 for the total bullying scale. The scale was scored on a 5-point Likert rating scale, where "Never" was scored as 1 and "Daily" as 5.

The Workplace Bullying Strain Inventory (WBSI) [48] was used to assess the bullying strain. The use of the WBSI derived from the assumption that strain results from bullying experience and that it manifests itself in several areas/domains related to job/work, psychology, interpersonal relations/problems, physical, and behavioral issues/problems. The WBSI consisted of 33 items. The scale was scored on a 5-point Likert rating scale where "Never" was scored as 1 and "Always" as 5. The WBSI consisted of 5 subscales. There were 6 items for job strain, 7 items for the dimension of psychological complaints, 6 items for physical complaints, 7 items for interpersonal complaints, and 6 items for the dimension of behavioral complaints. Respondents' higher scores on WBSI were indicative of greater strain in specific areas. The Cronbach's alphas of the five subscales of the WBSI acquired in the present study are $\alpha = 0.89$, 0.87, 0.89, 0.85, 0.86 for the psychological strain subscale, interpersonal strain subscale, physical strain subscale, job-related strain subscale, and behavioral strain subscale, respectively, and 0.94 for the total WBSI scale. Sample items are "I feel a lack of interest in my office work", "These days I feel depressed due to the problems related to my job", and "I have trouble falling asleep and sleeping well".

To examine how the survey respondents cope with bullying-related strain, the Brief Cope Inventory Scale (BCIS) [50] was used. This scale enables assessing the respondents' preference to apply certain coping strategies over others when facing a stressful situation. While the original scale consists of 28 items, for the purpose of this study, only a 10-items-subscale of problem-focused strategies was used. The sample items of that subscale included: "I've been taking action to try to make the situation

better" and "I've been trying to get advice or help from other people about what to do". This scale is scored on a four-point rating scale: with responses pertaining 1 "Usually don't do" to 4 "Do this a lot". The Cronbach's alpha for the problem-focused coping scale for this study was 0.97. The higher scores on the BCIS indicated a greater preference and tendency to use these coping strategies.

Finally, the Turnover Intention Scale (TIS-6) [51] was applied to assess the respondents' intention to leave the HEI organization in near future. The original version of this TIS-6 consists of 14 items [43], but its shorter version is also available [52] and consists of 6 items. The items included in the TIS-6 applied in this study were as follows: "How often have you considered leaving your job?" and "How likely are you to accept another job at the same compensation level should it be offered to you?" The Cronbach's alpha for the Turnover Intention Scale on present data was 0.82. The higher the score on the TIS-6 scale, the greater the intention to leave the institution.

3.4. The Results

The following seven tables, i.e., Tables 1–7, offer an insight into the results of the detailed analysis of the responses to the survey. Each table dwells on a specific issue, an item comprising the research model applied in this study. Table 7 serves as the most important table, perhaps, as it confirms the positive correlations between a problem-focused coping strategy, the faculty's degree of bullying-related strain, and intention to leave the organization. Details are provided below.

Table 1 offers an insight into the descriptive statistics, Cronbach's alphas, and inter-correlations of the study variables. With the goodness of fit at 0.99, the comparative fit index at 0.99, goodness of index at 0.1, the root mean square of residual at 0.02, and χ^2/df ratio at 2.76 showing that the proposed model provided a good fit to the data. Forty-two percent of teachers reported experience of workplace bullying in their respective institutions. Findings indicate that bullying positively and significantly predicted bullying strains and turnover intentions, and this relationship was mediated by problem-focused coping strategies. Table 1 shows that all scales possess excellent reliability and support the use of these scales in the present study [53].

Table 1. Descriptive statistics, Cronbach's alphas, and inter-correlations of the study variables (N = 400).

Scales	1	2	3	4	A
1-Work-bs	-	0.54 **	0.34 **	0.20 **	0.90
2-Bul-si	-	-	0.22 **	0.18 **	0.83
3-Prob-foc	-	-	-	0.13 **	0.88
4-Turnover					0.82
M	53.84	92.14	23.72	22.58	
SD	10.63	25.75	10.26	3.27	

** $p < 0.01$. Note: Work-bs = Workplace Bullying Scale, Bul-si = Workplace Bullying Strain Inventory, Prob-foc = problem-focused coping.

Table 2 demonstrates that 42% of the participants reported bullying exposure, while 58% of the participants were never exposed to workplace-bullying. Women were subjected to bullying more frequently (66%) as compared to male faculty members.

Table 2. Percentage of higher education teachers according to bullying exposure (N = 400).

Bullying Exposure	Men (N = 200) n (%)	Women (N = 200) n (%)	Total (N = 400) n (%)
Bullied	36 (18)	132 (66)	168 (42)
Non-bullied	164 (82)	68 (34)	232 (58)

Table 3 indicates that workplace bullying is a significant positive predictor of coping strategies as it explained 12% of the variance in coping strategies. Workplace bullying is a significant positive

predictor of bullying strain (ß = 0.54, $p < 0.001$) as well as it explained 30% of the variance in workplace bullying strain. Table 3 also shows that the predictability of turnover is the result of exposure to workplace bullying. Results show that workplace bullying is a significant positive predictor of turnover (ß = 0.20, $p < 0.001$); it accounted for 4% of the variance in turnover intention.

Table 3. Linear regression for predicting use of coping strategies, strains, and turnover from workplace bullying exposure (N = 400).

Variables	Coping			Strains			Turnover		
	B	SEB	ß	B	SEB	ß	B	SEB	ß
Workplace Bullying	0.33	0.04	0.34 ***	1.31	0.10	0.54 ***	0.06	0.01	0.20 ***
R^2		0.12			0.30			0.04	
F		54.58			21.63			167.05	

*** $p < 0.001$. Note: SEB = Standard Error of the Un Standardized Beta.

Table 4 offers an insight into person-related and work-related bullying subscales that were examined through the stepwise regression analysis. Accordingly, Table 4 shows that 18% of the variance in bullying strain is accounted for by work-related exposure to bullying alone. At the same time, work-related and person-related bullying collectively account for 30% of the variance in bullying strains. F = 92.71, 83.10, $p < 0.001$ supported the model. Thus, both types of bullying were found to serve as significant predictors of bullying strain.

Table 4. Stepwise regression for predicting bullying strain from the subscales of workplace bullying (N = 400).

Model	B	SEB	β
1. Constant	43.8	5.15	0.43 ***
Job-related bullying	1.73		
R^2	0.18		
F	92.71		
2. Constant	20.91	5.64	
Job-related bullying	1.38	0.17	0.34 ***
Person-related bullying	1.25	0.16	0.33 ***
R^2	0.3		
F	83.1		

Note: *** $p < 0.001$.

Table 5 demonstrates the results of the stepwise regression analysis of the workplace bullying subscales. On the person-related subscale, bullying appeared as a significant predictor of workplace bullying strains (ß = 0.19, $p < 0.001$), while person-related exposure to bullying explained 3% of the variance in employees' turnover intention.

Table 5. Stepwise regression for predicting turnover from the subscales of workplace bullying (N = 400).

Model	B	SEB	β
1. Constant	20.21	0.62	
Person-related bullying	0.09	0.02	0.19 ***
R^2	0.03		
F	15.36		

Note: *** $p < 0.001$.

Table 6 offers evidence that the model applied for this study fits the data. The above model is judged to be a good-fit model as $\chi^2 = 2.76$ with a p-value > 0.05; the values of the comparative fit index (CFI), Bollen's incremental fit index (IFI), and goodness of fit index (GFI) are higher than 0.90, and root mean square residual (RMSR) is less than 0.08 [54]. The ratio of χ^2/df was used as a further goodness-of-fit criterion that is not larger than 5. Therefore, the model fits the data well [55].

Table 6. Fit indices for the mediation model (N = 400).

Model	χ^2	df	CFI	IFI	GFI	RMSR
	2.76	1	0.99	0.96	0.1	0.02

Note: χ^2 = chi-square, df = degree of freedom, CFI = comparative fit index, IFI = Bollen's incremental fit index, GFI = goodness of fit index, RMSR = root mean square residual.

Table 7 showcases that the standardized direct effects of workplace bullying are a significant predictor of bullying strain and employees' turnover. According to the findings shown in Table 7, problem-focused coping strategies fully mediate the relationship between bullying exposure, employees' strains (ß = 0.07, p = n.s), and their intention of turnover (ß = 0.02, p = n.s). Accordingly, it can be argued that problem-focused coping strategies can mitigate the effects of bullying on employees' level of strain and their turnover intention.

Table 7. Standardized direct, indirect, and total effects of workplace bullying on bullying strains and turnover intention (N = 400).

Predictor	Outcome	Direct Effect	Lower-Upper	Indirect Effect	Lower-Upper	Total	p
Workplace bullying	Strains	0.52	0.45–0.60	0.02	−0.01–0.05	0.54	0.000
Workplace bullying	Turnover intention	0.18	0.06–0.28	0.02	−0.00–0.06	0.20	0.000
Workplace bullying	Coping	0.34				0.34	0.000
Coping	Strains	0.07				0.07	0.170
Coping	Turnover	0.02				0.02	0.342

3.5. A Few Words on the Limitation of This Study

There are three key limitations to this study. First, the data were collected through a self-reporting method. This might have exacerbated the already existing problem of the underreporting of workplace bullying [8,10,30,54]. The suggestion, therefore, is that future research dealing with the problem examined here is enriched by focus groups and interviews. In this way, more detailed information about the frequency, severity, and consequences of bullying might be collected. Second, the respondents invited to this study were only from public HEIs. Even if, at face value, adding respondents from private HEIs would add to the discussion, a decision was made not to do so at this point. Research suggests that the prevalence of workplace bullying is higher in public HEIs [56]. At the same time, a case can be made that dissimilarity in work environments between public and private HEIs exists. This issue has to be factored into the analysis. This is the subject of our ongoing exploration. Third, the discussion in the paper might have benefitted from additional covariates in the regression analysis, e.g., work-family conflict, the institutional environment where bullying takes place, victims' personality

type, and his/her personal characteristics, such as age, gender, job rank, and length of experience. The inclusion of these factors would certainly add a more sophisticated twist to the analysis. To remain concise and focused on the purpose of the study, these covariates were not addressed in this study. Notably, these factors not only enhance the occurrence of bullying but may also lessen the coping process. All things considered, these issues shall be addressed in our future research.

4. Discussing the Survey's Results

The objective of this paper was to query the relationship between bullying and bullying-related strain in HEIs and the efficiency of problem-focused coping strategies seen as a function of HEIs' sustainability. The key assumption on which the discussion in this paper was built is that workplace bullying in HEIs—due to its implications for absenteeism, turnover, and productivity—represents one of the most challenging issues in talent management in HEIs. It was argued that the diverse, prolonged, and hidden implications of workplace bullying in HEIs, a phenomenon termed here as the "hidden cost of workplace bullying", constitutes a direct challenge for HEI sustainability and resilience. To support these interrelated assumptions, a survey (n = 400) was conducted across HEIs in Pakistan. The findings of the analysis performed on the outcomes of the survey are discussed below.

The results of this study confirm the initial assumption that bullying in HEIs is a common practice [57–59]. Indeed, 42% of the HEI faculty who responded to this survey indicated that they were subjects to work-related bullying (see Table 2). These findings are consistent, but not identical, with the findings presented in the broader literature on the subject [57]. Country-level disparities, institutional specificity, and (organizational) culture are the key factors that determine the emergence and forms of workplace bullying [60–62]. These factors are complemented by such issues as an increased demand for efficiency in HEIs, a tendency for an over-evaluation of the faculty, an incommensurate weight of students' opinions in the overall evaluation of the faculty, frequently subjective and overall unfair rules defining the prospect of promotion, and many others, including the changing global landscape of education [63]. The same factors also play a role vis-à-vis the degree of tolerance for workplace bullying behaviors, and finally vis-à-vis self-reporting of acts of bullying.

To explore the bullying strain, it was assumed that experience of workplace bullying predicts psychological health complaints, physical strain, interpersonal strain, job-related strain, and behavioral strain. Regression analyses performed for the purpose of this study showed that workplace bullying exposure significantly predicted bullying strain. These outcomes are in line with the findings of earlier studies [64–67] that made a clear connection between exposure to bullying in the workplace and propensity for depression, anxiety, low self-esteem, and others. Empirical evidence indicates that bullying impacts all aspects of targets' lives.

Workplace bullying bears significant costs for any organization. The cost can be quantified, but it is rather the qualitative dimension of the cost that, paradoxically, is the costliest for organizations. In the case of HEIs, the loss of talent due to high turnover, or under-exploitation of the talent aboard, is responsible for what we call the "*hidden cost of workplace bullying*". As argued earlier in this paper, victims of bullying tend to underperform in general, where underperformance may take the form of increased absenteeism, lesser commitment to workplace duties and obligations, the resultant decreased quality and quantity of performance, and many others. Institutional turnover is one of the major possible consequences of bullying [11–13,65–68]. In this study, a simple linear regression analysis was employed to test if workplace bullying may significantly predict the respondents' intention of turnover. The finding shows that the predictor explained 4% of the variance (ß = 0.20, $p < 0.001$).

This study also examined the mediating role of problem-focused coping strategies in association with workplace bullying, bullying strain, and turnover intention (see Table 3). It was hypothesized that problem-focused coping strategies will mediate the relationship between workplace bullying and bullying strain and employees' turnover intention. To examine this the classic mediational analysis was applied [69–71]. In order to meet the initial criteria, set by Baron and Kenny [69], significant relationships were established between (i) the independent variable (workplace bullying) and dependent variables

(strain and turnover); (ii) the independent variable and mediator (problem-focused coping); and (iii) between the mediator variable and the outcome variables (strains and turnover) (see Table 3).

The condition of mediation also requires that the independent variable must have no effect on the outcome variable when the mediator is held constant (full mediation) or should become significantly smaller (partial mediation). To test the mediation analysis the SEM approach was used. Results describe a good fit of the hypothesized model to the data. According to the findings of this study, problem-focused coping strategies mediate the relationship between workplace bullying, bullying strain, and employee turnover. These results echo the finding described earlier in the literature on the subject [72,73]. What is interesting, and the results of this study confirm it, the problem-focused coping strategy proved an effective mediator of workplace-bullying-related strain and the intention of turnover. This is consistent with arguments raised in the literature that stress that active coping strategies, of which problem-focused coping strategies are a part, tend to yield sustainable solutions to problems, in this case, to bullying in HEIs and its diverse implications [73–80].

5. Conclusions

The objective of this paper was to query the relationship between bullying and bullying-related strain in HEIs and the efficiency of problem-focused coping strategies seen as a function of HEIs' sustainability. A study based on the responses of 400 individuals, faculty members in HEIs in Pakistan, provided evidence for a positive relation between problem-focused coping strategies and the implications of workplace bullying. Throughout the paper, the negative long-term and frequently hidden implications of workplace bullying on the overall performance of HEIs were stressed. We termed them the "hidden cost of workplace bullying" in HEIs. To this end, we argued that the hidden, frequently unaccounted for, yet very pricy, cost of bullying in HEIs may unfold at three interconnected dimensions, including (i) adverse effects on an individual's well-being, as evidenced by anxiety, insomnia, indigestion, lack of appetite, and others; (ii) adverse effects on an individual's family and family life because of stress and strain that are "imported" into their households; and (iii) an adverse impact on an individual's performance at work, as it manifests itself through absenteeism, decreased productivity driven by dwindling motivation, intention to leave, and others. As it was argued in this paper, the hidden cost of workplace bullying in HEIs is immense, and yet it remains under-explored and under-rated. Against this backdrop, this paper sought to stress that active problem-focused coping strategies represent the most efficient way of navigating the multi-scalar challenge of bullying in HEIs. The promise that the problem-focused coping strategies bear is derived from the fact that the victims are enabled and empowered to confront those who are responsible for the situation of strain, in this case, bullying. This may include direct and instrumentalized forms of action. The remainder of this paper sheds light on what could be done to reify the value of addressing bullying and bullying-related strain in HEIs through problem-focused coping strategies. The following three points, seen merely as an introduction to a conversation, are dedicated to a brief discussion on soft and hard tools of purposeful problem-focused coping strategies that HEIs might promote.

As for hard tools, these would entail legal and paralegal measures the victims of bullying might refer to. However, grievances and lawsuits tend to be inefficient when it comes to workplace bullying in HEIs. Frequently, faculty manuals do not expressly foresee the possibility of reacting to acts of bullying; ad hoc committees that might be established to deal with a complaint tend to be either biased or confined by their own members' fear of the implications of going against a superior. As regards lawsuits, these require time and resources, rare goods in the world of HEIs.

As for soft tools associated with problem-focused coping strategies, there is an urgent need for space for the faculty to socialize and relax at the premises of a given HEIs. There is a need for a faculty space clearly delineated from areas accessible by students and by the administration. The faculty needs to have the possibility to develop soft tools of active response to instances of bullying, caused by the fellow faculty member(s) and by the administration, including the deans. The soft tools of response, serving as necessary enablers of problem-focused coping strategies require friendship, skilled helpers,

and genuine buffering of groups and individuals. These informal institutions can only develop and thrive if the faculty can build and develop their group identity. Failure by the administration to provide for such a space is a serious hindrance.

What follows is that HEIs need to have clearly written faculty manuals that give the faculty members the possibility of having justice served. This requires that open and confidential channels of communication exist where victims of bullying can seek first instance support. Several institutional solutions to this idea exist, and the actual model that might be developed will be a function of a given institution's culture, resources, and tradition. In this context, however, the role of accreditation bodies, for instance, NEASC or AACSB, should be stressed. Their institutional review process should include the question pertaining to workplace bullying and unfair behavior both toward the faculty, among the faculty, and by the faculty. This means that a 360 counter-bullying strategy may make a difference. This paper sought to contribute to the debate.

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The Gig Economy: Current Issues, the Debate, and the New Avenues of Research

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Abstract: In the context of the debate on platform economy, on the one hand, and the gig economy, on the other, this paper delineates the conceptual boundaries of both concepts to query the gig economy research included in the Web of Science database. The initial search, cutoff date February 2020, targeting "gig economy" returned a sample of 378 papers dealing with the topic. The subsequent analysis, employing the science mapping method and relating software (SciMAT), allowed to query the body of research dealing with gig economy in detail. The value added by this paper is fourfold. First, the broad literature on gig economy is mapped and the nascent synergies relating both to research opportunities and economic implications are identified and highlighted. Second, the findings reveal that while research on gig economy proliferates, the distinction between "platform" and "gig" economy frequently remains blurred in the analysis. This paper elaborates on this issue. Third, it is highlighted that the discussion on gig economy is largely dispersed and a clearer research agenda is needed to streamline the discussion to improve its exploratory and explanatory potential. This paper suggests ways of navigating this issue. Fourth, by mapping the existing research on gig economy and highlighting its caveats, the way toward a comprehensive research agenda in the field is highlighted.

Keywords: gig economy; platform economy; science mapping; WoS; servitization; digital economy

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1. Introduction

Advances in sophisticated information and communication technology (ICT) are the key source of disruption, both positive and negative, in today's politics, economy, and society [1,2]. One of the still nascent and, therefore, underexplored fields is the platform economy that denotes the possibility of connecting employers and employees via online digital platforms to accomplish very specific tasks of diverse degrees of complexity [3–5]. While literature on the technical aspects underlying the emergence of platform economy abounds [6–8], at this point, suffice it to say that blockchain and safe contracts are bound to introduce a new wave of advances in this domain, rendering the platform economy one of the key drivers of business activity in the economy; caveats certainly exist.

One of the corollaries of the emergence of platform economy is the phenomenon of gig economy. In contrast to the traditional definition of gig economy that used to denote short-term contracts and freelance work, as opposed to permanent jobs, the onset of platform economy redefines the very concept of the gig economy [9–11]. In other words, the ever more advanced technological solutions, involving blockchain, smart contract, and AI, enhance the capacities, opportunities, and economic synergies that the, by now digital, platforms can deliver. Thus, representing a departure from the classic definition of gig economy, this digital-platform-based gig economy+ suggests that new fields, domains, and modes of collaboration will be possible. In contrast to the traditional meaning of gig economy, gig economy+, from now on referred to as gig economy, on the one hand, requires a specific set of skills, notably digital literacy, ability to work in geographically

distributed virtual teams, etc., and on the other, suggests that high-value-added jobs, or gigs, will also be feasible. In brief, gig economy requires a serious reconsideration [9].

Considering the substantial and crucial entanglement of platform and gig economies it is necessary to carefully delineate the two. One way of looking at this issue is to view the platform economy through the perspective of the digital platform itself and, thus, through the function that the ICT-enabled platform performs. In this view, the digital platform serves as the intermediary between actors operating on the market. Advances in ICT expanded the range of activities a digital platform was an intermediary for from activities such as sale of goods, e.g., Amazon in its early years of existence, to an entire ecosystem of digital-platform-based collaborations [12] including the sale of goods and services and the provision of labor [13]. The emergence of the digital platform, and the array of implications for the market players it bears, makes it challenging to conceptualize it. With the (digital) platform economy owing its consolidation to advances in ICT and the related emergence of ICT-based tools enabling communication (via social networking sites and associated tools), safe transactions (via safe contracts and blockchain-based solutions) etc., it may well capture the basics of traditional market activity, but it may also give rise to new, so far largely absent, aspects of economic exchange. For instance, research suggests that digital-platform-mediated services require that people share also social value beyond mere economic considerations [14]. In this view, gig economy is but a part of the broader notion of platform economy. A rich body of research on both platform and gig economy exists [15–18]. However, the COVID-19 pandemic, the quarantine, and the necessity of relying on remote modes of work, created a momentum to rethink the nature and the added value of both platform and gig economy, respectively. Corresponding advances in blockchain technology, smart contracts, and AI add to that momentum. In this context, regulatory issues come to the surface of the discussion on gig economy too, albeit respective advances are geographically fragmented and confined by national and regional labor markets' specificity [19–23]. Considering the value, the potential, and the inescapability of both platform and gig economies, new insights and perspectives are needed to query the field. This paper upholds this plea to map the key areas of research dealing with gig economy and to identify topics and issues that remain underdiscussed. The argument in this paper is structured as follows.

The following section offers an insight into the research model underpinning the discussion in this paper. To this end, the key research steps and the key analytical tools employed for this study are elaborated on. In Section 3, the findings are presented. Then, a discussion and conclusions follow.

2. Materials and Methods

This article uses science mapping analysis to display scientific research structural characteristics, and academic field architecture [24] to address the development of gig economy studies and identify the critical area of work and employment research. The following sections outline the details, including the limitations, of this approach.

2.1. Science Mapping and Bibliometric Analysis: Their Relevance and Value Added

Science mapping is a graphic representation of how certain knowledge areas, documents, or authors are related to one another as shown by their physical proximity and relative locations [25]. Science mapping can be applied to any field concerning specific research issues [26]. Science mapping applies automated, algorithm-based assessment, thus providing unbiased insight into the research subject based on secondary bibliometric data. It can be viewed as a development of traditional methods of bibliometric analysis.

Bibliometric analysis employs a quantitative approach for the evaluation of published research [27] and applies statistical methods to develop an objective and quantitative perspective on a selected area of study [28], thus greatly improving the quality of the review [29]. The most common methods of bibliographic analysis are citation-based analysis, co-authorship analysis, and keyword co-occurrence analysis [30].

For the purpose of the analysis presented in this paper, science mapping based on keyword co-occurrence analysis has been adopted, because it provides an insight into the content of the specific topics that are queried. The co-occurrence analysis assesses the frequency of keyword co-occurrence (the number of papers in which two keywords appear together), thus providing an insight into the interaction strength between keywords in the analyzed pool of scientific papers [31]. Therefore, keyword co-occurrence analysis is employed to explore the concept networks, to build thematic network, and to review trends in research themes, because keywords are provided to represent the primary focus of the articles [32].

The analysis carried out in this study serves to identify themes and their thematic networks based on keyword co-occurrence. SciMAT software was used in the analysis to achieve a fine-grained result [33]. SciMAT facilitates theme visualization in a strategic diagram and thematic network (theme network) representation enabling research gap analysis [27].

A research strategic diagram is divided into four quadrants representing four types of themes: motor, basic, specialized, and emerging themes. Each theme is characterized by two dimensions, i.e., centrality and density [34]. Based on these characteristics, a theme is allocated to a given quadrant of the strategic diagram.

The dimension "centrality" measures the degree of interaction of a thematic network with all other thematic networks in the diagram, thus providing an insight into the strength of the thematic network's external ties. Centrality can be viewed as a measure of theme importance in the research area. Callon's centrality [34,35] is used as default network measure on each detected theme and its thematic network in SciMAT [36]. Callon's centrality is applied to measure the degree of interaction of a thematic network with other thematic networks. It is defined as follows:

$$c = 10 \sum e_{uv} \quad (1)$$

with u an item (keyword) belonging to the theme and v an item (keyword) belonging to other themes [37].

"Density", in turn, examines the internal strength of the thematic network, that is the strength of links between the number of co-occurring keywords that create the thematic network (internal ties). Density can be viewed as a measure of theme development [24]. Callon's density is used in SciMAT to measure the internal strength of the network. It is defined as follows:

$$d = 100 \left(\sum e_{ij} / n \right) \quad (2)$$

with i and j items (keywords) belonging to the theme and n the number of items (keywords) in the theme [37]. Please, consider Figure 1 that offers a visualization of the strategic diagram template.

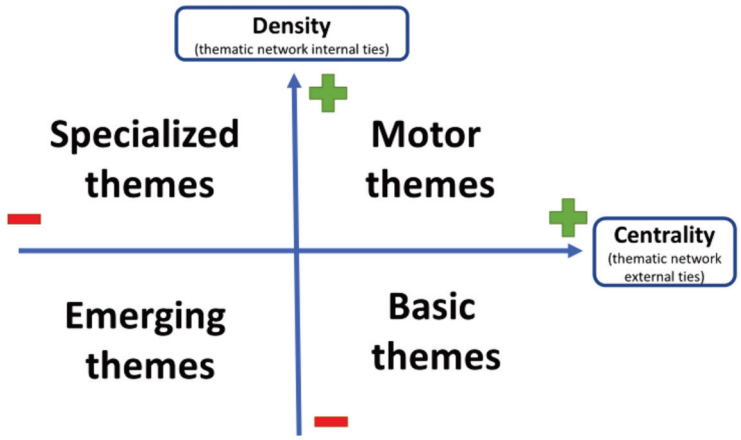

Figure 1. Strategic diagram—an example.

Motor themes are well developed and important for the research area and have strong centrality (well-developed external ties with other themes) and high density (well-developed internal ties, within its thematic network). Therefore, motor themes make a major contribution to the research area. Basic themes are important themes for the research area but are not well developed in terms of their internal ties within their thematic networks. Therefore, basic themes make an important but not focused contribution to the research area. Specialized themes correspond to themes that are internally well developed but are isolated from the other themes and, therefore, make a limited but focused contribution to the research area. Themes with a poorly developed internal and external network represent emerging themes in the research area. The sphere size can represent bibliometric indicators, such as the document number or number of citations by documents in the theme and in its internal network, thus adding an additional analytical dimension [24].

The science mapping approach can be used to analyze thematic networks to provide an additional dimension to the research landscape analysis and more fine-grained insight into the themes. Each theme can be visualized with a number of keywords and their interconnections that build a network graph, called a "thematic network". By default, the thematic network is designated by the most significant keyword. This keyword appears in the center of the graph, and it is the same as the theme name. The sphere size with the keywords in the thematic network corresponds to the number of documents where a given keyword occurs. The thickness of the line between two keyword spheres is proportional to the equivalence index [37]. The equivalence index is given by the following equation:

$$E_{ij} = \left(C_{ij}{}^2\right) / \left(C_i \times C_j\right) \quad (3)$$

The number of occurrences of the keyword i is C_i, and the number of occurrences of the keyword j is C_j. Two keywords, i and j, co-occur if they are used together in the description of a single document. The number of co-occurrences of the keywords i and j is C_{ij} that is the number of documents that are described by both keywords in the set of keywords used to index them. Note that when two keywords always appear together, the equivalence index equals unity, when they never occur together it is zero [34].

The equivalence index can be viewed as a measure for normalized co-occurrence frequency. Therefore, the greater the proportion of documents in which the two keywords appear together to the total number of documents where they occur, the thicker the line between the keyword spheres in the thematic network [37]. As an example, a thematic network is presented in Figure 2 with theme A and keywords 1, 2, 3, 4, 5, and 6.

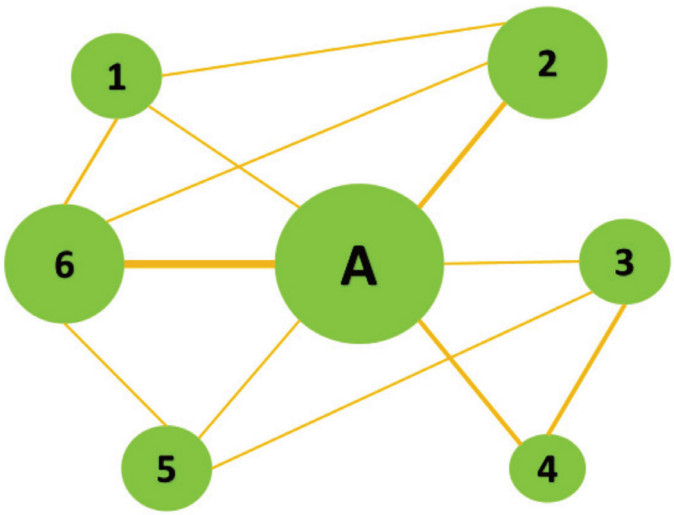

Figure 2. An example of thematic network. Theme A and keywords 1, 2, 3, 4, 5, and 6.

The science mapping analysis employed in this research follows a six-step procedure: data search, data refinement, standardization and network creation, map creation, analysis and visualization, and performance analysis [36]. In this research, the bibliometric data was obtained through the Web of Science (WoS) database and the sample used in this study was limited to published articles. To guarantee the homogeneity of the sample, books, conference proceedings, and reports were not considered in the analysis.

As a novel approach, science mapping analysis has already been applied in the field of social and economic studies. The same method, including SciMAT software and the use of strategic diagram analysis, has been applied to support research into a large variety of topics including among others: future of work [10,24], big data [38], circular economy [39], e-government [40], sustainability of family firms [41], and creativity in business economics [42].

2.2. Limitations

This study uses science mapping analysis based on bibliometric data. Therefore, it is not devoid of embedded limitations related to the use of this research method and other limitations related to the scope of the study. Two basic limitations shall be highlighted here.

First, consider that science mapping, as a method of analysis, is based on the assumption that the content of the articles included in the analysis is adequately represented by the keywords provided by authors of specific texts. In this view, the quality and accurateness of the outcome is a function of the quality and accurateness of the input data. This issue cannot be controlled during research employing science mapping. Nevertheless, to address this limitation, other research methods, such as systematic analysis and text mining methods, could be employed to bypass the this defined caveat inherent in the science mapping method.

Second, the findings of a query conducted by means of science mapping depends on the choice of language of the data to be examined, i.e., the articles. While the issue of the prevalence of the English language literature is self-explanatory, the really important issue to be raised is that of the existence and accessibility of databases. In brief, science mapping and bibliometric analysis tend to be applied to data included in Scopus and WoS. This certainly raises questions of inclusion, exclusion, and bias in [43–46]. Despite the comprehensive scope of the WoS database, the use of other databases such as Scopus would have extended the scope of the analysis. As far as the focus of the study is concerned, this analysis targets the connection between gig economy and future of work. Other perspectives on the gig economy body of knowledge could be applied to provide valuable insight and research progress.

3. Results

The data search in this research covered texts indexed in the WoS identified using the specific phrase "gig economy" in any fields as of 20 August 2020. The search returned 378 articles. In the data refinement, the sample was limited to an article published in a scientific journal as all other texts were excluded to ensure adequate scientific rigor of the analysis. This step resulted in the sample being limited to 269 articles with 1142 different keywords. Further data refinement enabled keywords to be grouped by combining singular and plurals as well as British and American spellings in the same groups to avoid keyword duplication.

3.1. Strategic Diagram

The next stages of the science mapping process were performed with the use of SciMAT software, which enabled the creation of the following strategic diagram for gig-economy studies presented in Figure 3.

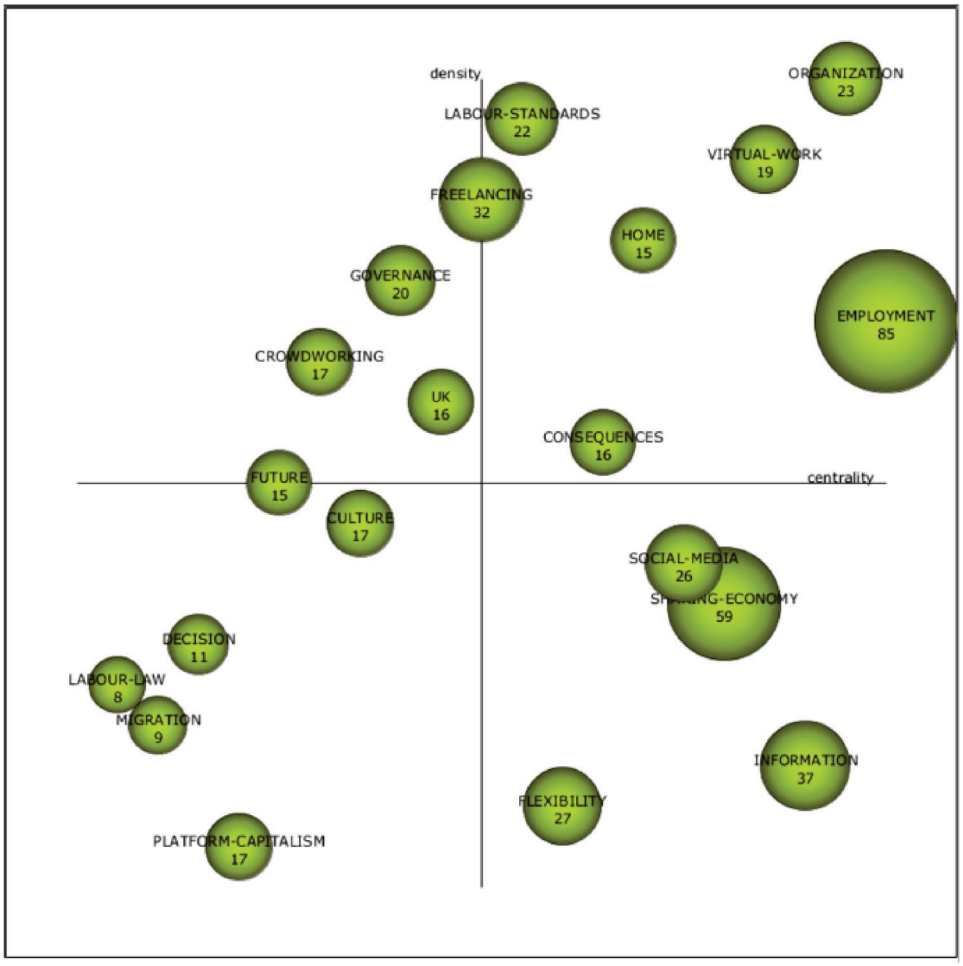

Figure 3. Strategic diagram of gig economy themes (number of documents).

Twenty themes have been identified and mapped in gig economy research. The size of the theme sphere is proportional to the document number covered by the thematic network stated below each theme label. The themes with the highest number of articles in gig economy research landscape are "employment", producing 85 documents; "sharing economy" producing 59 texts; and "information", producing 37 articles. This metric, however, can be viewed only as a proxy for theme popularity. It does not provide insight into theme centrality and density for gig economy research, which is achieved with strategic diagram analysis (data about centrality and density of each theme are included in Appendix A, Table A1).

Gig economy science mapping analysis using a strategic diagram enabled the following to be identified: six motor themes (employment, organization, labor-standards, virtual work, consequence, home), four basic themes (sharing economy, social-media, information, flexibility), four emerging themes (culture, platform-capitalism, decision, migration), three specialized themes (governance, crowdworking, UK), and two borderline themes (future and freelancing) between emerging and specialized and between specialized and motor themes, respectively.

3.2. Motor Themes

Primary research themes have been identified as motor themes that have high centrality and density for the gig economy research landscape. From among six themes, those with the highest centrality were chosen for more focused analysis, and these were employment, virtual work, and organization.

3.2.1. Employment in the Gig Economy

Employment is the major motor theme in gig economy research (see Figure 3), with 85 documents and 558 citations. The employment thematic network exploration reveals that its internal network covers the following keywords: work, labor, precarious work, job quality, and autonomy as presented in Figure 4 below. (Data about the equivalence index in the employment thematic network are included in Appendix A, Table A2).

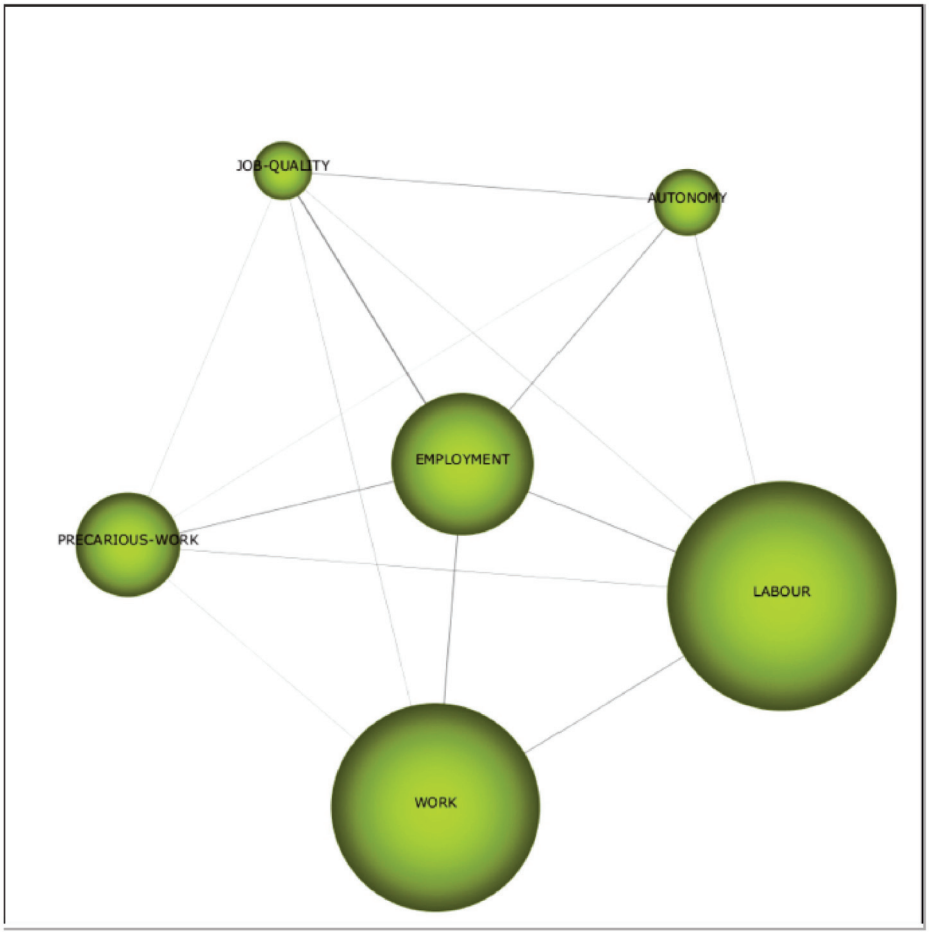

Figure 4. Thematic network (employment) in gig economy research.

The employment thematic network includes terms related semantically to labor and work. The remaining keywords, which were job quality, autonomy, and precarious work, indicate that the employment theme in gig economy research is studied predominantly with a focus on the supply side of the labor market.

Employment institutional arrangements and worker status in the gig economy remain a crucial research area, while there is no consensus on definitions so far, discussed by De Stefano [47], Tassinari and Maccarrone [18], and others. Gandini [48] stated that workers who work through (and for) a digital platform, such as gig workers, are not merely "users" of a platform but actually paid laborers. Friedman [49] called the intermediary platform a "shadow employer". Ashford, Caza, and Reid [50] underlined that the gig economy consists of "people working independently, outside of organizations".

Employment in the gig economy undermines the popular assumption related to human capital at work. The research results tentatively indicate that an employee with high or specialized skills is no longer the most desirable worker. A gig economy typically means microtasking, i.e., work fragmentation into simple activities that can be easily codified. According to Gandini [48], a gig economy employer strives to make every task operationalized and codified so that the worker performing that task becomes an

interchangeable part of the process and can be replaced with little disruption. As a result, in the gig economy, employment ceases to fulfil its traditional social functions, i.e., a source of professional identification, prestige), and becomes a commodity.

The gig economy is often associated in popular discourse with the expression "new work arrangement". Due to the Uber platform, often considered a precursor of these new arrangements and a hallmark of the gig economy, the way work is organized in the gig economy is sometimes dubbed "uberization" of work [51]. For now, uberization is mainly researched in relation to employment arrangements. In the future however, the concept of uberization may be expanded to cover other areas of the economy and society as well.

3.2.2. Virtual Work in the Gig Economy

Another motor theme identified in the course of our analysis is "virtual work", with 19 articles and 178 citations. This is one of the smallest motor themes in terms of the number of articles but has a significant level of centrality and density within the gig economy research landscape to consider it for more in-depth analysis. The virtual work thematic network consists of the following keywords: gig work, temporary worker, human resource management, determinants, and motivation, as presented in Figure 5. below. (Data about the equivalence index in the virtual work thematic network are included in Appendix A, Table A3).

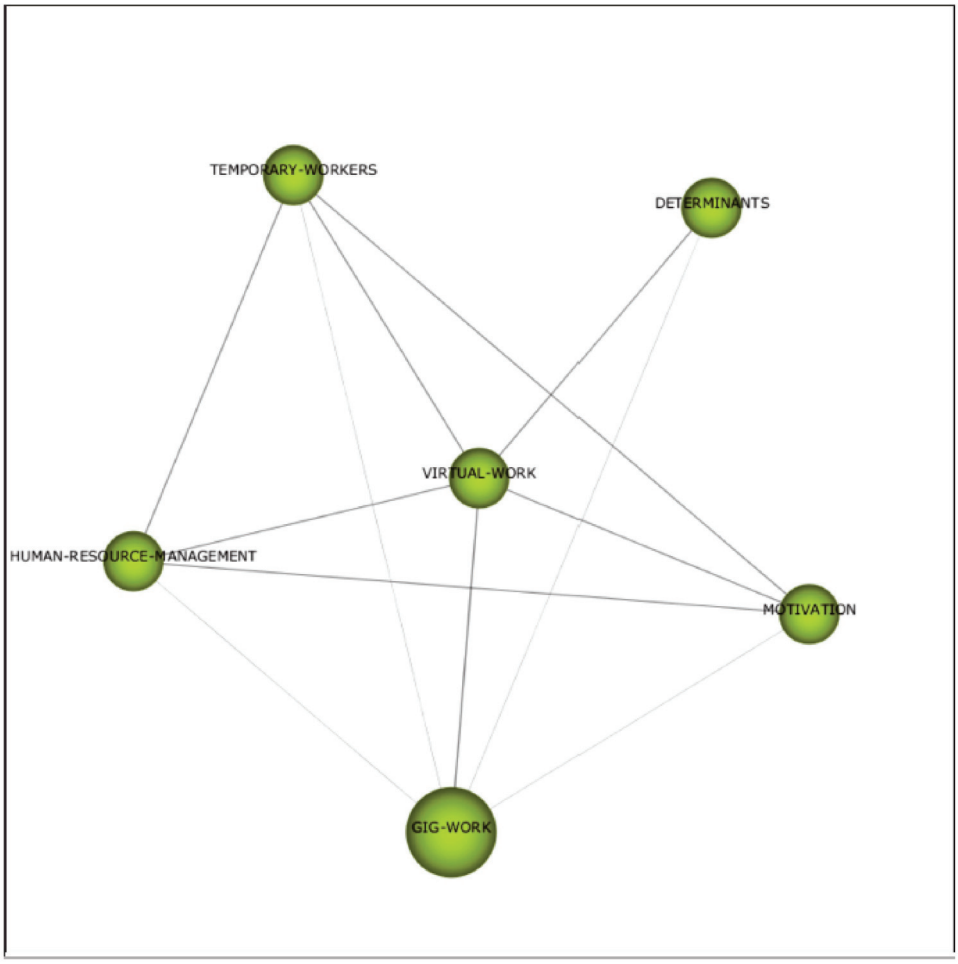

Figure 5. Thematic network (virtual work) in gig economy research.

Virtual work practices have been seen to penetrate real-world work routines, e.g., workers can easily collaborate between various geographical locations, but more distinctly virtual collaboration is becoming common even among workers who are collocated [52].

Ashford et al. [50] observed that alternatives to traditional organization and traditional work are developed based on virtual work, on-line communication, and virtual workspace. The virtual work theme stresses the creation of a new profession, i.e., virtual assistant, and the development of virtual economies [53].

The gig economy and gig platforms cater for both kinds of work, physical and local, versus virtual and global [54]. Uber offers physical local work for low-skilled workers. Fully virtual and global work is offered by MTurk (Amazon Mechanical Turk, a crowdsourcing website) for low-skilled workers, but examples of gig economy platforms for highly skilled professionals, such as LabMate, were also analyzed [11].

There is a research consensus that virtual work in the gig economy requires new management routines, as gig workers are also supervised virtually [55]. In the search for an adequate metaphor for virtual work in the gig economy, it has been described as a "virtual assembly line" [56]. Moreover, virtual work has been said to contribute to the physical atomization of work and that has given rise to virtual communities of gig workers [57].

The researchers seem to lean toward analyzing threats arising from the development of virtual work as indicated above. Only a limited number of studies highlight the benefits of virtual work that can be applied to the gig economy. These include not only organization gains such as cost reduction, risk reduction, and increasing operational efficiency but also advantages for virtual workers, such as a greater feeling of autonomy and job satisfaction, less work–family conflict due to helping workers juggle professional and personal work, and less time spent commuting [53].

3.2.3. Organization in a Gig Economy

Work and business are being transformed within the gig economy to an extent that poses a challenge for existing management theories to accommodate these new arrangements. The next motor theme identified in the gig economy research landscape is "organization", which produced 23 texts and 235 citations and the highest density and centrality, which places this topic at the heart of the gig economy debate. The organization thematic network consists of the following keywords: management, contingent work, resistance, subjectivity, and construction (identity), as shown in Figure 6 below. (Data about the equivalence index in the organization thematic network are included in Appendix A, Table A4).

Gig economy research addresses the fundamental aspects of an organization [51]. The boundaries as to who should be considered an organization member are fiercely debated among scientists. The answers to such dilemmas are of fundamental importance to furnish the institutional void in which organizations in the gig economy operate. Under the current conditions, platform-enabled gig work is managed in the absence of a structured employment relationship between the organization and those cooperating with it, and this setup is resisted by workers [58]. At the same time, traditional human resource management (HRM) tools such as remuneration and benefits, performance feedback, training et cetera, become obsolete under gig economy conditions.

The hallmark of the platform, a primary business model in the gig economy, is a risk-management practice that transfers the maximum risk from the organization to the platform users. This increases organization competitiveness as it greatly reduces operating costs, such as employees' medical insurance, paid sick leave, and pension contributions. According to Meijerink and Keegan [59], this presents a paradox, as intermediary platform organizations simultaneously disavow employers' responsibilities while they do exercise considerable control over work time, place, and quality with selected HRM instruments.

While in traditional organizations HRM activities are the primary tasks of HR professionals and line managers, in the gig economy this responsibility is shared among intermediary platforms, gig workers, and end-users. It has been emphasized that gig workers may even be deprived of a human supervisor. This does not, however, portend supervision absence, as control has been redesigned and is exercised by algorithms. Algorithm-based control in the workplace operates through a recommendation mechanism and users' ratings replace worker evaluation and recognition [57].

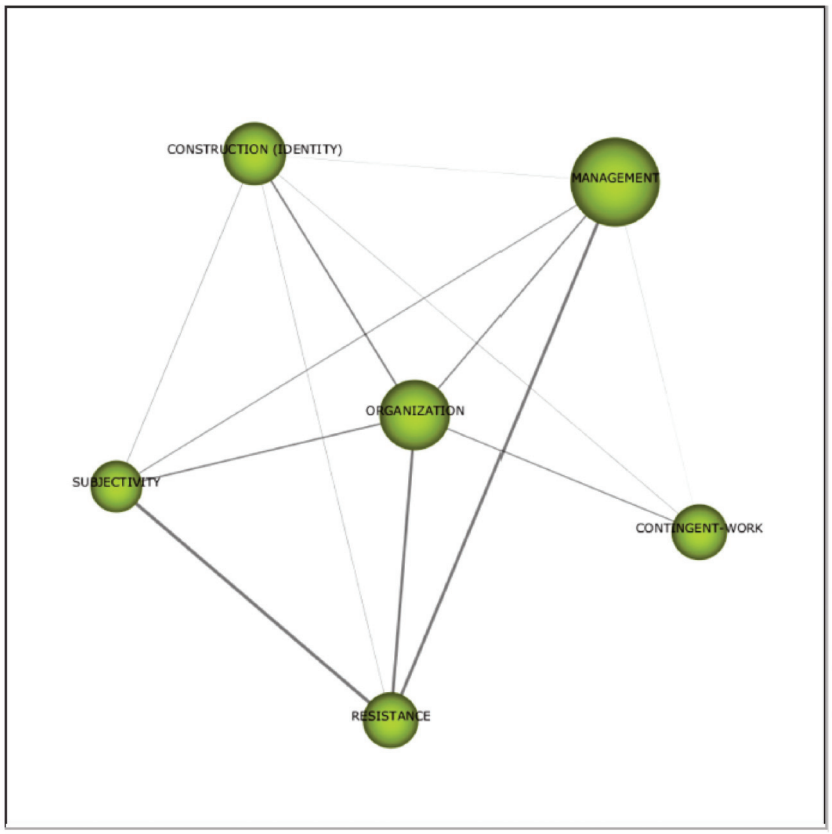

Figure 6. Thematic network (organization) in gig economy research.

It has been observed that gig workers are individually and collectively resisting algorithm-based control [58]. Moreover, digital gig work platforms seem to be designed as organizational models that "invisibilize" the managerial figure, which remains hidden and inaccessible for workers as it sits behind the screen of a digital device and a set of anonymous notifications, and prevents workers from socializing with each other, thus reducing the potential for resistance and unionization [48].

The gig economy organizational research perspective highlights the severe tension between the intermediary platform, gig workers, and end-users. As the law and institutional changes do not keep up with the changes imposed by gig economy growth, many conflicts remain to be resolved by local courts on case-by-case basis [59]. However, scientific research improves the understanding of existing practices and can contribute to the resolution of more systemic disputes.

3.3. Basic Themes—Sharing Economy

Four basic themes have been identified in gig economy research: social media, sharing economy, flexibility, and information. The basic themes have a high centrality and low density of thematic networks. Therefore, they are important for gig economy research, but their internal thematic networks are relatively sparse as connections between keywords tend to be relatively weak and less numerous.

The most prominent basic theme in gig economy research field in terms of number of articles as visualized by the size of the sphere in a strategic diagram is the sharing economy. The sharing economy thematic network consists of the following keywords: platform economy, self-employment, employment contract, labor market, and Uber presented in the Figure 7. (Data about the equivalence index in the sharing economy thematic network are included in Appendix A, Table A5).

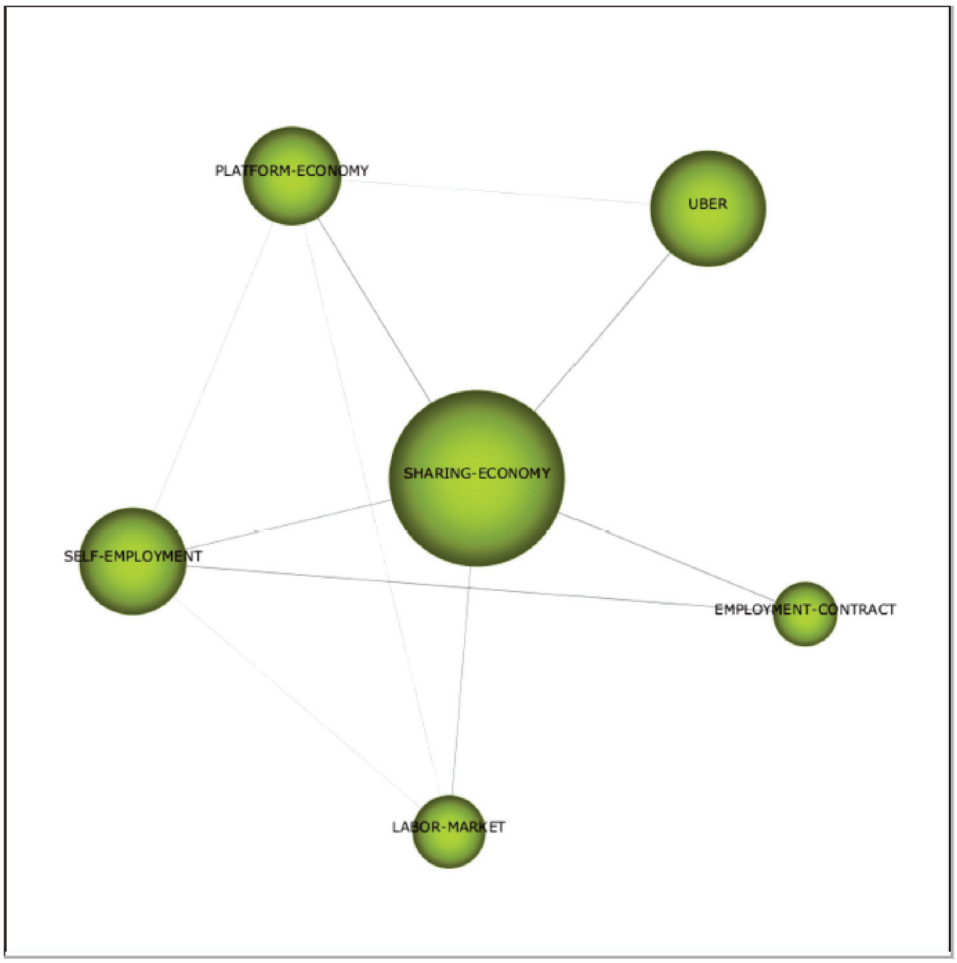

Figure 7. Thematic network (sharing economy) in gig economy research.

A particularly strong thematic connection in this area of gig economy research has been identified between the "sharing economy" and "platform economy", between the "sharing economy" and "Uber", as well as in the thematic triangle "sharing economy", "self-employment", and "employment contract".

The interconnectivity between the gig economy, sharing economy, and platform economy and its impact on work and employment has been the subject of numerous studies. The research points out internet platform use by various professions as a cornerstone of both the sharing and gig economy, indicating their affiliation to the broader concept of the platform economy [3,9,10]. Therefore, platform owners secure surplus value from a transaction via technological control over transaction facilitation in both the sharing and gig economy. However, labor, as a factor of production, is more commonly used in gig economy ventures [60], whereas capital is a more important source of surplus in the sharing economy [48]. Companies—internet platform operators—prefer to embrace sharing economy rhetoric, rather than acknowledge the gig economy affiliation, in order to build an image of being entrepreneurship-supporting entities [61]. This approach is used to support their claim that their de facto workers are independent entrepreneurs or self-employed specialists, which excludes them from labor law standards, granting more power to platform operators [62].

An important example used to stress the connection between the gig economy and sharing economy with self-employment and an employment contract as well as a flagship subject on many studies in this field, is Uber [51]. Most studies highlight negative aspects of Uber's performance, among others the company's attempts to misclassify workers and employ the most economically vulnerable [63]. This has led to calls for more corporate

social responsibility [64] and regulation [65]. Further in-depth empirical studies have revealed that the development of Uber indeed had adverse effects on the earnings of incumbent workers in the industry; however, such distributional impacts do not always translate into worse employment prospects in traditional jobs [66].

3.4. Emerging Themes—Culture

As a result of the analysis, five emerging themes were identified (culture, decision, labor law, migration, and platform capitalism) and one border theme between the emerging and specialized theme domain (future), which will be included in this section of the analysis.

An emerging theme with the highest density and centrality is "culture", and its proportionate importance within the emerging theme is additionally confirmed by the highest number of articles. The "culture" thematic network in the gig economy has vital importance for understanding work in the gig economy, which is proven by the keywords in its network, which include the following: working life, on-demand labor, surveillance, identity, and political economy, as presented in the Figure 8 below. (Data about the equivalence index in the culture thematic network are included in Appendix A, Table A6).

Figure 8. Thematic network (culture) in gig economy research.

Research on the culture theme in the gig economy demonstrates that online platforms that facilitate on-demand work are contested spaces with some characteristic business culture features, where on one hand algorithms may reshape organizational control through new efficient surveillance techniques [61], but on the other hand digital labor politics penetrates beyond the algorithmic power of the new technology [67]. Moreover, value extraction, exploitation of labor, efficacy, and inequality are among the most important areas for further studies using political economy theoretical lenses [68,69].

Researchers have attempted to address the working life and identity in the gig economy for various professions. In this stream of research, it has been shown that musicians routinely involved in activities that could be viewed as entrepreneurial in a gig economy are reluctant to label themselves as entrepreneurs [70]. Moreover, occupational identity is also problematic for drivers, due to the ambiguity of their legal classification and the precarious nature of their material conditions [57]. In order to address identity challenges and other demanding aspects of work-life culture, a number of coping strategies have been identified by researchers, which among creative workers include downplaying competition and conflict and changing career [71]. Studies show that while gig workers share some vulnerabilities that are highly harmful to their health, the extent of their exposure varies depending on regions of the world [72].

3.5. Specialized Themes—Freelancing

The results of a science mapping analysis for gig economy research shows that there are three specialized themes (governance, UK, crowdworking) and a one borderline theme between specialized and motor themes. This is included in this part of the review (freelancing). The proximity of the freelancing theme to motor themes and the high number of research papers focusing on this theme are important premises to select a freelancing thematic network for further analyses.

The visualization of the freelancing thematic network in gig economy research shows a network constructed with the keywords "outsourcing", "digital work", "digital labor", "precarity", and "business". The network diagram shows the strongest connection between the keywords "freelancing" and "outsourcing", as well as a strong connection within the triangle freelancing, precarity, and digital-work, as shown in Figure 9 below. (Data about the equivalence index in the freelancing thematic network are included in Appendix A, Table A7).

Precarity in digital work is highlighted as a crucial social and economic consequence of the rise of the gig economy [73]. This research analyses how gig-economy-driven precarity can result in a number of negative repercussions depriving individuals of choice and control as well as leading to experiences of disempowerment, alienation, anxiety, and insecurity [74]. Researchers vary in their proposed solutions to address these issues, but regulators and policymakers are mainly encouraged to strengthen the regulatory framework governing gig work, which may include significant amendments to labor law [75]. Such developments could include more effective law enforcement, a clearer definition of "employment", creation of a new category of "independent worker" with adequate rights, and a review of the concept of "employer" [58].

The emergence of the gig economy is a reinforcement of the long-term trends of increasing contingent work, rising labor market flexibility, and increasing use of outsourcing [76]. The global reach of online platforms facilitating freelancing in services ranging from software development to copywriting and graphic design has been analyzed as a form of offshore outsourcing. Contrary to the traditional approach, where outsourced services are provided by large multinationals, in the gig economy, cross-border services are predominantly provided by individuals who are microproviders located in emerging-economy countries. This further diminishes the importance of home-country institutions such as labor regulations and promotes cross-border business [77].

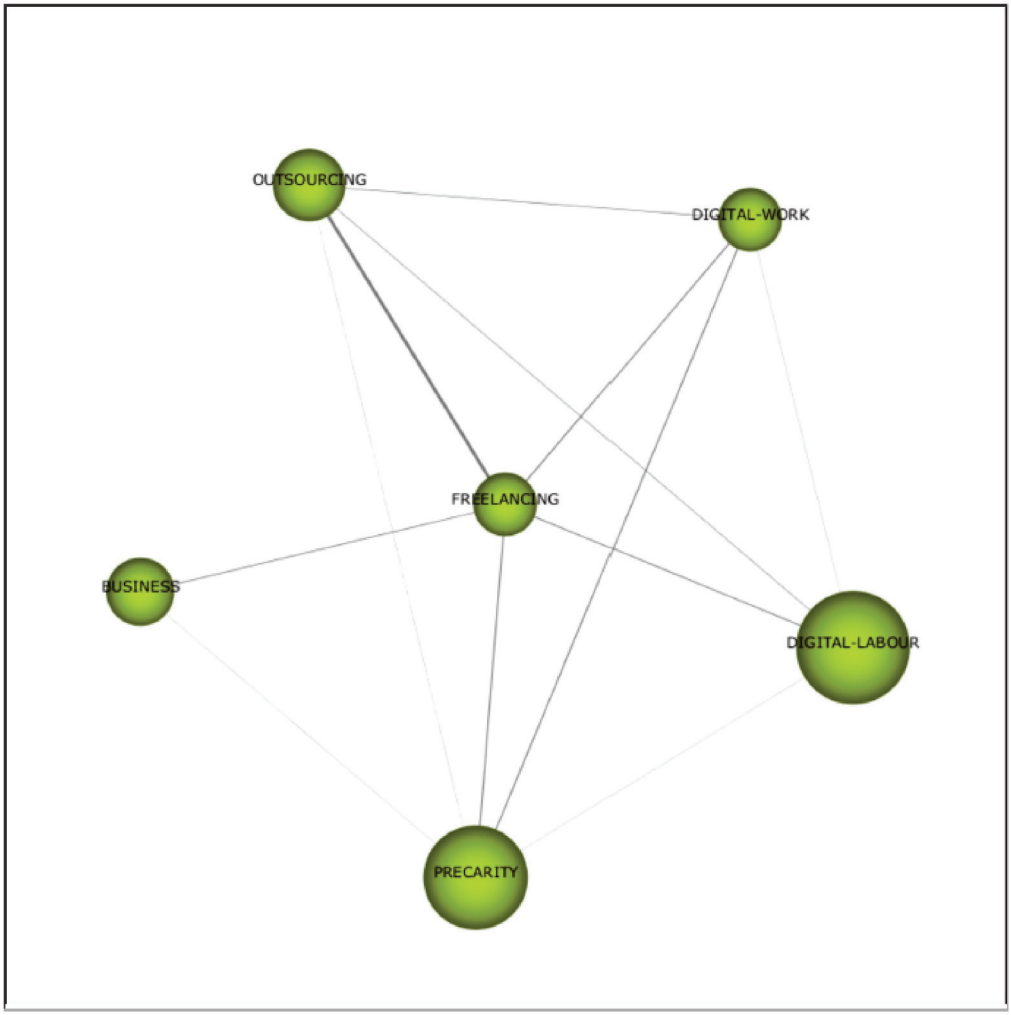

Figure 9. Thematic network (Freelancing) in gig economy research.

4. Discussion and Conclusions

Against the backdrop of the inroads of ICT in today's economies and the resulting digitization and servitization of contemporary economies, the objective of this paper was to employ the method of science mapping to query the debate on gig economy [78]. In other words, the objective of this paper was to identify and map the existing, indexed in the Web of Science database, research on gig economy, to delineate the conceptual boundaries of gig and platform economy, and having done so, to critically examine the directions and underexplored synergies that have emerged in the gig economy research.

The findings of the examination thus performed suggest that the gig economy and its twin concept of platform economy offer a variety of still underexplored research opportunities. Five major points have been raised, queried, and substantiated in this paper. First, it is argued that while research on gig economy proliferates, the distinction between platform and gig economy remains blurred in the analysis. This paper addresses this issue. Second, the discussion on gig economy is largely dispersed, and a clearer research agenda is needed to streamline the discussion and improve its exploratory and explanatory potential. This paper suggests ways of navigating this issue. Third, taking into account the technology-driven features of gig economy today, a clear focus on diverse manifestations of gig economy at local, regional, national, and possibly transnational levels is needed to understand the plethora of implications it bears for the society and the economy [9,18]. Conversely, fourth, provided the flexibility and geographically distributed nature of gig economy, it is equally vital to explore factors that enable and/or constrain the development of the gig economy. This certainly brings the discussion to, fifth, questions of regulatory

frameworks and models of economic growth [9,10,21]. The paradox that the ICT-driven gig economy reveals is that space, distance, and territorial boundaries become increasingly obsolete in the digital economy [23]. This paper sets the background for this discussion to unfold in future research.

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Appendix A

Table A1. Strategic diagram of gig economy themes' centrality and density.

Name (Theme)	Centrality	Density
Organization	55.43	30.48
Home	35.7	15.74
Virtual work	40.07	17.41
Future	17.59	11.11
Governance	24.91	14.49
Freelancing	32.59	16.16
Crowdworking	22.73	12.27
Employment	66.71	13.24
UK	31.98	11.48
Labor standards	32.76	26.73
Culture	23.9	10
Sharing economy	39.78	7.85
Flexibility	33.7	4.39
Social media	36.9	9.03
Information	44.23	4.83
Decision	13.52	7.54
Labor law	6.49	6.48
Migration	13.35	5.93
Platform capitalism	14.9	2.12

Table A2. Equivalence index in the employment thematic network.

Keyword 1	Keyword 2	Equivalence Index
Labor	Work	0.07
Labor	Precarious work	0.04
Labor	Job quality	0.03
Labor	Employment	0.08
Labor	Autonomy	0.04
Work	Precarious work	0.02
Work	Job quality	0.03
Work	Employment	0.09

Table A2. *Cont.*

Keyword 1	Keyword 2	Equivalence Index
Precarious work	Job quality	0.02
Precarious work	Employment	0.08
Precarious work	Autonomy	0.01
Job quality	Employment	0.13
Job quality	Autonomy	0.07
Employment	Autonomy	0.08

Table A3. Equivalence index in the virtual work thematic network.

Keyword 1	Keyword 2	Equivalence Index
Motivation	Gig work	0.03
Motivation	Human resource management	0.11
Motivation	Virtual work	0.11
Motivation	Temporary workers	0.11
Gig work	Human resource management	0.03
Gig work	Virtual work	0.13
Gig work	Temporary workers	0.03
Gig work	Determinants	0.03
Human resource management	Virtual work	0.11
Human resource management	Temporary workers	0.11
Virtual work	Temporary workers	0.11
Virtual work	Determinants	0.11

Table A4. Equivalence index in the organization thematic network.

Keyword 1	Keyword 2	Equivalence Index
Organization	Contingent work	0.12
Organization	Resistance	0.28
Organization	Subjectivity	0.17
Organization	Construction (identity)	0.19
Organization	Management	0.15
Contingent work	Construction (identity)	0.04
Contingent work	Management	0.02
Resistance	Subjectivity	0.33
Resistance	Construction (identity)	0.04
Resistance	Management	0.31
Subjectivity	Construction (identity)	0.06
Subjectivity	Management	0.1
Construction (identity)	Management	0.01

Table A5. Equivalence index in the sharing economy thematic network.

Keyword 1	Keyword 2	Equivalence Index
Employment contract	Sharing economy	0.07
Employment contract	Self-employment	0.07
Labor market	Sharing economy	0.05
Labor market	Self-employment	0.01
Labor market	Platform economy	0.01
Sharing economy	Self-employment	0.06
Sharing economy	Platform economy	0.07
Sharing economy	Uber	0.07
Self-employment	Platform economy	0.02
Platform economy	Uber	0.02

Table A6. Equivalence index in the culture thematic network.

Keyword 1	Keyword 2	Equivalence Index
Identity	Political economy	0.07
Identity	Culture	0.07
On-demand labor	Surveillance	0.07
On-demand labor	Culture	0.11
Working life	Culture	0.11
Surveillance	Culture	0.07
Political economy	Culture	0.11

Table A7. Equivalence index in the freelancing thematic network.

Keyword 1	Keyword 2	Equivalence Index
Digital labor	Precarity	0.01
Digital labor	Outsourcing	0.06
Digital labor	Freelancing	0.1
Digital labor	Digital work	0.02
Precarity	Business	0.02
Precarity	Outsourcing	0.02
Precarity	Freelancing	0.11
Precarity	Digital work	0.11
Business	Freelancing	0.08
Outsourcing	Freelancing	0.27
Outsourcing	Digital work	0.07
Freelancing	Digital work	0.11

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Entrepreneurial-Specific Characteristics and Access to Finance of SMEs in Khyber Pakhtunkhwa, Pakistan

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Abstract: Small and medium-sized enterprises (SMEs) not only support the country in financial and business aspects but also overcome unemployment by creating job opportunities. The SME sector contributes more than thirty-five percent of the country's Gross Domestic Product (GDP). The study aims to discover entrepreneurial-specific characteristics and their impact on accessing bank financing. The study collects primary data through questionnaires. Approximately 204 questionnaires were distributed randomly, out of which 192 were returned and analyzed through a binary logit model. Entrepreneurial personal traits play a vital role in obtaining financing from banks and other financial institutions in Pakistan. The study reveals that age and level of education are significant and play a vital role in accessing bank financing in Khyber Pakhtunkhwa (KP). Conversely, gender, experience, and SME skills that entrepreneurs have are insignificant to accessing bank financing in KP. This paper attempts to identify the entrepreneurial-specific characteristics within a large sample size of enterprises and compares the small and medium-sized ones separately in KP, Pakistan. Additionally, the study reveals how an entrepreneur's personal traits impact the accessibility of bank financing and the need to formulate strategies and policies to strengthen these entrepreneurial-specific characteristics through training, development, and personality growth for the efficient operations of the SME sector in KP, Pakistan. The study is also significant for policymakers, stakeholders, and lenders.

Keywords: SMEs; access to finance; SMEs entrepreneur; entrepreneurial characteristics; Pakistan

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1. Introduction

SMEs play a vital role in the economy of both developed and developing countries across regions. In a developed country, such as Australia, SMEs serve as a means of reviving stagnant industries [1,2]. The importance of a healthy industrial sector cannot be overlooked; in the last two centuries, industrial production has been the main impetus for productivity and improved quality of life in developed countries [3]. According to the European Commission's 2011 report, the countries that have not successfully developed industrially remain poor, and SMEs are the backbone of any economy around the world due to their significant contribution. US small businesses comprise 99.7% of all employer firms, employing half of all private sectors, which have, over the past ten years, gained 60 to 80%of new jobs per year, thereby generating more than 50% of the non-governmental private GDP [4].

Small businesses are an integral part of an economy. Data and reports from the SME subgroup also indicate that SMEs in developing countries contribute significantly to employment and an approximate 45% to an annual 33% gross domestic product [5]. The financial needs and practices of SMEs must first be considered, as these institutions are

important for the development of most economies around the world. They have contributed significantly to the development of various countries' economies and the creation of employment opportunities. In addition, they make valuable contributions to regional income and savings, facilitate training, and create a competitive edge by helping large firms; thus, they are a stimulus for economic growth and development. The enrichment and development of SMEs have significantly helped not only by generating job opportunities but also by reducing poverty [6].

In Pakistan, SMEs own 90% of all companies, including in the textile industry. SMEs also play a vital role in Indonesia's national economy, as evidenced by the large number of different small businesses, which reached up to 62.9 million, which is equal to a 99.99%-unit share. However, large firms are 5460 units, which equals a 0.01%-unit share, in 2017 [7].

In Jordan, the government believes that human, social, and economic development depends on MSMEs (micro, small, and medium-sized enterprises). The national agenda of 2006–2015 helps utilize MSMEs as a strategy to improve social security and well-being and promote economic development. In Jordan, SMEs face various problems, such as a lack of credit history, which impede their growth and development. In Bangladesh, the SME sector developed in the last twenty years and plays an indispensable role in the economy; however, Bangladesh's SME sector is facing issues and challenges in the country [8].

In Thailand, small firms were responsible for up to forty percent of GDP in 2008 and more than seventy-five percent of the jobs in 2013. In Vietnam, small businesses contributed 40% to GDP, and profits increased by about 20% annually [9]. The importance of the rapid development of small businesses in all regions of Russia is explained for the period up to 2030. It is shown that, from 2015 to 2016, the number of small businesses and employees increased at the same time [10].

While financing is an important, though sometimes challenging aspect, of SMEs' success in all regions around the globe, several studies have pointed out various other obstacles to developing SMEs across different regions, such as marketing, technology, innovation, HR practices, skilled personnel, bureaucracy, and regulations of the regulatory authorities [11].

These studies have demonstrated different challenges faced in SME entrepreneurship, which occasionally cause drastic failures in small-business operations. The challenges include an entrepreneur's personal traits, internal factors of SMEs (resources), and external factors [12,13]. The entrepreneur plays an indispensable role in an SME's success. The entrepreneur's personal traits related to business operation cannot be negated, and, in particular, their education and skills really impact the success of SMEs [14].

Despite the entrepreneurial-specific characteristics, resources and financial-related factors have also been a challenge to the SME sector. The SME sector has been facing hurdles when approaching banks and other formal financial institutions in the country, and it has been revealed that banks and other formal financial institutions prefer to finance the corporate sector and large enterprises and ignore the SME sector in the country. The promotion and development of the SME sector in KP is primarily weakened by a lack of financing, which negatively affects a large portion of industrial units; thus, a comprehensive study is required to find a better solution. Furthermore, a study is needed to elaborate upon the factors which impact the loan access of SMEs. Therefore, this study seeks to address the factors that play a crucial role to obtain financing from banks and other formal financial institutions in KP. In particular, this study has the following objectives:

O1. To elaborates the access of financing and the role of entrepreneurial characteristics in obtaining the loan.
O2. To observes the entrepreneurial personal traits and their due role in access to bank financing in KP.
O3. The study will also pose some suggestions and recommendations for the SME sector, banks, and other lending institutions for how to deal with SMEs, particularly in KP and generally across Pakistan.

The remaining paper has been structured as follows: Section 2 pertaining to literature review and hypotheses, followed by methodology in Section 3, data analysis in Section 4, discussion and conclusions in Section 5, implications of the study in Section 6; and the study's limitations and future research directions in Section 7. The paper concludes with a comprehensive reference list.

2. Literature Review and Hypotheses Development

Pakistan's economy is based on agriculture, fisheries, and forestry, which contribute about twenty-percent of the country's GDP. The manufacturing sector in Pakistan has been growing since 1950, but due to the scarcity of resources, the newly established economy of Pakistan faces a problematic trade deficit and external debt burden. In 1970, the government nationalized all the major industrial sectors of the country but failed to obtain the desired economic results. In 1980 and 1990, denationalization encouraged the private sector, most of which focused on the larger sector of industrial units. Subsequently, after 1990, the government focused on agriculture, privatization, and developing the SME sector through entrepreneurship in the country. Later on, the Small and Medium Enterprises Development Authority, (SMEDA) an independent body that which looks after the SME sector in the country and has regional offices in major cities across Pakistan, began working for the development and growth of SMEs in the country. SMEDA and SME banks were being developed by the government of Pakistan to cater to the needs of the SME sector, providing support through policy formulations and infrastructure development in the country. SMEDA has been working for entrepreneurs and the SME sector in the country and has opened provincial offices across Pakistan. Additionally, SME banks have also been established in each and every major city across the country for purposes of supporting entrepreneurship and the SME sector.

Currently, governments, along with other bodies, are working to promote entrepreneurship culture in the country by introducing various programs and initiatives to develop and promote SME and entrepreneurship in Pakistan. Recently, the government of Pakistan launched schemes for the youth and women entrepreneurs in the country by providing financing for the skillful individuals who work for their family and encourage entrepreneurial culture in the country [15].

It has been important to know about the entrepreneur-specific characteristics and how these personal traits influence business operations of the SME sector and the entrepreneurs. Keeping in mind this importance, various studies have been undertaken on these personal traits of entrepreneurs across the globe. Some of the studies have also been undertaken during the educational careers of the students, which elaborated upon these personal traits in their studentship. Likewise, a study in Iran conducted by [16] addressed the entrepreneurial personal traits, consisting of eight factors of the undergraduate students of the three universities in the country. Additionally, a similar study has also been conducted in Brazil [17]. Thus, as is evident from the literature, the entrepreneurial personal traits play an important role in promoting entrepreneurial culture and developing the SME sector of a country.

Entrepreneurial-specific features or personal traits of SMEs' owners/managers have a huge impact on access to finance. A study in the UK and the US points out that SMEs' success is associated with education, age, net worth, and several years of work [18]. The study discovered that the personal values of owners and managers, the strategies they adopt when running their companies, and the results of their business performance are inwardly related, observing a positive relationship between owner/manager personal traits and business performance of SMEs [19]. Previous literature suggests that financing factors for firms are owner characteristics, company characteristics, and ownership [20–22]. Meanwhile, it is factors such as financial issues (including short and long-term loans), good access to infrastructure, reliable supply chain systems, work experience, and educational background that drive the success of SMEs.

A study conducted by [23] focuses on the experiences of entrepreneurs and the personal attributes that prevent them from starting a business at the micro level in Pakistan. A total of eighty-four families in rural Sindh, Pakistan were interviewed. The findings reveal that religious, social, economic, and structural forces play a key role in suppressing social and cultural capital in rural Pakistan, which explains the low level of entrepreneurship in these areas. Social and cultural capital require a specific socio-economic perspective to promote business in Pakistan.

2.1. Age of SME's Entrepreneur

An entrepreneur's age is found to also be relevant in the development of SMEs and entrepreneurship culture as observed by [24]. Many studies have examined the access to loans and the age of the owner/manager. While some show that there is some importance with an observed positive impact on bank loan accessibility [25], some have shown that age does not have any association with access to finance [26]. A study examined the financial behavior of SMEs using two datasets comprised of 15,750 and 3239 SMEs from the UK and the US, respectively. The results reveal that younger owner-managers use more bank loans, credit cards, savings, and family resources than older ones, who rely on income. The young owners had a better chance of survival in SMEs compared to the older owners [27]. Based on the literature, the proposed hypothesis will be

Hypothesis 1 (H1). *The age of an SMEs entrepreneur has a significant relation toaccess to loans*.

2.2. Gender of SME's Entrepreneur

Like other entrepreneurial-specific characteristics, the entrepreneur's gender also plays a vital role in an SME's efficient operation [28–30]. The study found an association of gender and external finance access and reveals that both men and black and ethnic minority participants are inclined to the advice of family and friends, while women are more likely than men to use a business link [31]. A study by [32] does not provide any evidence to suggest a financial gap in the small businesses in Australia. In addition, the study further found no gender difference treatment by the financial institutions with respect to financing. Meanwhile, a study in the USA examined the views of SMEs' owner/managers regarding the gender differences and obtaining loans. Their results show that business owner/managers and male and female partners of bankers had a higher confidence level to loan and banking knowledge [33].

The women surveyed showed that the raising of funds by females was easier than by their male counterparts, while ethnic minority businesses, especially black owners, had the most difficulty obtaining financial assistance, which is why they resorted to financing. Based on the literature, the following hypothesis is empirically tested:

Hypothesis 2 (H2). *The gender of an SME's entrepreneur has a significant relation to access to loans*.

2.3. Education of SME's Entrepreneur

Entrepreneurship plays a vital role in a country's economy. For a good entrepreneurship, an individual's education and skills have a significant role. In this sense, education plays a key role in enhancing an individual's skills and abilities, as the business trend increases employment opportunities and serves as an engine to boost the country's economy [34]. Reference [35] provided an excellent case study of a frontline business family, Memons, (a family name) in Pakistan, whose business-based community structure largely reflects the educational preferences of other business families in Pakistan. It was found that, contrary to the preferences of most educated youth, Memon considered himself unwelcome in government jobs and preferred to start his own business and encouraged entrepreneurial culture in the country. It is suggested that the higher level of education tends towards a positive role in the access to credit from banks (39). In addition, considering the education factors, including the gender and ethnicity of the owner/manager, the result shows that

graduates had less difficulty obtaining funding than college students. It has been found that there is a positive association of owners' education level and loan availability [36]. Similarly, a study used the level of education of senior managers and revealed a relation with access to loans [37]. The impact of education level and training on indirect bank loan access through business trends was investigated. SMEs with an entrepreneur who has a professional level of education have a legal right of access to creditor a higher chance of success [38]. Therefore, the researchers propose the following hypothesis;

Hypothesis 3 (H3). *The education of an SME's entrepreneur has a significant relation to access to loans*.

2.4. Professional Experience and Skills of SME's Entrepreneur

An entrepreneur's experience is one of the main factors of an SMEs business operations and efficient utilization of their resources [39]. Experience is an important factor for external financing from the formal and informal financial institutions [40]. In addition, business size, gender, and location of owners are important factors at the company level that influence companies' reliance on informal credibility. Finally, the level of economic development in the country has significant implications in reducing the everyday use of credit. Most companies rely heavily on prior knowledge and experience [41].

Entrepreneurial skill has been proven to be the main factor of an SME's success [42]. Skill (managerial and business development) plays its role in attaining the funding from formal and informal financing sources. A study clarified that previous experience and skills were associated with access to loans from external sources for SMEs [43]. Experienced entrepreneurs perform well compared to less-experienced entrepreneurs in SMEs. It is thus advisable to include experience in loan credibility [44]. A significant relation has been proved with management skills and experiences in Bangladeshi SMEs [45]. Thus, the following hypotheses are proposed:

Hypothesis 4 (H4). *The experience of an SME's entrepreneur has a significant relation to access to loans*.

Hypothesis 5 (H5). *The skills of an SME's entrepreneur have a significant relation to access to loans*.

Figure 1 is the proposed conceptual framework of the current study, i.e.,

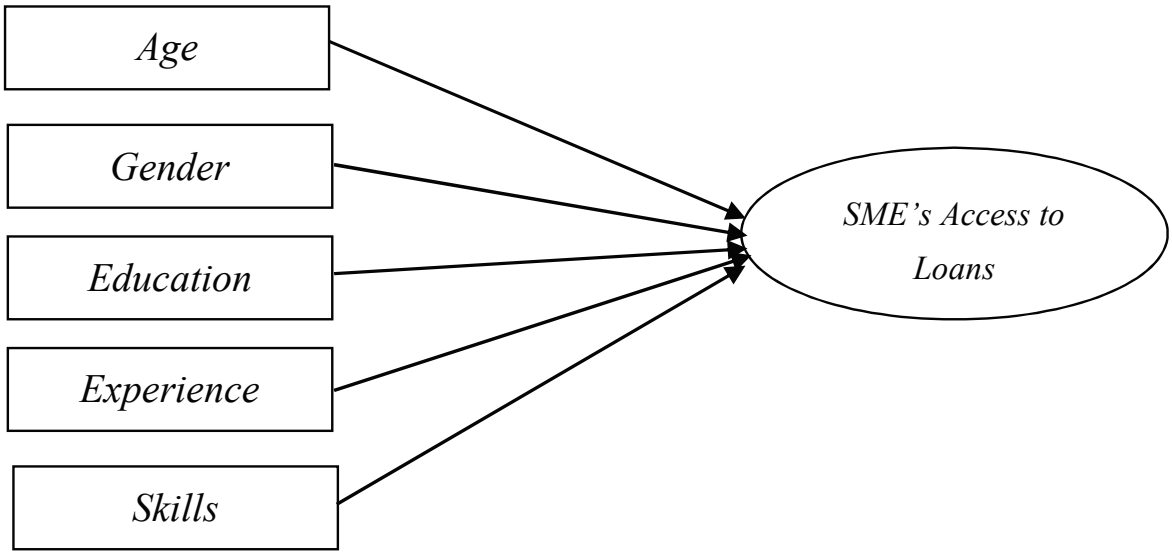

Figure 1. Conceptual Framework. Source: Authors.

3. Methodology of the Study

3.1. Binary Logistic Regression

This type of regression is employed when predicting an association in variables. The dependent variables are binary, having two choices (yes/no, male/female) and not more than that are termed as binary logistics. Binary logistics regression analysis is performed by multiple descriptive variables and the relationship between one single binary response variable, a categorical variable with two types [46].

$$\mathrm{Log}(P_i/1 - P_i) = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + \ldots \ldots . B_kX_k + E$$

where Log(P/1 − P) = Log(likelihood)
P = $e^{a+bx} \div 1+ e^{a+bx}$
P = Target variable (0 to 1)
B_0 = Constant
B_1 = Coefficient of variable X_1 and so on
X_1 = Independent variable
E = Error term.

Based on the above regression equation, the regression model of the study is as follows:

Access to finance = B_0 + B_1 (Age) + B_2 (Gender) + B_3 (Education) + B_4 (Experience) + B_5 (Skills) + E.

3.2. Population and Data

The population of the study is based on the SME sector of KP, Pakistan. According to the Census Report 2017 of Pakistan, KP, a province of Pakistan, had a population of more than 35.50 million. A total of more than 2.50 million individuals have been employed in different sectors of the economy, such as agriculture, trade, and commerce. The majority of the work force involved in the sub-sectors of SME in the province, e.g., textile, leather, and apparel; food and beverage; flour mills; and the tobacco sector.

According to the Small and Medium Enterprises Development Authority (SMEDA), there are more than 2250 industrial units operating in the province [47]. This is more than a14% contribution in the share of the SME sector in the country by KP.

There are different industrial zones in KP, spread in Peshawar, Gadoon, Hattar, DI Khan, Swat, and other provinces. This study focuses on the Peshawar district, the capital of KP. The industrial zone is located in Hayatabad Peshawar, the main city of the capital, and is the province's hub for business. The Hayatabad Industrial Sector has various kinds of industries and units of SMEs working. There are 431 firms working in Hayatabad Industrial Zone Peshawar, and this is the target population of the current study.

According to Cochran formula, the study's sample size is calculated for 204 SMEs. Therefore, 204 questionnaires are distributed randomly in Hayatabad.

According to the Cochran formula [48] the Hayatabad Industrial Sector was selected for data gathering and a total of 204 questionnaires distributed randomly among the owners and managers of SMEs. Of the 204, 197 questionnaires were successfully filled and returned, among which 192 were used for data analysis (response rate is 94%), and five were excluded due to lack of data or an incomplete identification of subject domain.

3.3. Variables of the Study

This section is comprised of the variables used in the study. Table 1 shows the details of the study variables. There is one dependent variable and five explanatory variables that predict the dependent variable. The variable age and experience have six categories, followed by gender having two options, and level of education has four categories, while both the skills (managerial and business development) and access to finance have two options in the questionnaire and details as shown in Table 1.

Table 1. Variables Description.

S.No	Independent Variables	Option/Category
1	Age	1. 25–30 years 2. 30–35 years 3. 35–40 years 4. 40–50 years 5. 50–55 years 6. 55–60 years
2	Gender	Male = 1, Female = 0
3	Education	1. School level 2. College level 3. University level 4. Diploma level
4	Experience	1. 1–5 years 2. 5–10 years 3. 10–15 years 4. 15–20 years 5. 20–25 years 6. 25–30 years
5	Skills (managerial & business development)	Yes = 1, No = 0
S.No	Dependent variable	Option/Category
1	Access to finance	Yes = 1, No = 0

4. Analysis and Results

The data analyzed through binary logistic regression as the dependent variables (access to finance) are categorical and have two options (yes/no), and the explanatory variables are age, gender, education, experience, and skills. Therefore, the binary logistic is suitable for analysis. Before analyzing, some assumptions are mandatory to check the data, such as running a normality test.

Table 2 shows the Shapiro-Wilk test; if the value of significance is >0.05, then data are normally distributed. Table 2 indicates that the *p* values of each variable are greater than 0.05, confirming that the data are normal.

Table 2. Tests of Normality.

	Shapiro-Wilk		
	Statistic	**df**	**Sig.**
Age	0.907	192	0.484
Gender	0.572	192	0.613
Education	0.910	192	0.497
Experience	0.800	192	0.747
Skills	0.623	192	0.835
Access to finance	0.614	192	0.814
Lilliefors Significance Correction			

The study also uses tolerance and VIF to check collinearity of the data. If the tolerance value is less than 0.1 or the VIF value is larger than five, there is a correlation between the variables.

Table 3 shows that the value of tolerance of each variable is greater than 0.1, and the value of VIF is less than 5; thus, it means that the variables have no collinearity and are hence feasible for logistic regression analysis.

Table 3. Multi-collinearity diagnosis indices.

	Collinearity Statistics	
	Tolerance	**VIF**
Age	0.488	2.048
Gender	0.565	1.770
Education	0.799	1.252
Experience	0.962	1.040
Do you have skills?	0.969	1.032
Dependent Variable: Do you have access to loans?		

Table 4 shows the output results of the dependent and explanatory variables of the study; according to the table, age ($p < 0.000$ and the value of the odds ratio are 5.488) is significantly associated with access to finance of SMEs. It means that if the age is increasing, there is a 1.703-unit increase in access to finance of the SMEs; therefore, null hypothesis is rejected at a 1% level of significance. This could imply that whenever the age of the entrepreneur (owner/manager) of SMEs increases, they know the business better. They have seen many activities involving the business, including financing and different strategies for external funding opportunities for their business compared to the younger individuals.

Table 4. Binary logistic regression model results.

Variables	**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Age	1.703	0.439	15.024	1	0.000	5.488
Gender	23.732	416.882	0.001	1	0.995	20,657.2
Education	0.589	0.287	4.22	1	0.040	1.801
Experience	0.239	0.323	0.548	1	0.459	1.27
Skills	−0.643	1.035	0.385	1	0.535	0.526
Constant	−30.697	416.884	0.012	1	0.994	0
−2 Log likelihood	29.468					
Cox & Snell R Square	0.694					
Nagelkerke R Square	0.941					
Hosmer and Lemeshow GOF Test						
Chi-square (df)	2.248(8) (0.945)					
Omnibus Tests of Model						
Chi-square(df)	227.437(8) ***					
Variable(s) entered: Age, Gender, Education, Experience, Skills.						

*** Note: Indicated significance at 1% level.

The education ($p < 0.040$ and the value of the odds ratio are 1.801) also has a significant association with access to finance and, hence, rejects the null hypothesis at the 5% significance level, accepting the alternate hypothesis. When education increases by 0.589 units, there is an increase in access to loans by the owner/manager of the SME. As the entrepreneurs (owner/manager) of SMEs have more education, they can easily obtain the business' financing compared to the individual who has less education. Banking and other financial institutions hesitate and do not encourage the owner and manager of SMEs with less education for credit opportunities compared to more educated owner/managers of SMEs.

Although the gender, experience, and skills of an entrepreneur (owner/manager) of SMEs are important personal traits and impact the business decisions, including financing and external sources for obtaining funds for the SMEs, in the present study, gender,

experience, and skills have not been significant. The *p*-value is (0.995, 0.459, and 0.535) respectively, which means that these three factors have no significant relation to finance access in the current study.

The likelihood ratio test value is 29.468 with a *p*-value of 0.000, which indicates that the overall fit of the model is good and statistically significant. The value of Cox and Snell R-square is 0.694, and the Nagelkerke R-square is 0.941, which shows that the model is good and shows the explanatory variables in the model explained between 69.4% and 94.1% of the changes in the dependent variable.

In Table 4, the Hosmer–Lemeshow test shows the goodness of fit of the model; the higher the value of the test, the better-fitted the model. The value of the test is (Chi-square 2.248(8), 0.945); this gives the predictive quality of the model, and it results in correctly predicting at a value of 94.5%, which is a very high value and close to 1. Thus, the model has high goodness of fit. Based on the Omnibus test, the corresponding Chi-square value is reported 227.437, with eight degrees of freedom with the *p*-value ($p < 0.0001$), so the explanatory variables used in the model have significantly contributed as compared to the model where the predictors are not used.

Table 5 is about the classification table and shows the dependent variable (access to finance) having a yes or no option. The classification table is another way of estimating the accuracy of the logistic regression model. This table contains the observed values (user-defined cut-off value, for example, $p = 0.50$) for dependent results and predicted values. This table shows the individual's percentage of the choice of the variable's answer in the model. The overall percentage of the model is 95.31%, which shows that the model is accurate.

Table 5. Classification Table.

		Predicted		
		Access to finance		
Observed		**No**	**Yes**	**Percentage Correct**
Do you have access to finance?	No	71	4	94.67
	Yes	5	112	95.73
Overall Percentage				95.31
The cut value is 0.500				

5. Discussions and Conclusions

The results of the binary regression analysis show that age and education are the two variables with significant results at 1% and 5% significance level and reject the null hypotheses at 1% and 5%. These results are similar to [49–53], who have also reported the same findings in their studies about a significant association of age and experience of entrepreneurs with their access to loans.

Although gender, experience, and skills of an entrepreneur (owner/manager) of an SME are important personal traits and impact business decisions, including financing and external sources for obtaining funds for the SMEs, in the present study, gender, experience, and skills have no significant relation to finance. These results are similar to the studies by [54–57].

Financial institutions are usually reluctant to lend to startups because of the high risks of loan default. Another personal aspect of the problem may be that credit officials as a group of clients can pose a threat to women entrepreneurs, thinking that women have less knowledge. Many banks' marketing strategies are based on a user profile that may not be suitable for female business people. Facing cultural barriers that women entrepreneurs face, e.g., maximized mobility and time demands, further limit women and their ability to access finance.

Some studies have mixed results regarding the entrepreneurial-specific characteristics and access to finance. A study by [58] reveal that loan accessibility in Kenya is not related

to knowledge of financing but related to income level, age, marital status, gender, and education. A study examined that the owner/manager's age has a relation with access to loans for SMEs. On the other hand, access to bank loans has no significant effect on the educational level.

It is concluded that different factors related to the firm's entrepreneur (owner/manager of the SME) are influencing the financing and credit availability from the financial institutions operating in the country and specifically in KP. The entrepreneur's factors, such as educational background, experiences, professional skills (managerial and business development), age, and gender influence the SME's business operations. All these personal traits of the SME's entrepreneur are important in its operations and especially in obtaining the financing from the external sources for the SMEs in KP. It summarized that age and experience, both the unique features of the entrepreneurs of SMEs, are significantly positively associated with access to financing from external sources, including formal and informal banking and financial institutions who deal in providing the funds to the businesses in the KP. On the other hand, other factors, education, and skills of the owner/managers of SMEs are insignificant with the access to financing. Although these factors also play an important role, this study showed that these are not relevant in SMEs working in KP.

The education is the major contributor in the development of an entrepreneur's personal traits. Without education, it is very difficult for an entrepreneur to easily understand the business environment of an SME. Above all, educational background must have developed an entrepreneur's personality in all aspects of their personal and business life. If an entrepreneur's level of education increases, their power of knowledge and understanding definitely increases, which leads them to efficient utilization of business resources and results in better performance of SMEs. Entrepreneurs with rich educational backgrounds can easily handle complex problems and challenges they face as compared to the entrepreneurs who lack education or have a low level of that. Hence, the well-educated entrepreneurs can easily access loans and funds in a professional manner while dealing with financial institutions, including banks, Non-Governmental Organizations (NGOs), and other funding agencies working for the promotion of entrepreneurial culture and the development of SME sector in the country.

The current study contributed that the educational factor is the main personal trait of entrepreneurs in the context of KP, Pakistan. The current study also contributed in the sense that entrepreneurs play a vital role in SMEs' business operations in obtaining access to loans. Age is one of the important factors of entrepreneurial personal traits. Older entrepreneurs will have the knowledge and understand the ups and downs in their business operations. They handle pressure of any sort well (e.g., lack of supplies and resources) in contrast with the younger entrepreneurs, who may have not faced such business dealings in their career. The older entrepreneurs deal with the lending institutions in a professional manner and understand the tricks to convince the bankers and lenders in obtaining funds for their business. In short, it has been summarized that an entrepreneurs' age is also important in an SME's business operations and access to financing in the context of KP, Pakistan.

It has been evident that a number of studies have been undertaken on large enterprises in Pakistan and the SME sector. Specifically, in the SME sector of the country, various researchers have focused on the different aspects of SMEs and access to financing in KP, but the researchers have not found any particular study which has elaborated the entrepreneurial personal traits and their impact on financing and access to bank loans in KP. Thus, the current study pioneers the subject domain in KP. The present research has a major contribution in the subject under consideration and will also be helpful for future researchers to further elaborate upon the SMEs in KP, Pakistan.

The study has also added to the existing literature and opened a new area for further elaboration by comparing various aspects of SMEs and entrepreneurial personal traits. Additionally, the study will also be useful in policy formulation for the SME sector to further improve and strengthen the entrepreneurial personal traits through training and development, conduct seminars & workshops, and, above all, involve the entrepreneurs

in live case studies of the developed nations across the globe through which they can understand and enhance their ability, skills and work environment according to the current requirement and development of the SME sector in KP, Pakistan.

6. Implications & Recommendations of the Study

The implications & recommendations of the study are threefold for policy-makers who will formulate policies and strategies for the SME sector in the country and will keep in mind the need of the small business, especially for their resources and financing. That is how they can easily acquire funds and loans for their business operations and their efficient utilization to obtain the maximum benefit and lead to the success and performance of the SME sector in the country.

The implications for entrepreneurs are that, while starting their business at early stage, they will have hired human capital in a well-judged manner, especially keeping in mind the personal characteristics of personnel, as it has been proven that entrepreneurial personal traits will play a major role in the success of a business, especially in the SME sector. In a later stage, once a business is established, a proper measure should be undertaken for the professional development of the entrepreneurs of SMEs.

It has been recommended that the top management and owners of the business must focus on the personal characteristics and enhance these factors through educating, training, conducting seminars & workshops, and hands on practices during training and development activities. Through their professional and personality development, an entrepreneur will enrich their education, experiences, and professional skills to deal business operations in the best way and will also enhance their ability and cognitive skills, which benefit them in solving complex problems and scenarios they face.

The banks and other formal financial institutions will have also benefited in the sense that, whenever an SME's entrepreneur approaches them for their financing and loan opportunities, they can analyze all aspects of their business and thus be comfortable in dealing with the entrepreneurs having rich qualities and traits. Because the bankers and other lenders are convinced by SME entrepreneurs, this will result in the granting of loans and funds for their business.

7. Limitations & Future Research

The present study limited to the SME sector of the country, in which only the manufacturing SMEs of Pakistan have been considered. The entrepreneurial-specific characteristics, including age of not more than 60 years along with experience of not more than 30 years, have not been considered. The study is limited to only one province of Pakistan and has not considered other provinces of the country. The informally documented SMEs of KP have not been under consideration of the current study.

The study only focused on the Hayatabad Industrial of Khyber Pakhtunkhwa as cluster sampling through which a total of 204 SMEs has been selected and has not considered the other industrial zones across the province

The study suggests that future researchers explicitly narrate the entrepreneurial specific-characteristics with a large sample while comparing the small and medium-sized enterprises separately in KP, Pakistan. The study should also consider various sub-sectors of SMEs in KP. Additionally, it should observe how personal traits of entrepreneurs' impact accessibility to bank financing in the country and formulate strategies and policies for strengthening these entrepreneurial-specific characteristics through training and development and personality growth for the efficient operations of the SME sector in Pakistan. Nevertheless, a cross-provincial analysis will also apply in which the SME sector of one province with the other province of the country will be observed and will observe how the entrepreneurial-specific characteristics impact the financing decision and access to bank loans in Pakistan.

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

Data Availability Statement: The data of the current study are for researchers and academics for their academic purposes only.

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The Moderating Effect of Institutional Quality on the Financial Development and Environmental Quality Nexus

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Abstract: Environmental sustainability is a major concern of contemporary societies, businesses, and governments. However, there is a lack of knowledge as to how countries can achieve the goal to end poverty, whilst protecting the planet. It is the objective of our study to examine the moderating role of institutional quality on the financial development and environmental quality nexus in South Asia. Our sample consists of panel data of five South Asian countries (India, Bangladesh, Nepal, Sri Lanka and Pakistan) from 1984 to 2018. We find that financial development increases CO_2 emissions in this region, implying that countries in South Asia have utilized financial development for capitalization, instead of improving production technology. Institutional quality moderates the negative impact of financial development on environmental sustainability. An implication of our findings is that efforts to improve institutional quality may help to promote sustainable development in South Asia.

Keywords: economic growth; energy consumption; environmental pollution; financial development; foreign direct investment; institutional quality

1. Introduction

A clean natural environment is considered an essential element for improving the quality of human life in modern societies. Government and regulatory authorities have a keen interest in the management of natural resources to preserve the ecosystem. Yet, natural resources, in particular fossil fuels and minerals, are essential to economic development since they are key inputs to the production of goods and services. However, the expenditure of natural resources through the combustion of fossil fuels, increases CO_2 emission into the atmosphere, a gas that absorbs and emits thermal radiation and is a primary contributor to the so-called 'greenhouse effect'. In the last four decades, global CO_2 emissions have been the main contributor to environmental degradation and climate change risk. Although the share of South Asian countries in global CO_2 emissions is currently less than ten percent, it is expected to increase significantly as these economies develop further [1].

Given that climate change poses a significant threat to human life, researchers are increasingly focusing on achieving better understanding of the link between economic growth and environmental degradation. Financial development has been strongly linked to environmental degradation [2]: financial development increases environmental pollution by boosting industrial activity [3]. However, countries with well-developed financial markets tend to have a cleaner environment [4].

Institutional quality—rules of law, risk of expropriation, corruption, quality of bureaucracy—is a less considered factor in terms of the causes of environmental degradation [5–9]. Arguably, environmental quality improves when government institutions are effective enough to enforce environmental standards and regulations that have been adopted [10].

Empirically, the financial development and environmental quality nexus has been examined in a number of developing countries, including Brazil, Russia, India and China (BRIC) countries [11], China [12–14], sub-Saharan African countries [15], Turkey [16], Indonesia [17], South Africa [18], Vietnam [19], Middle East and North Africa (MENA) countries [20], and 19 emerging economies [21].

South Asia is characterized by rapid urbanization and population explosion. It has many industries with highly outdated technologies and high carbon-emitting infrastructure. As a result, air, surface and water pollution have increased substantially in this region of the world as it has developed economically. If appropriate measures are not taken to reduce environmental pollution, South Asian countries may have to face severe negative economic consequences as a result of climate change. Nevertheless, only a limited number of studies have examined the financial development and environmental quality nexus in this region, notably India [22,23] and Pakistan [24–26]. However, these studies have ignored the influence of institutional quality on environmental quality, even though institutional failure may exacerbate this association. The aim of our study is to fill this gap in the literature.

Our sample covers five countries of South Asia for the period 1984 to 2018: Pakistan, India, Sri Lanka, Nepal, and Bangladesh. Our panel analysis indicates that financial development causes environmental pollution, consistent with the prevailing literature. Hence, countries in South Asia have utilized financial development for capitalization, instead of improving production technology. Notably, institutional quality moderates the negative impact of financial development on environment quality, suggesting that well-functioning institutions act in enhancing environmental sustainability.

The remaining part of this paper is organized is as follows. Section 2 provides the hypotheses and a short literature review, followed by a discussion of the data and methodology in Section 3. Empirical findings are provided in Section 4, whilst Section 5 provides a conclusion of our findings, including a policy implication and suggestions for future research.

2. Literature Review and Hypotheses Development

There is a rich theoretical literature on the relation between financial development and environmental performance. Scholars [4,11,27] argue that financial development helps reduce environmental pollution for the following main reasons: (1) businesses are required to periodically update production technology and equipment in order to lessen production costs as well as improve the market competitiveness of products, which are possible only with adequate financial support. Businesses can achieve this by effectively mitigating their financing constraints through a well-developed financial system; (2) governments promote environment friendly projects, clean energy usage, and overall industrial transformation in order to cope with environment degradation. Financial institutions considering such policy arrangements play an important role as governments can obtain the necessary funds to finance such projects, reducing environmental pollution through improvements in energy infrastructure; (3) firms listed on the stock market are required to disclose all types of information (including environmental information) on a regular basis and are under strict supervision of regulatory authorities. To remain credible, firms need to create and maintain a good image/reputation, such as using environment friendly technologies which helps to reduce environmental pollution.

Grossman et al. [28] argue that the acceleration of economic growth results in higher environmental pollution in the early stage, but in later stages lowers environmental pollution; high emissions of pollutants are the result of high energy usage resulting from economic growth [29]; economic growth and environmental degradation have a causal relation [30].

Energy consumption is a key determinant of environmental pollution [29,31,32]. Rapid growth in the social economy leads to higher energy usage, increasing environmental pollutant emissions [33]. Zhu et al. [34] propose that energy plays a vital role in economic development and poverty reduction and that such countries need to use energy in an effective way and move to clean and renewable energy by adopting an energy development program.

Foreign direct investment (FDI) is also thought to be associated with environmental pollution [31]. The pollution haven hypothesis and the halo effect hypothesis are two perspectives of the relation between FDI and environmental pollution. The pollution haven hypothesis states that developing countries, through non-enforced or relaxed regulation, tend to disregard environmental concerns in order to attract FDI [35]. Contrarily, the pollution halo hypothesis argues that the FDI effect is inverted by introducing low polluting technologies [36]. The empirical literature has reached consensus about the existence of positive linkage between FDI and financial development (SMD) [37–40]. FDI leads to economic growth and economic growth promotes SMD [41]. Therefore, FDI promotes SMD. Malik and Amjad [42] derive an inference on the role of FDI in promoting aggregate SMD in Pakistan. On the other hand, Heyes et al. [43] argue that air pollution could influence brain health, cognition and risk attitude, resulting in decreased risk tolerance, changed mood and trading behavior of investors. Further, they provide evidence that poor air quality in a stock-market based city causes market prices to diverge from prices based on fundamentals, which results in lower returns.

Figure 1 shows the proposed theoretical framework of our study. We consider financial development, institutional quality, foreign direct investment, economic growth and energy consumption as key determinants of environmental quality.

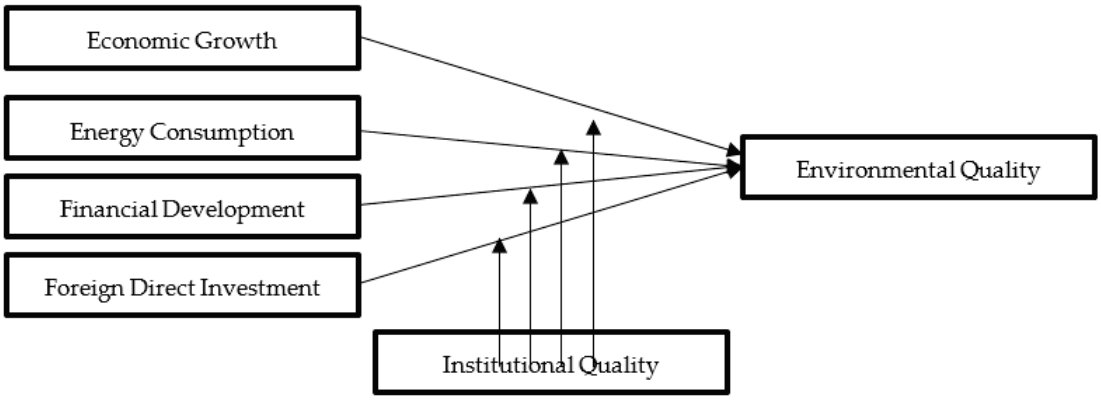

Figure 1. Proposed theoretical framework.

According to Yuxiang and Chen [13], financial development influences environmental quality in four probable ways, including capitalization, technology, income and regulation effects. In the capitalization effect, the growth of small-scale industries is stimulated by financial development having some benefits, including the reduction in pollution and economies of scale [44]. The technology effect requires the encouragement of environment-friendly projects through financial development [11] and advancements in technology by offering cheaper financing, which in turn reduces pollution through adopting more efficient production processes [45]. On the other hand, technologically advanced firms need more natural resources which may negatively affect environmental quality [46]. In the income effect, it is assumed that long-run economic growth is stimulated by financial development [47], which can have either positive or negative impacts on the environment [48]. The regulation effect implies that financial development, in the presence of environmental regulations, is advantageous for the

environment [13]. Firms having ordinance of environmental regulation can protect the environment and can access external financing from banks based on their environmental assessment. This policy is thought to have significantly contributed to improved environmental quality in China [49]. According to Adom et al. [50], financial development negatively affects environmental pollution as it has less scale effects but more technical effects at the macro level. Saidi and Mbarek [21] report negative impact of financial development on environmental pollution. Others [18,51,52] document similar findings.

Considering the weight of the arguments provided above, we predict the following:

Hypothesis 1 (H1). *Financial development negatively affects environmental quality.*

Institutional quality, such as rule of law, quality of bureaucracy, and control of corruption, is an important, although somewhat neglected aspect that may influence environmental quality [5–9,53]. Conversely, institutional failure may lead to degradation of the ecosystems. Well-functioning quality institutions improve the environment even if a country has a low level of income [53]. Environmental quality improves when government institutes are strengthened enough to enforce environmental standards and regulations [10]. Governmental organizations may prioritize factors like legal and political framework, sufficient budgetary resources, feedback mechanisms availability, citizens' perceived ease of engagement and motivated citizens that boost citizen engagement to create higher value with open government data (OGD) to solve societal problems, which may improve institutional quality [54]. Practitioners and policymakers need to assure the importance of key factors, i.e., user satisfaction, usefulness, efficiency, quality, ease of use, which ultimately enhance institutional performance [55].

Persson et al. [56] argue that at the early stages of economic development, environmental pollution can be reduced through adopting policies for pollution reduction. One such policy to mitigate pollution is a strong financial system along with an efficient institutional structure. Hence, environmental quality improves with future higher income as income growth and environmental regulation go side by side. That is, environmental standards are relaxed at initial stages of economic development but become stronger when the level of development improves [10]. Tamazian and Rao [2] argue and find that both financial development and institutional quality are negatively associated with environmental pollution.

Based on the discussions above, we predict the following:

Hypothesis 2 (H2). *Institutional quality positively affects environmental quality.*

Hypothesis 3 (H3). *Institutional quality moderates the negative relation between financial development and environmental quality.*

3. Data and Methodology

3.1. Data

The sample of our study consists of annual data from five South Asian countries (India, Bangladesh, Nepal, Sri Lanka, and Pakistan) over the period of 1984 to 2018. Three South Asian countries (Bhutan, Maldives, and Afghanistan) are excluded from our sample due to unavailability of data. We use the corruption index as the proxy for institutional quality, with the data taken from Table 3B of the International Country Risk Guide (ICRG). Goel et al. [57] use the same proxy in their study to measure institutional quality. We use World Development Indicators (WDI) to obtain data for the remaining macroeconomic variables. WDI is an online database operated by the World Bank. CO_2 emissions data are extracted from World Data Atlas.

3.2. Methodology

To test our hypotheses, we estimate the following panel regression model (Equation (1)):

$$enq_{i,t} = \beta_0 + \beta_1 ecg_{i,t} + \beta_2 enc_{i,t} + \beta_3 fid_{i,t} + \beta_4 fdi_{i,t} + \beta_5 insq_{i,t} + \beta_6 (ecg_{i,t} * insq_{i,t}) + \beta_7 (enc_{i,t} * insq_{i,t}) + \beta_8 (fid_{i,t} * insq_{i,t}) + \beta_9 (fdi_{i,t} * insq_{i,t}) + v_{i,t} \quad (1)$$

where $enq_{i,t}$ is CO_2 emissions (CO_2), $ecg_{i,t}$ is economic growth, $enc_{i,t}$ is energy consumption, $fid_{i,t}$ is financial development, $fdi_{i,t}$ is foreign direct investment, $insq_{i,t}$ is institutional quality and v is the residual term.

Environmental quality (*enq*) is proxied by per capita CO_2 emissions (metric tons per capita) [34,58]. Countries with higher per capita CO_2 emissions have lower environmental quality. Environmental degradation and global warming are affected by CO_2 emissions at a larger scale in comparison to other greenhouse gases (GHGs), such as sulfur dioxides and nitrogen oxides which are generated by power plants, energy-intensive industries, and transportation [59].

Economic growth (*ecg*) is proxied by real GDP per capita in US dollars (income) [34]. The intuition is that economic activities, like manufacturing, electricity generation and operation of motor vehicles, boost air pollution.

Energy consumption (*enc*) is proxied by the per capita kilogram of oil equivalent [33,34]. Arguably, energy consumption has a strong negative impact on the environment. It affects the environment through the burning of fossil fuels, in particular coal.

Financial development (*fid*) is proxied by the private sector domestic credit, as a percentage of GDP [33,34,58]. Whilst several studies have used M2 or M3, as a percentage of GDP (liquid liabilities), Shahbaz and Lean [60] criticize this measure claiming that these represent liquid liabilities instead of the size of the financial sector. We predict that financial development increases pollution.

Foreign direct investment (*fdi*) is proxied by foreign direct investment as a percentage of GDP [34]. The net effect of FDI on environmental quality depends upon the prevailing conditions discussed in the pollution haven hypothesis and the pollution halo hypothesis.

In Equation (1), both the independent and dependent variables are represented in logarithmic form. Thus, the β-coefficients show elasticities. For example, β_1 is the elasticity of environmental pollution with respect to economic growth, which is anticipated to have a positive sign since pollution is anticipated to increase with economic growth in South Asia.

To test for the moderating effect of institutional quality on CO_2 emissions through economic growth (*ecg*), energy consumption (*enc*), financial development (*fid*) and FDI (*fdi*), we add the following interaction terms to the regression model: ($ecg_{i,t} * insq_{i,t}$), ($enc_{i,t} * insq_{i,t}$), ($fid_{i,t} * insq_{i,t}$) and ($fdi_{i,t} * insq_{i,t}$) respectively. We expect the coefficients on each of these interaction terms to be negative and significant. Effective regulatory framework exercised through strong institutions ensures efficient use of energy which decreases environmental pollution [61]. A well established and effective institutional mechanism discourages FDI in contaminating industrial sectors and encourages FDI in environment-friendly and less polluting industries. Variables measurement is summarized in Table 1.

Table 1. Variables measurement.

Variable	Description	Symbol	Reference
CO_2 Emission	Per capita CO_2 emissions (metric tons per capita)	Enq	Zhu et al. [34]; Jiang and Ma [58]
Economic Growth	Real GDP (Gross Domestic Product) per capita	Ecg	Zhu et al. [34]
Energy Consumption	Per capita kilogram of oil equivalent	Enc	Jian et al. [33]; Zhu et al. [34]
Financial Development	Domestic credit to private sector as a percentage of GDP	Fid	Jian et al. [33]; Zhu et al. [34]; Jiang and Ma [58]
FDI	Foreign direct investment as a percentage of GDP	Fdi	Zhu et al. [34]
Institutional Quality	The corruption index developed by the International Country Risk Guide (ICRG)	Insq	Goel et al. [57]

Ignoring cross-sectional dependence in the estimation may result in loss of efficiency of the estimators, biased test statistics and spurious inferences in hypothesis testing. Consequently, we

conduct several cross-sectional dependence tests. The null hypothesis of no-cross-sectional dependence is as follows: $P_{ij} = Corr(v_{it}, v_{jt}) = 0$ for $I \neq j$, where P_{ij} is correlation coefficient among the disturbances in cross-sectional units i and j.

4. Empirical Results

Table 2 provides the descriptive statistics of the sample. The mean value of environmental quality measured by CO_2 emissions is 0.54, ranging from 0.03 to 2.02 metric tons CO_2 per capita. Economic growth per capita has an annual average of 2825.13 US dollars, ranging from 892.92 to 11,738.40 US dollars. Energy consumption per capita ranges from 103.91 to 639.95 kilogram of oil equivalent, with a mean value of 356.14. Financial development, proxied by domestic credit to the private sector as a percentage of GDP, has an average value of 27.73, ranging from 8.49 to 66.92. FDI is relatively low for our sample of South Asian economies, with an average value of just 0.74 percent, ranging narrowly between 0 and 3.68 percent. Finally, institutional quality proxied by the corruption index has a mean value of 2.25 and varies between 0.10 and 4.00. A score of 4 represents very low corruption risk, whilst a score of 0 represents very high corruption risk.

Table 2. Descriptive statistics.

Variable	Mean	Standard Deviation	Median	Minimum	Maximum	Coefficient of Variation
CO_2 Emission	0.54	0.45	0.46	0.03	2.02	0.81
Economic Growth	2825.13	1927.94	2435.64	892.92	11,738.40	0.67
Energy Consumption	356.14	126.40	367.33	103.91	639.95	0.36
Financial Development	27.73	11.94	25.97	8.49	66.92	0.44
FDI	0.74	0.75	0.55	0.00	3.68	0.98
Institutional Quality	2.25	0.83	2.50	0.10	4.00	0.37

Table 3 shows the Pearson pairwise coefficient matrix of the regression variables. Notably, environmental quality proxied by CO_2 emissions (*enq*) has a high and positive correlation with energy consumption (*enc*) and financial development (*fid*), as expected. CO_2 emissions is also positively correlated with economic growth (*ecg*) and FDI (*fdi*). The correlation between environmental quality and institutional quality (*insq*) is also positive. Based on the relatively weak correlations between the dependent variables, multicollinearity is unlikely to be a major concern in our regression analysis.

Table 3. Pearson correlation matrix of key variables.

	Variable	1	2	3	4	5	6
1	CO_2 Emission						
2	Economic Growth	0.315 (3.866) ***					
3	Energy Consumption	0.806 (15.860) ***	0.608 (8.828) ***				
4	Financial Development	0.606 (8.772) ***	0.270 (3.029) ***	0.411 (5.046) ***			
5	FDI	0.472 (5.985) ***	0.437 (5.622) ***	0.557 (7.339) ***	0.553 (7.477) ***		
6	Institutional Quality	0.201 (2.276) **	0.294 (3.454) ***	0.395 (4.806) ***	0.295 (3.467) ***	0.287 (3.376) ***	0.585 (8.086) ***

Note: *t*-values are in parentheses. *, **, *** represent significance at 10, 5, and 1 percent level, respectively.

Table 4 provides the results of our cross-sectional dependence tests. The table shows that the null hypothesis of no-cross-sectional dependence is rejected in all tests, indicating the existence of cross-section dependence in the data. To overcome this problem, we estimate the model by applying the generalized least squares (GLS) technique. In our model, the number of explanatory variables considered exceeds the number of cross-sectional units. As a result, we estimate the model using country fixed-effects.

Table 4. Cross-section dependence (CD) tests.

Test	Statistic	*p*-Value
Breusch-Pagan LM test	25.9166 ***	0.0038
Pesaran scaled LM test	2.5410 ***	0.0145
Pesaran CD test	2.9682 ***	0.0039
Baltagi et al. bias-corrected scaled LM test	2.1792 **	0.0217
Pesaran et al. bias-adjusted LM test	4.2132 ***	0.0001

Note: *t*-values are in parentheses. *, **, *** represent significance at 10, 5, and 1 percent level, respectively.

The regression results are reported in Table 5. Economic growth (*ecg*) has a statistically significant positive association with CO_2 emissions (column 1), suggesting that economic growth in South Asian economies is at the cost of the environment, as predicted. Our finding is inconsistent with the phenomenon of "decoupling of economic growth and CO_2 emissions" [62,63]. We also find that energy consumption (*enc*) is positively and significantly associated with CO_2 emissions (see columns 1 to 6). This finding supports the proposition that energy consumption is a key driver of CO_2 emission.

Table 5. Panel regression results for CO_2 emissions (enq_{it}).

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Constant	−1.599	−1.775	−1.561	−1.763	−1.758	−1.934
	(−3.950) ***	(−3.318) ***	(−3.443) ***	(−2.188) **	(−3.271) ***	(−3.887) ***
ecg_{it}	0.424	0.714	0.567	0.823	0.718	0.713
	(1.914) *	(2.131) **	(1.831)	(2.394) ***	(2.146) **	(2.768) ***
enc_{it}	0.247	0.262	0.229	0.270	0.259	0.284
	(3.338) ***	(2.816) ***	(2.844) ***	(1.738) *	(2.717) ***	(3.197) ***
fid_{it}	0.148	0.241	0.145	0.250	0.236	0.219
	(1.669) *	(2.971) ***	(2.017) **	(2.330) **	(2.910) ***	(1.715) *
fdi_{it}	−0.012	−0.022	−0.019	−0.019	−0.022	−0.022
	(−1.699) *	(−2.651) ***	(−2.669) ***	(−1.842) *	(−2.539) **	(−2.577) ***
$insq_{it}$		−0.115				
		(−1.875) *				
ecg_{it} * $insq_{it}$			−0.014			
			(−1.810) *			
enc_{it} * $insq_{it}$				−0.022		
				(−1.846) *		
fid_{it} * $insq_{it}$					−0.038	
					(−1.787) *	
fdi_{it} * $insq_{it}$						−0.011
						(−2.713) ***
enq_{it-1}	0.843	0.839	0.855	0.830	0.840	0.830
	(20.130) ***	(18.278) ***	(19.986) ***	(11.316) ***	(17.964) ***	(16.784) ***
R^2	0.996	0.993	0.995	0.992	0.993	0.994
Adjusted R^2	0.996	0.992	0.994	0.991	0.992	0.994
S.E. of regression	0.057	0.069	0.061	0.070	0.068	0.064
F-statistic	2834.69 ***	2268.27 ***	2262.52 ***	2177.32 ***	2271.61 ***	2502.33 ***
Durbin h	−2.451	−2.029	−2.116	−2.037	−1.985	−2.360
Prob. (J-statistics)	0.259	0.617	0.146	0.674	0.585	0.831

Note: *t*-values are in parentheses. *, **, *** represent significance at 10, 5, and 1 percent level, respectively.

The coefficient of financial development (*fid*) is statistically significant and positive (column 1). Thus, financial development is associated with lower environment quality in South Asian countries, as predicted. This result is robust to alternative specifications and consistent with the estimates and inferences of the literature for developing economies [14,26,64]. The interpretation is that financial development is used in developing countries for capitalization, i.e., to boost the growth of small and medium scale industries. Small and medium enterprises have fewer advantages of economies of scale (in the usage of resources) and pollution reduction. So, pollution increases as a result of financial development. Our findings show that in South Asia, the technology effect is outweighed by the capitalization effect, suggesting that environment friendly and fuel-efficient technologies are not the priority of the financial sector for the provision of finance. To sum up, our results do not provide any evidence for the proposition that financial development reduces pollution through the dominance of

the technology effect. This finding deviates from Boutabba [22] for India, and Abbasi and Riaz [25] for Pakistan, who report that financial sector development enhances environmental quality.

Our main variable of interest is institutional quality. Institutional quality (*insq*) has a negative and statistically significant association with CO_2 emissions, suggesting that strong institutions boost environment performance, whilst weak institutions are associated with environmental harm. Further, all the interaction terms (with institutional quality) are negative and statistically significant. Taken together with the findings detailed above, strong institutions lessen the adverse impacts of economic growth, energy consumption and financial development on the environment. This provides support for the regulation effect hypothesis, i.e., with the implementation of (environmental) standards, the trade-off between financial development and environmental quality lessens. Hence, in the presence of strong institutions, financial markets are more likely to provide capital to environment-friendly business projects. Therefore, the negative impact of financial development on environmental quality should be balanced with highly effective institutions so as minimize harm to the environment.

Foreign direct investment (*fdi*), our proxy of financial openness, is negatively associated with CO_2 emissions. Our results provide some support for the "pollution halo hypothesis", in that the inflow of foreign investment helps to reduce pollution by transferring energy-efficient technology to the host country [11,65]. However, we should be careful in terms of attributing causation to this relationship as it is possible that more polluted countries attract less FDI. Our results are contrary to those of Cole et al. [66] for their large sample of 94 countries for the period of 1987 to 2000, who find that the inflow of FDI leads to environmental harm.

The coefficient of the interaction of FDI with institutional quality is negative and is statistically significant. This finding suggests that, jointly with effective institutional infrastructure, FDI can play an effective role in reducing CO2 emissions. This reinforces the complementary role of the regulatory framework and effective institutional infrastructure in developing countries in terms of boosting environmental protection [67]. Knowledge incentive economies and technology driven innovation may provide a benchmark and is one of the key challenges towards sustainable growth from a global perspective [68].

Overall, our model has high explanatory power. The Durbin-h test results, used to diagnose autocorrelation, show that all statistical values of Durbin-h test are higher than 1.96, indicating no evidence of the presence of autocorrelation in the model. The F-statistics shows that all independent variables are jointly significant. The validity of the instruments has been checked by employing the J-test, also called 'Sargan J-test'. The p-values for the J-statistics are high which suggests that the instruments are valid.

Next, we examine the efficiency and scale effect of stock market development and financial sector development, following Zhang [14]. Efficiency effect is proxied by credit to the private sector as a percentage of GDP, while the scale effect of financial sector development is proxied by total credit as a percentage of GDP.

Table 6 shows that both indicators of financial sector development, i.e., total credit (*tc*) as a percentage of GDP and private credit (*pc*) as a percentage of GDP, increase CO_2 emissions. This is in line with earlier findings that financial development negatively affects environmental quality in South Asia. Our results are inconsistent with that of Abbasi and Riaz [25] who find a negative impact of total credit, as a percentage of GDP, on CO_2 emissions in Pakistan. The estimates presented in Table 6 column (1) are similar to those reported in Table 5 column (1). The efficiency effect of financial sector development outweighs the scale effects as indicated by the size of the coefficients. Moreover, the efficiency effect has high statistical significance as compared to the scale effect. These finding contradict with those of Zhang [14] for China.

Table 6. Scale and efficiency effects (enq_{it}).

Variable	(1)	(2)	(3)	(4)	(5)
Constant	−0.937 (−7.516) ***	−1.804 (−3.288) ***	−1.303 (−3.557) ***	−2.427 (−5.220) ***	−2.521 (−7.557) ***
ecg_{it}	0.502 (3.527) ***	0.753 (2.081) **	0.775 (1.885) *	0.484 (3.273) ***	0.394 (62.213) ***
enc_{it}	0.254 (8.603) ***	0.268 (2.806) ***	0.198 (2.695) ***	0.374 (4.354) ***	0.388 (7.384) ***
tc_{it}	0.207 (1.981) **				0.069 (2.847) ***
pc_{it}		0.243 (2.991) ***			0.019 (0.615)
mc_{it}			0.045 (1.986) *		0.024 (1.718) *
st_{it}				−0.025 (−1.984) **	−0.031 (−2.161) **
fdi_{it}	−0.021 (−1.936) *	−0.022 (−2.653) ***	−0.017 (−2.126) **	−0.017 (−1.892) *	−0.016 (−1.689) *
$insq_{it}$	−0.064 (−1.231)	−0.113 (−1.836) *	−0.118 (−1.897) *	−0.051 (−1.875) *	−0.054 −2.450) **
enq_{it-1}	0.854 (39.942) ***	0.843 (17.118) ***	0.864 (24.568) ***	0.745 (15.774) ***	0.731 (20.231) ***
R^2	0.986	0.982	0.982	0.986	0.986
Adjusted R^2	0.985	0.981	0.982	0.985	0.985
S.E. of regression	0.059	0.071	0.065	0.044	0.047
F-statistic	1322.463 ***	2467.375 ***	2306.321 ***	2101.106 ***	1569.432 ***
Durbin h	−2.026	−2.128	−2.208	−2.246	−1.965
Prob. (J-statistic)	0.235	0.626	0.689	0.298	0.416

Note: *t*-values are in parentheses. *, **, *** represent significance at 10, 5, and 1 percent level, respectively. Variable definitions are presented in Table 1.

Stock market capitalization (*mc*) has a positive coefficient and is statistically significant, while the estimated coefficient of stock traded (*st*) has a negative coefficient. These results imply that CO2 emissions increase with scale effects of stock market development, while CO_2 emission decrease with the efficiency of stock markets, consistent with the findings of others [14,25]. Column 5 presents the joint effect of the financial sector variables on CO_2 emissions. The coefficient of each test variable is consistent both in terms of their sign and statistical significance. However, the coefficient of private credit is now statistically insignificant, plausibly a result of multicollinearity as this variable is highly correlated to total credit, as show in Table 7.

Table 7. Correlation matrix of financial development variables.

Variable	tc_{it}	pc_{it}	mc_{it}
tc_{it}			
pc_{it}	0.706 (15.689) ***		
mc_{it}	0.664 (9.532) ***	0.501 (7.036) ***	
st_{it}	0.517 (8.231) ***	0.293 (4.831) ***	0.804 (13.872) ***

Note: *t*-values are in parentheses. *, **, *** represent significance at 10, 5, and 1 percent level, respectively. Variable definitions are presented in Table 1.

5. Conclusions

We examine the moderating effect of institutional quality on the financial development and environmental quality nexus in South Asia. We use panel data and conduct empirical analysis over the period from 1984 to 2018. We find that financial development is used for capitalization purposes, not for directing the use of clean energy, leading to increased environmental degradation. Thus, financial development deteriorates the environment in South Asia, as proxied by per capita CO_2 emissions. FDI, a measure of financial openness, reduces CO_2 emissions. This relation offers some support for the pollution halo hypothesis, which specifies that FDI brings technological advancements to the host country, helping in reducing environmental pollution in South Asia.

We find institutional quality is a key factor in improving the environment. Institutional quality moderates the adverse effects of economic growth, energy use, and financial development on the environment. In sum, weak institutions damage the environment, whereas strong institutions improve the environment in South Asia. In terms of policy implications, we believe that sustainable development, i.e., economic growth while preserving the quality of the environment, can be achieved in South Asian countries through strengthening of their institutions. For this, governments should create public awareness about the environment, introduce effective environmental monitoring, and strictly enforce environmental laws and systems, using pro-active policies.

Our study has several limitations. First, we employ country-level data only. It may be worthwhile to extend the empirical analysis at the disaggregate level using firm-level data so as to gain insights into how financial development can encourage firms to use efficient technologies that are environmentally friendly. Second, we used a single indicator of institutional quality. Future studies may develop a more comprehensive composite index of institutional quality using multiple indicators related to governance, regulatory framework and enforcement. Finally, our proxy of financial development is credit to the private sector, future research could use a broader proxy for access to capital market finance.

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Performance Dissimilarities in European Union Manufacturing: The Effect of Ownership and Technological Intensity

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Abstract: Our paper addresses the relevance of a set of continuous and categorical variables that describe industry characteristics to differences in performance between foreign versus locally owned companies in industries with dissimilar levels of technological intensity. Including data on manufacturing sector performance from 20 European Union member countries and covering the 2009–2016 period, we used the random forests methodology to identify the best predictors of EU manufacturing industries' a priori classification based on two main attributes: ownership (foreign versus local) and technological intensity. We found that EU foreign-owned businesses dominate locally owned ones in terms of size, which gives them an edge in obtaining higher profits, cash flow and investments and coping with higher personnel costs. Furthermore, ownership is a more important differentiator of performance at the industry level than the industry's technological level. The performance of foreign-owned high-tech manufacturing industry units across the EU is the most heterogeneous compared to the other four categories, indicating particularities linked to technological level, ownership, and even location. Our findings suggest that multinational enterprises in high-tech industries transfer to eastern EU countries' activities and processes with lower technological intensity and higher labour intensity, but also that locally owned businesses, even within high-tech industries, have lower technological levels.

Keywords: performance; European Union; foreign investors; high-tech industries; random forests

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1. Introduction

The March 2000 Lisbon European Council established the objective of making the European Union "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion" [1]. This ambitious target cannot be reached without the consolidation of an efficient and competitive manufacturing sector, since an economy based only on service industries cannot survive for a long period of time. The ongoing COVID-19 crisis has significantly shaken the manufacturing sector around the world, and it will take years for turnover to return to its precrisis levels. Moreover, the accelerated trend towards the use of Industry 4.0 technologies that include automation, advanced analytics use, and connectivity will transform the manufacturing sector in terms of efficiency and effectiveness, product and service customization to clients' needs, and will lead to the creation of new business models [2].

The manufacturing sector includes diverse activities that occur in a wide range of enterprises, from traditional smaller businesses to large-scale and technology-intensive corporations. The manufacturing sector's contribution to the value added in the EU declined sharply in recent decades, from 19.8% in 1991 to 13.9% in 2009, but reached 14.4% in 2019 [3]. In 2018, more than 32 million people were employed in the manufacturing sector in the EU in 2.1 million enterprises (21.7% of the people in employment and 8.7% of the

number of enterprises in the non-financial business economy). In addition, manufacturing was responsible for 64% of private sector research and development (R&D) and 49% of innovation expenditure in Europe in 2018 (European Commission, 2020). Looking back, the competitiveness of the EU economy proved to be remarkably dependent on the ability of the manufacturing sector to deliver high-quality innovative products employing the latest advances in information and communications technology (ICT), and this trend will certainly accelerate in the years after the COVID-19 pandemic.

The last ten years have seen a notable increase in the foreign ownership of EU companies [4], fueled by the globalization process and the expansion of multinational enterprises (MNEs). Researchers have investigated the effects of inward investments, technological opportunities, and spillover effects brought by foreign companies, building on the ownership, location, and internalization (OLI) paradigm of international production articulated by John Dunning [5,6]. The paradigm offers a framework for the decision of multinational enterprises to expand abroad through foreign direct investments, indicating a logical approach from assessing ownership advantages (O) to location-related advantages (L) and internalization advantages (I). From this perspective, a still unsolved problem concerns whether and to what extent foreign-owned firms have superior performance (productivity, profitability, etc.) compared to locally owned firms. In many cases, foreign owners select the best local firms to invest in or local firms in high-productivity industries. Thus, some foreign-owned businesses may benefit from a productivity advantage that is disconnected from ownership.

The general view is that ownership provides an edge for companies, as foreign companies perform significantly better than local ones, although several contributions in the literature have questioned this opinion. Our paper builds on this strand of the literature and provides evidence on the differences in performance between foreign-owned and locally owned companies in the EU-28 manufacturing industry between 2009 and 2016, after the global financial crisis of 2008–2009, but with a focus on how the technological level of industries within the manufacturing sector might intermediate between these differences. Our main research hypothesis is that significant differences exist between the performance of companies with different types of ownership and levels of technological intensity in the manufacturing sector in EU-28. We address the relevance of a set of continuous and categorical variables that describe industry characteristics for the observed differences in performance and contribute to the literature by identifying the best variables that predict the a priori classification of manufacturing industries in a class defined by two attributes: ownership and technological intensity. To our knowledge, this is the first investigation of the manufacturing sector in the EU when both performance differentiators are considered. Gaining insight into manufacturing industries' attributes from both perspectives might represent a starting point for the manufacturing sector's transformation with the support of industrial policies in the post-COVID-19 world.

In this framework, it is worth considering the heightened interest in the increasing role of technological advancements in economic growth and development brought about by the COVID-19 pandemic, when the use of technology became a critical and essential component of our lives. For the EU, recent reports forecasted an impressive growth of the digital economy, which is estimated at adding 1.1% to the EU's annual economic growth and at increasing the region's GDP by more than 14% by 2030 [7], building on the desired position of EU as global leader through the implementation of the Digital Single Market strategy [8]. Starting with the "A Digital Agenda for Europe" series of documentation issued in 2010 [9], the EU has constantly reinforced its willingness to use digitalization and technologies such as the Internet of Things, big data and artificial intelligence as major drivers of innovation-led economic growth. The EU's commitment to the digital economy will also be backed by a planned budget of 7.6 billion Euros within the Digital Europe Programme that aims at accelerating the economic recovery after the pandemic and supporting the digital upscaling of the EU's economies and societies, with a particular focus on small and medium-sized companies [10]. Therefore, it is expected that the development

of industries with a strong high-tech orientation will represent a fundamental component of economic advancement in the EU. Moreover, the EU's economies and particularly the eastern ones may use the technological spillover effects induced by foreign direct investments to boost the technological level of local enterprises, which may further foster economic growth [11–13]. From this perspective, our paper's genuine contribution is to shed light on the current situation in the manufacturing sector of the EU when the technological level and ownership are considered, which may lay the foundations for a better formulation of industrial policies and of measures towards attracting FDI that are able to support technological advancements.

The rest of this paper is organized as follows. Section 1 offers insight into the research directions and results in the literature. Section 2 presents the data and the research methodology used. The main findings are shown and discussed in Section 3. The last section concludes, discusses the limits of our analysis, and outlines a few directions for future research.

2. Research Background

Over time, various theoretical frameworks have attempted to assess the main reasons behind superior business performance, and numerous studies have empirically examined the factors behind companies' results. Researchers are constantly revisiting this field, driven by the evolving transformation of economies and business environment.

The starting point in understanding firm performance was the work of Bain and Mason written between 1940 and 1950 [14–16] who proposed the industry environment as a performance driver in the structure-conduct-performance framework, as part of the paradigm of industrial organization. Later, Refs. [16,17] supported this view, with the amendment that [16] suggested the firm's capability to use and sustain its competitive advantages as an addition to the performance framework.

Company ownership as a criterion for performance is a factor that is often discussed in the literature. Empirical research attempted to explain whether foreign ownership resulting from foreign direct investments, for example, provides companies with better performance compared to local or domestic ownership. Interestingly, the literature focused on two main directions in responding to this question: the specific advantages of MNEs which accompany foreign ownership, and the liability of foreignness. The well-known OLI paradigm proposed by Dunning [5,6] introduced the "ownership advantage", built on tangible and/or intangible assets of the firm that are transferred abroad, as one of the factors behind the higher competitiveness of MNEs. From here, the literature developed, and various authors advanced improvements by adding industry, size, country of origin, host country level of development, multinationality per se or multinationality level as superior performance drivers associated with foreign ownership [17–21]. On the other hand, the "liability of foreignness", understood as "the cost of doing business abroad that results in a competitive disadvantage for an MNE subunit" [22], in the form of spatial distance, unfamiliarity with the host country, or obstacles and restrictions in conducting business [23], counterbalances foreign ownership benefits. The consequence is a lower profitability of foreign-owned companies against domestic-owned ones, although the sector or industry of operation of the firm, the country of origin, or the specific mode of entry may alter this result [24,25]. In this context, several contributions point out that a differentiation needs to be made between purely foreign companies and affiliates of MNEs when comparing their performance with local companies [26,27].

In a recent study, two main reasons behind the superior performance of foreign-owned firms over locally owned ones were highlighted [28]. The first reason is that only highly productive companies are the origin of foreign investments, and the second is that foreign investors select only well-performing companies to invest in, which links the superior performance to a selection bias. In this context, Ref. [29] discovered that MNEs were more profitable than local corporations in Greece, but foreign ownership did not have a significant impact on business performance in Portugal. At the same time, Ref. [30] found

that profitability drivers differ between foreign and local Greek companies. While the profitability of foreign companies mainly depends on their market share, knowledge and experience acquired in the local market, training intensity, and product differentiation using more technologically intensive inputs, the profitability of local companies depends only on market share and product differentiation through local advertising and R&D. Our research complements this line of research by providing insight into the differences between foreign versus locally owned companies within the EU, thus portraying dissimilarities not only at the country level, but also at a wider level, within a region where economic integration for decades now is expected to have significantly changed the performance patterns across countries and industries [31–33].

Concerning the manufacturing firms' performance, in the last two decades, the empirical literature has been growing. Previously, empirical research addressed firm-level, industry-level, and macroeconomic determinants of firm performance [34]. The evidence based on firm-level and industry-level determinants outlined a positive and significant link between R&D intensity and productivity of manufacturing firms. Other authors examined the link between innovation and productivity considering manufacturing firms from Finland, Norway, and Sweden, and discovered that R&D and innovation performance were the main determinants of the differences in productivity growth between firms [35]. Later, the positive effects of R&D expenditures, output innovation, investments in physical capital, market share, and export on labour productivity in Spanish manufacturing companies were shown [36]. It has often been demonstrated that R&D activities play an essential role in firms' product or process innovations [37], which further allows us to link a higher degree of technological intensity of an industry to superior performance.

Other factors were also proposed as drivers of performance for manufacturing firms. For instance, Ref. [38] discovered that the previous year's growth, minimum efficient scale, total factor productivity, exports, capital–labour ratio, technology usage, sunk costs, and age had an impact on firms' growth in both SMEs and large manufacturing firms in Iran, but company size and economic particularities of the country also had their role in explaining performance. In the same vein, [34] used firm, industry, and macroeconomic determinants as performance drivers and have shown that age, labour costs, industry concentration, GDP growth, and inflation were significantly influencing the profitability of Croatian companies. Ref. [39] reported that e-business use contributes positively to the performance of manufacturing SMEs in Spain by the instrumentality of organizational innovation.

Regarding the differences between firms from high- and low-tech industries, most researchers investigated them considering the number and type of innovations implemented or how firms handle the process of commercialization. In this framework, Ref. [40] found that low-tech product innovators differed from their high-tech counterparts regarding structure, market orientation, and need for external financing. Furthermore, Ref. [41] suggested that high-tech firms' higher investment propensity in product R&D and low-tech firms' higher investments in process R&D may not be an appropriate approach to innovation for SMEs.

The empirical literature regarding the driving factors of performance of firms in high- versus low-tech industries is rather poor to our knowledge. Ref. [42] found that foreign ownership cannot be considered a driving factor for the growth of Canadian high-tech and low-tech firms. Later, Ref. [43] found remarkable differences between innovative and non-innovative Italian firms in terms of profitability and growth rates, particularly when size is considered. In this framework, our paper is one of the pioneering endeavours that aims at a better understanding of the drivers of performance dissimilarities in industries with different technological levels, which may be further used by businesses and governments alike to address the existing profitability and productivity gaps as an avenue towards fostering economic growth and development.

3. Materials and Methods

3.1. Data

Our investigation covers the 2009–2016 period and includes data on manufacturing sector performance from 20 EU member countries (Austria, Bulgaria, Czech Republic, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom). Annual frequency data for 11 manufacturing industries were collected from the Foreign Affiliates Statistics Database (FATS) of Eurostat. The number of countries and industries included in the analysis is strictly based on data availability.

The core of our analysis is the "industry unit" (IU), which represents the "average" enterprise in each manufacturing industry. An IU has three attributes: ownership, industry of operation, and country where the IU originates from. In terms of ownership, IUs were classified as foreign (F) or locally owned, and, from the country perspective, we included them in the eastern (E) or western-located groups, depending on their geographical location within the EU. The 11 industries were further classified depending on their technological intensity, into high-technology (high-tech) or low-technology (low-tech) industries (see Table 1), using the EU High-tech classification of manufacturing industries based on NACE Rev.2 2-digit codes. To the best of our knowledge, no previous research has used the "average enterprise" as defined by the three attributes employed in our endeavour, although other authors have dealt with this type of artificial construct [44–46]. However, we found this approach more useful instead of building other constructs such as "average employee", given our interest in observing firm performance depending on ownership and technological levels in specific industries.

Table 1. Descriptive statistics of performance variables.

Variables	Mean	Median	Min	Max	SD	Mean SE	Skewness	Kurtosis
Turn_en	20.09	5.30	0.08	341.48	39.48	1.88	4.24	22.96
VA_en	4.50	1.33	0.02	73.94	7.77	0.37	4.06	24.11
GOS_en	1.77	0.49	−0.09	42.47	3.57	0.17	5.51	46.53
Perscost_en	2.73	0.83	0.01	37.88	4.63	0.22	3.88	20.75
GI_en	0.74	0.23	0.00	13.05	1.47	0.07	4.61	27.16
Empl_en	77.70	40.43	1.78	751.33	104.44	4.98	3.08	11.98
Turn_emp	0.19	0.15	0.02	1.19	0.15	0.01	2.16	7.86
VA_emp	0.05	0.04	0.00	0.20	0.03	0.00	1.23	2.23
GOS_emp	0.02	0.01	0.00	0.12	0.01	0.00	2.37	8.21
Perscost_emp	0.03	0.03	0.00	0.13	0.02	0.00	0.85	1.08
GI_emp	0.01	0.01	0.00	0.03	0.00	0.00	1.85	4.51
ALP	47.41	42.91	4.68	233.14	32.33	1.54	1.27	3.17
SWALP	166.98	158.88	62.45	383.55	40.61	1.94	1.76	5.02
GOR	9.57	9.39	−11.45	23.23	3.78	0.18	0.08	2.78
GIturn	4.59	3.99	0.61	18.68	2.38	0.11	1.94	5.77
VAturn	26.75	26.76	8.55	45.05	6.58	0.31	0.08	−0.41
Pcostturn	17.15	17.16	3.78	34.81	5.86	0.28	0.20	−0.47

Source: Authors' calculations.

Overall, 440 IUs were included in our investigation, equally divided into foreign versus locally owned (40 IUs per industry). Of them, 280 IUs were in low-tech industries (7 industries), and the remaining 160 IUs were in high-tech industries (4 industries). In regional terms, 242 IUs were western-located, and 198 were eastern-located. In our sample, locally owned IUs held higher shares than foreign-owned IUs in turnover and persons employed, but in some industries, such as C20 or C29, both in the high-tech category, the share of foreign-owned IUs was higher, in the 40–50% range. In addition, foreign-owned businesses had higher shares in turnover and persons employed in high-tech versus low-tech industries, in the range of 30–50% for turnover and 25–50% for employment.

Figure 1 shows the relative importance of the 11 industries in EU manufacturing in 2016. Their shares in turnover vary between 1.1% (C13 and C18) and 14.6% (C29), and in the number of employees between 2.2% (C18) and 14% (C10). In absolute terms, industry C29 generated the highest turnover in 2016—1,082,642.5 million Euros— and industry C13 generated the lowest—78,000 million Euros in 2016. In the same year, 638,794 persons were employed in industry C18 (the lowest number in our 11 industries), and 4,019,413 persons worked in industry C10. The countries included in our sample cover to a significant extent the industries' turnover and number of employees, which ensures its representativeness; our IUs hold a share in turnover between 89.7% (C10) and 98.6% (C31), and a share of the number of employees between 77.4% (C18) and 98.3% (C29).

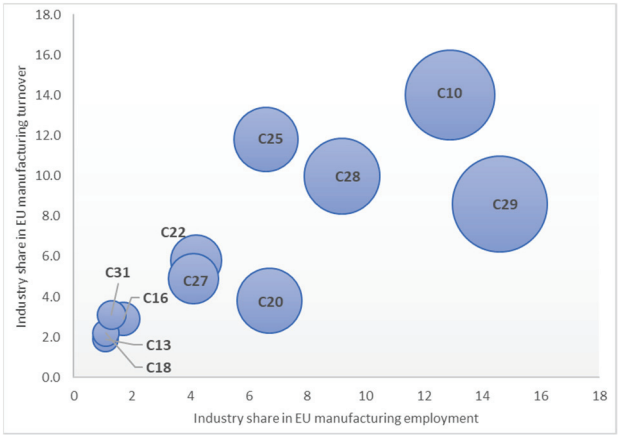

Figure 1. Manufacturing industries' importance in total sector turnover and employment, 2016 Source: Authors' calculations. Note: Bubbles' size indicates industry turnover in 2016.

3.2. Sample Characteristics

The IUs included in our research depict a diverse landscape of performance across EU on the ownership versus technological intensity axis. Table 1 shows the descriptive statistics of the 17 continuous variables based on their 2009–2016 mean values for each IU. Between 2009 and 2016, manufacturing IUs generated a turnover of 20.09 million Euros, value-added of 4.50 million Euros and gross operating profit of 1.77 million Euros at the mean average enterprise level. They have also employed a mean of 77.70 persons per enterprise and paid average personnel costs of 2.73 million Euros. Their mean gross investments reached 0.74 million Euros at enterprise level. When we change the reference to the employee, the turnover reached, on average, 0.19 million Euros, gross operating profits only 0.02 million Euros, and personnel costs 0.03 million Euros (higher than operating profits).

Manufacturing IUs had a labour productivity measured by ALP of 47.41 thousand Euros per person employed and by SWALP of 166.98%. Mean profitability (GOR) was 9.57%, and IUs' mean shares in turnover were 26.75% for value-added, 17.15% for personnel costs, and 4.59% for gross investments. The medians were, with a few exceptions—Perscost_emp, GI_emp, VAturn, and Pcostturn—lower than the corresponding means, which indicates right-skewed distributions (positive skewness). This applies to each of the four categories of IUs. Kurtosis values showed leptokurtic distributions and the presence of "fat tails", for all variables at the enterprise level, for most of the variables at employee level, as well as for ALP, SWALP and GIturn. This points towards the existence of larger IUs, but with significantly higher labour productivity and propensity towards investment.

The high variation in performance across IUs is also signalled by the minimum and maximum values of variables, as well as by standard deviation. These differences between IUs are better understood when we consider the ownership and the technological intensity of the origin industry. Foreign-owned companies had higher mean turnover, value added, personnel costs, gross investments, employees, and gross operating profits at both the enterprise and employee level compared to locally owned companies. The differences

in means are high particularly at the enterprise level—between 7.87 (Perscost_en) and 10.17 times (GOS_en) larger for foreign-owned companies—but also at the employee level, although only up to two times higher for foreign-owned companies. This suggests a higher homogeneity in terms of employment between foreign and locally owned IUs.

Foreign-owned companies' mean SWALP was only 1.11 times higher than locally owned companies', while for the other relative performance variables, locally owned companies recorded slightly better values than foreign-owned companies. Moreover, variables' distributions for locally owned IUs show higher kurtosis than for foreign-owned IUs, indicating the likely presence of larger and better-performing IUs for the former. In relative terms, however, locally owned companies seem to be more profitable, generate a higher value-added share of turnover, invest more (as share of turnover), but allocate a higher proportion of costs and turnover to personnel costs. This implies that locally owned IUs have a higher labour use intensity and/or employ more personnel than needed.

When we use technological intensity as a performance discriminator, the results mirror those for ownership; this time, IUs in high-tech industries record better performance than IUs in low-tech industries at the enterprise and employee level. In contrast, the difference at the enterprise level is significantly smaller for high-tech versus low-tech IUs, compared to foreign versus local ownership—mean values of performance variables at the enterprise level were between 2 and 3 times higher only for high-tech versus low-tech IUs, compared to 7 to 10 times higher for foreign versus local IUs. For low-tech industries, C10 and C22 included the highest IUs at the enterprise and employee level, respectively, by considering the means and medians of variables (29.45 million Euros in C10 and 13.96 million Euros in C22 as mean turnover per enterprise; 7.72 million Euros in C10 and 7.09 million Euros in C22 as median turnover per enterprise). At the other end, the smallest IUs in turnover per enterprise were in industry C18 (mean turnover per enterprise of 5.66 million Euros and median of 1.99 million Euros). In relative performance terms, C10 and C22 recorded the highest means and medians for labour productivity, while C18, C22, and C16 showed better profitability and the highest investment intensity, but also personnel costs. In the case of high-tech industries, C29 and C20 displayed the best means and medians for variables at the enterprise and employee level, respectively. Moreover, C29 had the highest labour productivity, profitability, and share of gross investments in turnover, but the lowest value-added and personnel costs share of turnover. Positive skewness characterizes the distribution of performance variables for high-tech versus low-tech IUs, indicating that more IUs had lower values of variables than the group mean. Kurtosis values suggest, for most variables, leptokurtic distributions for both high-tech and low-tech IUs; the exceptions are mainly for relative performance variables for low-tech IUs.

3.3. The Random Forest Methodology

Our research addresses the relevance of a reduced set of continuous and categorical variables that describe business and industry characteristics for differences in performance. We were interested in identifying the best industry-related variables that can predict the a priori classification of an IU in a class defined by two attributes: ownership and technological intensity. We defined four categories based on these attributes as follows: foreign-owned high-tech IUs (Foreign-HT), foreign-owned low-tech IUs (Foreign-LT), locally owned high-tech IUs (Local-LT), and locally owned low-tech IUs (Local-LT).

The variables included in the model are presented in Figure 2. Each IU is described by 17 continuous performance variables (predictors) and one categorical variable (Eastern versus Western EU). There were six aggregate variables at industry level (turnover, value-added, gross operating surplus, personnel costs, gross investments, and number of employees) that we divided by the number of enterprises to obtain variables at the enterprise level (6) and by the number of employees to obtain variables at the employee level (5), in each industry. Additionally, we used six relative performance variables already calculated by Eurostat (ALP, SWALP, and GOR) or calculated by us (VAturn, Pcostturn, and GIturn).

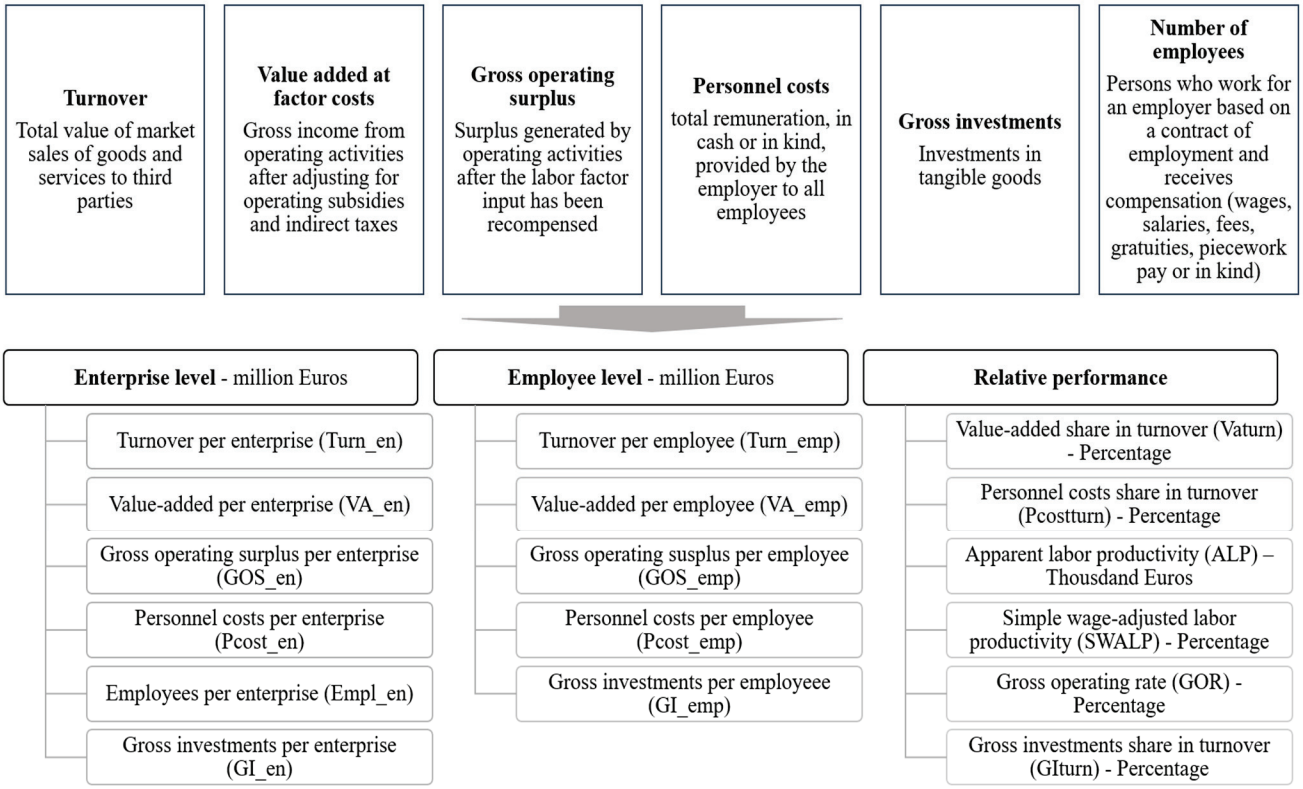

Figure 2. Continuous variables description. Source: Authors' calculations. Note: Variable descriptions are from Eurostat.

Considering the nature of our analysis, we are faced with a classification problem, and one of the best methods to use is a random forest model. Random forests belong to the classification and regression tree category of models, which are wide-used alternatives to the more traditional linear and logistic regression or discriminant analysis [47]. Ref. [48] is the reference for classification and regression trees (CART). CART algorithms sequentially create binary decision trees using the power of predictors (variables) to partition (or split) the data, with the goal of reducing the conditional variation in the dependent variable. Afterwards, cross-validation is used to select the best tree out of the "grown" trees in the process. CART models have the advantage of simplicity, as explaining observations' classification or prediction is made considering the split variables and observations included in categories [49]. Another important advantage of CART-based models, including random forests, is the departure from the implicit linear relationship assumption between the predicted variable and its predictors. Hence, they are better able to identify links between variables that might have otherwise been challenging to spot [50].

Random forests have been employed in several studies to predict the probability that a customer will honour his debt [51], to model travel choice behaviour [52], to predict default patterns [53], to forecast insolvency of insurance companies [54], to predict a household's energy consumption [55], or to predict short-term congested traffic flow [56].

Random forests consist of many decision trees (or models) that operate as an ensemble or committee, whose advantage relies on the fact that as the trees are uncorrelated, the ensemble will outperform the individual constituent models. The rationale behind this is that as a group, the trees can perform better than individual trees. The algorithm starts at a root node and splits the data into child nodes whose structure looks like an upside-down tree. By using bagging or bootstrap aggregation (a technique which allows each individual tree to randomly sample from the dataset with replacement, thus training on different sets of data) but also feature randomness (a technique which makes individual trees pick from a random subset of features, thus using different variables or features to decide), more variation among the trees in the model is brought together with lower correlation across trees and higher diversification.

As shown in Figure 3, each random forest will predict a different outcome of classes for the same test feature or variable, and a small subset of the forest will look at a random set of features. Let us suppose that out of 1000 random forest trees generated initially, 100 trees predict some unique targets while the remaining trees predict other unique targets. Then, the votes of the first 100 trees are generated out of 100 random decisions and likewise for the rest of the targets. If the first 100 trees return the highest number of votes, it means that the final random forest returns the first target as the predicted target (a process known as majority voting). The same applies to the rest of the targets: if the algorithm predicts that the rest of the targets are similar to the predicted targets, then the high-level decision tree can vote the best variables to predict a certain classification.

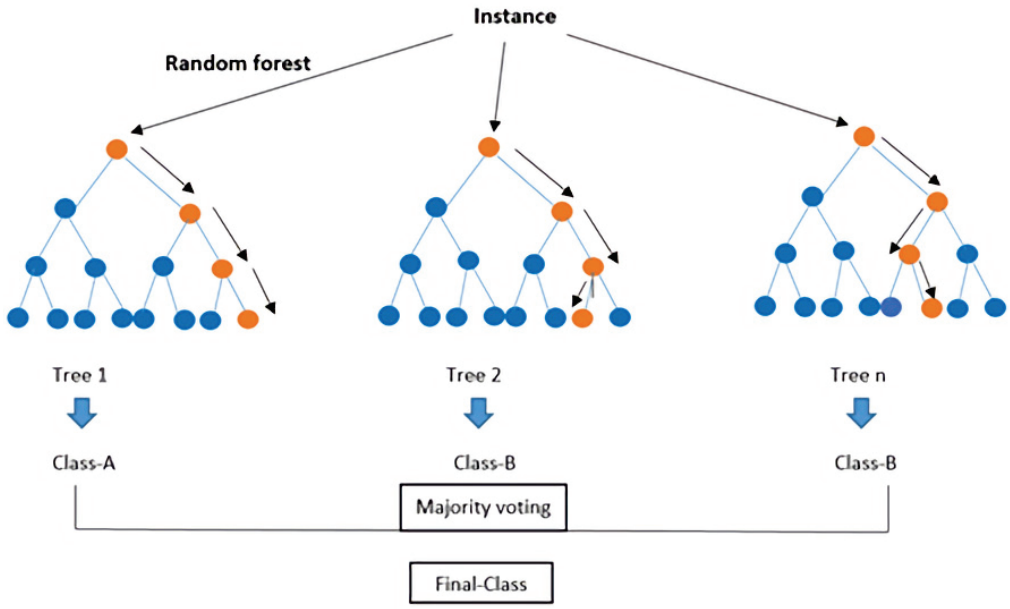

Figure 3. A simplified view of random forests. Source: Authors' design.

The prerequisites for having a model that makes accurate class predictions are features (variables in our case) that ''have at least some predictive power'' so that the prediction offers a better solution than just random guessing but also ensuring that individual trees have low correlations with one another [57]. An important feature of the random forest methodology is the ability to rank predictors according to their internal measure of variable importance, which makes it an easy and friendly tool to use. In addition, predictors that do not add value can be easily spotted and eliminated, which prevents overfitting.

In traditional regression models, multicollinearity (or near-linear dependence) between independent variables or regressors is a well-known critical issue for model estimation and reliability, which needs to be handled before the model is implemented [58]. Several techniques have been proposed to manage this problem; among the best known are lasso regression [59,60], ridge regression [61], and the elastic net methodology proposed by [62]. In random forest modelling, multicollinearity between predictors is handled through bootstrap and feature sampling, which pick different combinations of variables for the models it builds. Thus, the classification result is not influenced by the multicollinearity between predictors. However, the determination of variable importance for classification of cases is affected by multicollinearity. We chose to run random forests on the whole set of variables, regardless of their correlation, and to consider potential correlation issues when interpreting the results.

To determine the number of variables (predictors) included in the sampling, we used the formula provided by [48] and set the number of predictors at 5. The other model settings were as follows: 70% of observations were used to generate the prediction and 30% of observations for testing; we used a sufficient number of trees (360) to generate the

prediction and two different seeds for random number generators to verify the results—we selected the prediction with the lowest risk estimate (or misclassification error) for the test sample; the minimum number of children in a node was 5, and the maximum number of nods was 100; the maximum number of levels was 10 and the maximum tree size was 100. The training was instructed to automatically stop when the percentage decrease in the training error was 3%, i.e., if the training error was not improved by at least 3% given the number of cycles, the training was stopped. The algorithm stopped after generating 270 trees. Misclassification costs were 1 for all categories of the categorical dependent variable. We made scale-adjustment standardization of variables before implementing the model.

4. Results

When ownership and industry's technological intensity were merged, the results indicate that ownership is a more important differentiator of performance than technological level. Figure 4 shows the boxplots for all variables that help to spot differences between the four categories of IUs. On average, Foreign-HT IUs perform better than Local-HT IUs (in terms of mean, median, minimum, and maximum values). The same result is confirmed for Foreign versus Local-LT IUs, with a significantly higher difference in statistical indicators' values for high-tech versus low-tech industries. Overall, Foreign-HT IUs record the best mean and median performance at enterprise and employee levels, and for SWALP, while Local-LT IUs perform better in relative terms (GOR, GIturn, VAturn, and Pcostturn). This result may be partially explained by the smaller size of Local-LT IUs, which distorts the absolute performance. This is in line with the unreliability of using financial indicators that measure relative performance, such as Internal rate of return (IRR) or Profitability index (PI) for ranking projects of different scales (Brealey et al., 2020). On the other hand, standard deviations show that the performance of Foreign-HT IUs is more diverse compared to the other categories of IUs.

The random forest (RF) model implemented considered the a priori classification of IUs into the four classes depending on their ownership and industry's technological intensity as the categorical dependent variable, the 17 business performance variables as continuous predictors, and region (east–west) as the categorical predictor. Figure 5 presents the model summary for the training and test data samples.

Any prediction has an inherent amount of uncertainty. The risk estimates for our model, computed according to [48], are 0.272 (SE: 0.026) for the training set and 0.283 (SE: 0.038) for the test set. They show the proportion of incorrectly classified observations by the model. The misclassification rate was the lowest (0.254) for three trees (33 to 35). Of all variables, Pcostturn was used in all three trees, while Empl_en and GI_en were used in two trees. Tree 34, as shown in Figure 6, uses the lowest number of variables (5) for classification, with five non-terminal nodes and six terminal nodes.

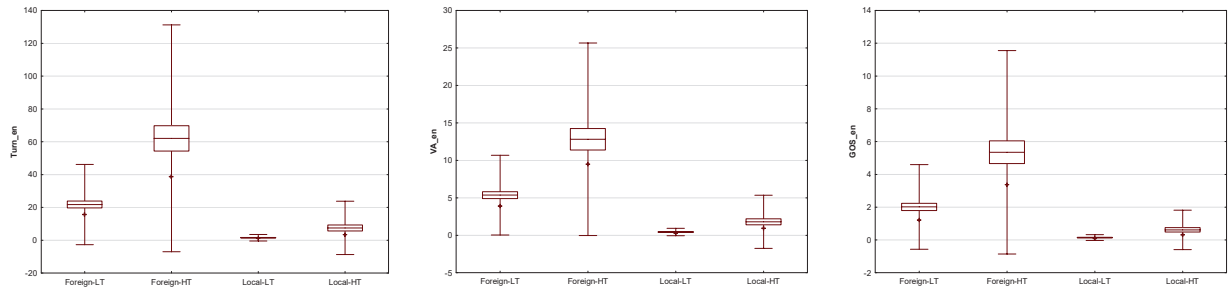

Figure 4. *Cont.*

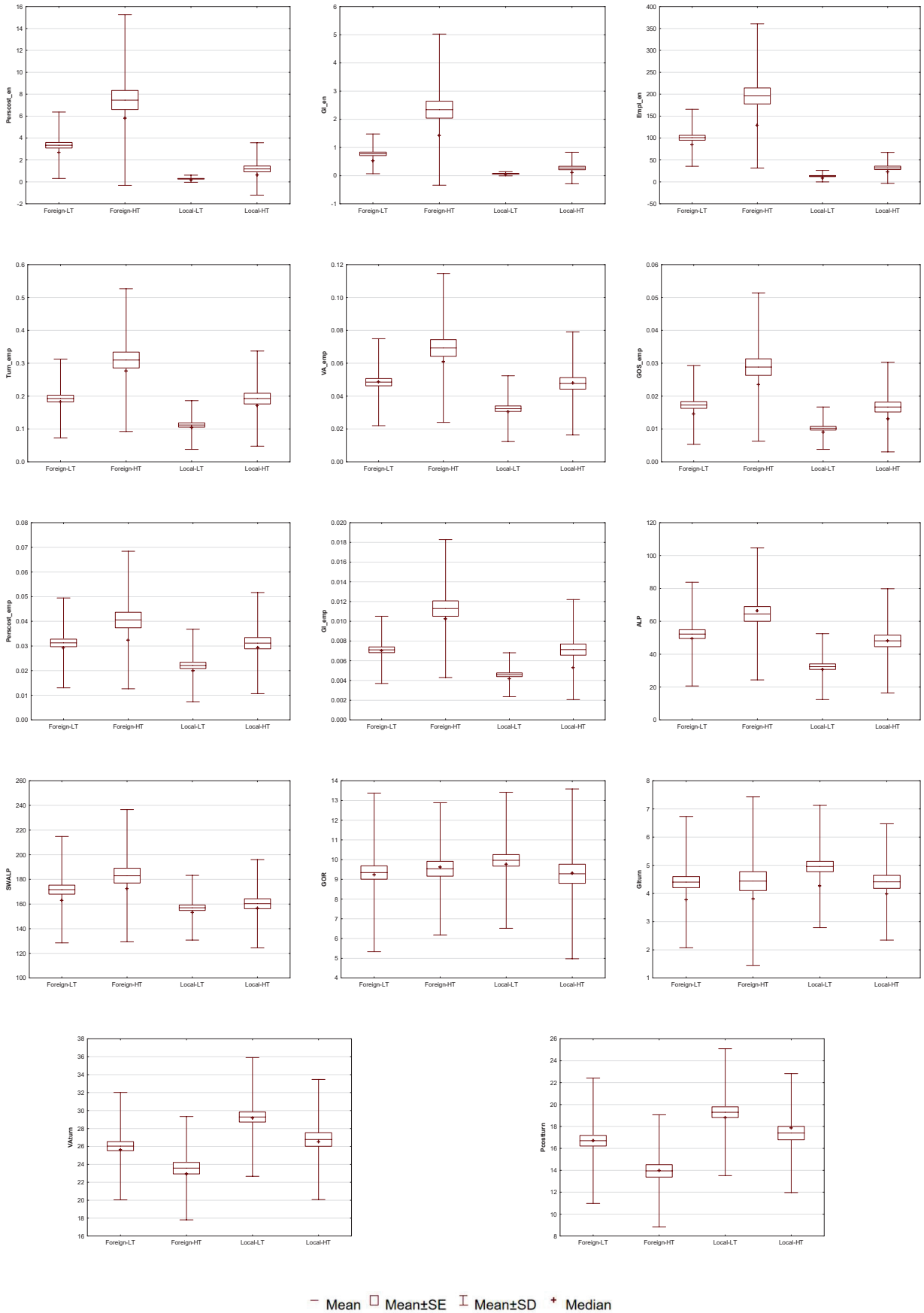

Figure 4. Boxplots of variables' distributions. Source: Authors' calculations.

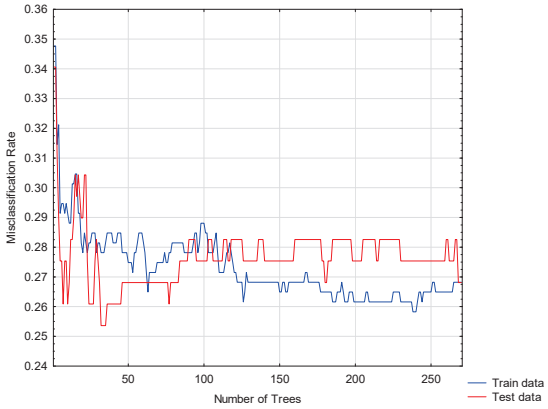

Figure 5. Random forest summary—number of trees versus misclassification rate. Source: Authors' calculations.

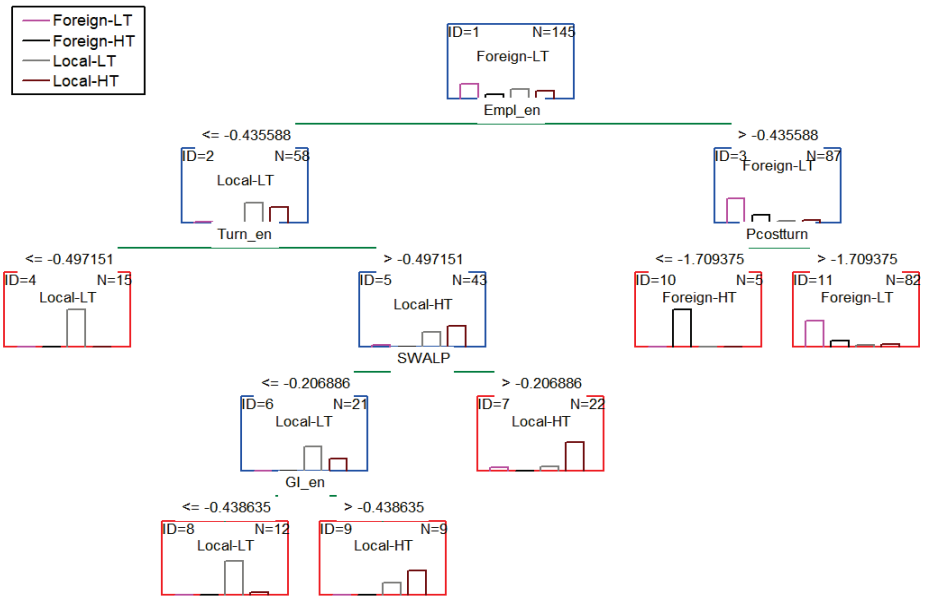

Figure 6. Tree 34 of the random forest model. Source: Authors' calculations.

The predictor importance graph shows the importance ranking on a scale from 0 to 1 for each predictor variable included in the model. Predictor importance is calculated by totalling the decline in node impurity and dividing it by the largest sum identified over all predictors. In our model, based on [63], the sum for all predictors and over all nodes is calculated, and not only for split variables. This method avoids the possibility that a variable that is not used by the model as a split variable can be ignored and unidentified as important, as is the case with the method of [48].

The most important variable that predicts IU classification into the four categories based on ownership and industry technological intensity (see Figure 7) is the number of persons employed per enterprise, followed by the five variables at enterprise level—of them, turnover per enterprise has the highest importance (0.888) and personnel costs per enterprise the lowest importance (0.800). They were followed by personnel costs per employee (0.793), ALP (0.714), and the remaining variables at the employee level—the lowest importance is for GI per employee, 0.654). Remarkably, the relative performance predictors included in the analysis performed poorer than predictors at the enterprise and employee level for IU classification (except for ALP), but their importance is still above 0.50. Instead, region seems to play an insignificant predictive role when distinguishing between manufacturing IUs on the ownership–technology axis.

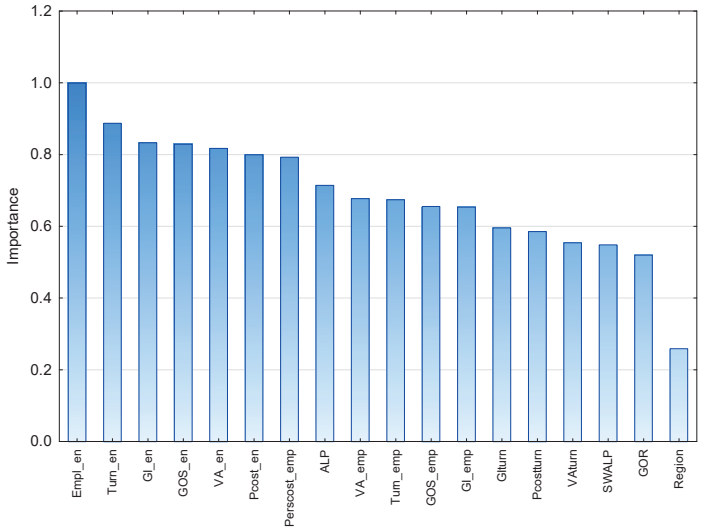

Figure 7. Variable importance. Source: Authors' calculations.

The classification results are presented in Figure 8 and Table 2, that show the percentage of observed versus predicted IUs in each of the four categories for the test set and for the whole sample.

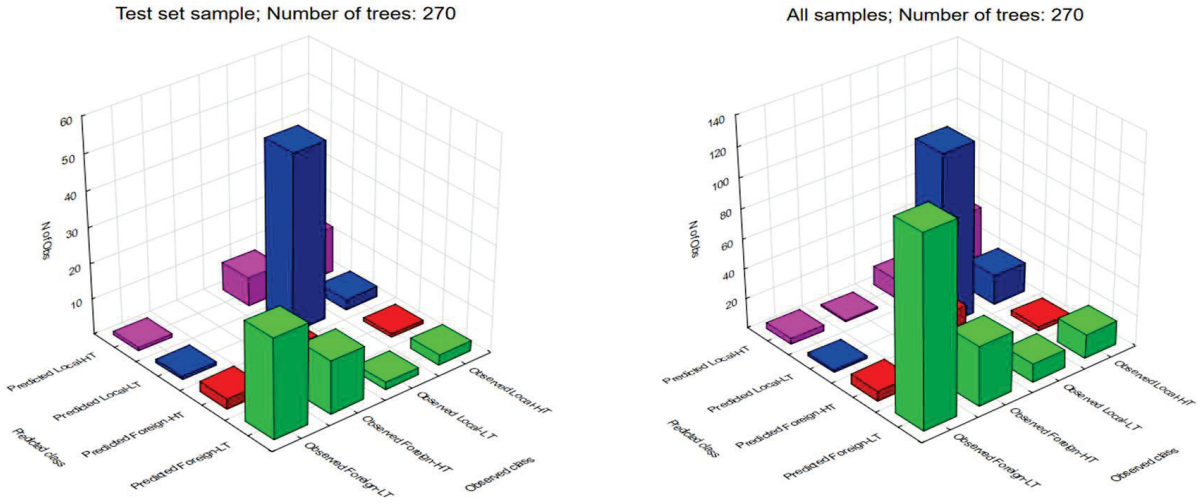

Figure 8. Classification of IUs in test sample (**left**) versus full sample (**right**) sets. Source: Authors' calculations.

Table 2. Observed versus predicted classification for the test sample (138 IUs).

Observed \ Predicted	Foreign-HT	Foreign-LT	Local-HT	Local-LT
Foreign-HT	40.00%	60.00%	0.00%	0.00%
Foreign-LT	9.09%	84.85%	3.03%	3.03%
Local-HT	5.00%	15.00%	65.00%	15.00%
Local-LT	0.00%	3.33%	13.33%	83.33%

Source: Authors' calculations.

In the test sample, the model classifies the best Foreign-LT and Local-LT IUs; the percentages of correct classification are 84.85% and 83.33%, respectively. High-tech IUs are less well classified, with percentages of correct classification of only 65.00% for Local-HT and 40.00% for Foreign-HT IUs. Of all categories, Foreign-HT IUs had the highest misclassification percentage, as 60.00% of them are classified by the model as Foreign-LT

IUs. At the other end, the lowest (and above zero) misclassification rate is encountered for Foreign-LT IUs, in which case 3.03% were predicted as Local-LT IUs.

Besides misclassification percentages, which reflect the power of variables included in the model to predict the observed category for each IUs, identifying the incorrectly classified IUs might offer further insight into the idiosyncrasies of manufacturing industries' performance in the EU. We further present and discuss the results based on the test sample. The 15 Foreign-HT IUs that were classified by the model as Foreign-LT IUs (40% of the total) are mostly eastern-located (9 from eastern EU countries versus 6 from western EU countries) and operate in three industries: C27, C28 and C29. One IU from the Local-HT category is seen by the model as sharing similar characteristics to Foreign-HT IUs (from C20 and Germany, thus western-located IU). Six IUs from the same category were classified as low-tech, either foreign (2 IUs in C27 and C29, one from the western EU and one from the eastern EU), or local (in C27, C28 and C29, two from the western EU and one from the eastern EU). Moving to the Foreign-LT category, there were 5 misclassified IUs by the model (15.15%), of which 3 were misclassified as Foreign-HT (in C10 and C18, all from Western-located EU countries), one as Local-LT (in C31, from an Eastern-located country), and one as Local-HT (in industry C16, from a western-located country). Lastly, 10 IUs included in the Local-LT category were seen by the model as being more like Foreign-LT IUs (2 IUs from C10 and C25, one from the western EU and one from the eastern EU) or Local-LT IUs (8 IUs from C10, C22 and C25, two from the eastern EU and 6 from the western EU). Overall, the model correctly assigned all IUs in industries C13 (low-tech) and C20 (high-tech), and the highest misclassification rates were found for C27 (high-tech; 75% of the IUs), C22 (low-tech; 45.45%), C28 (high-tech; 41.6%), and C29 (high-tech; 40%). When observing the misclassified IUs by their ownership, more foreign-owned IUs were misclassified compared to locally owned ones (20 versus 17), but the highest proportion of misclassified foreign-owned IUs were from high-tech industries (15 out of 20), while the highest proportion of misclassified locally owned IUs are from low-tech industries (10 versus 7). Moreover, when the region was considered, 23 misclassified IUs were western-located and 14 were eastern-located. Most eastern-located IUs (9 out of 14) were misclassified by the model as Foreign-LT, against their a priori classification of Foreign-HT. For western-located IUs, 7 out of 23 are incorrectly classified as Local-HT, despite their a priori classification as Local-LT, and 6 out of 23 were misclassified as Foreign-LT, although they were Foreign-HT IUs in the a priori classification.

The gains chart for each category is presented in Figure 9. The chart shows the percentage of observations that are correctly classified (red curves), linked to the top percentage of cases in each category (represented on the horizontal axis). The gains chart associated with a good model is further away from the baseline random classification of the cases (the straight blue line in Figure 9), which may be interpreted as the classification produced by tossing a coin. Our model performs significantly better than random classification for all categories of IUs, indicated by the overall ascending cumulative curves.

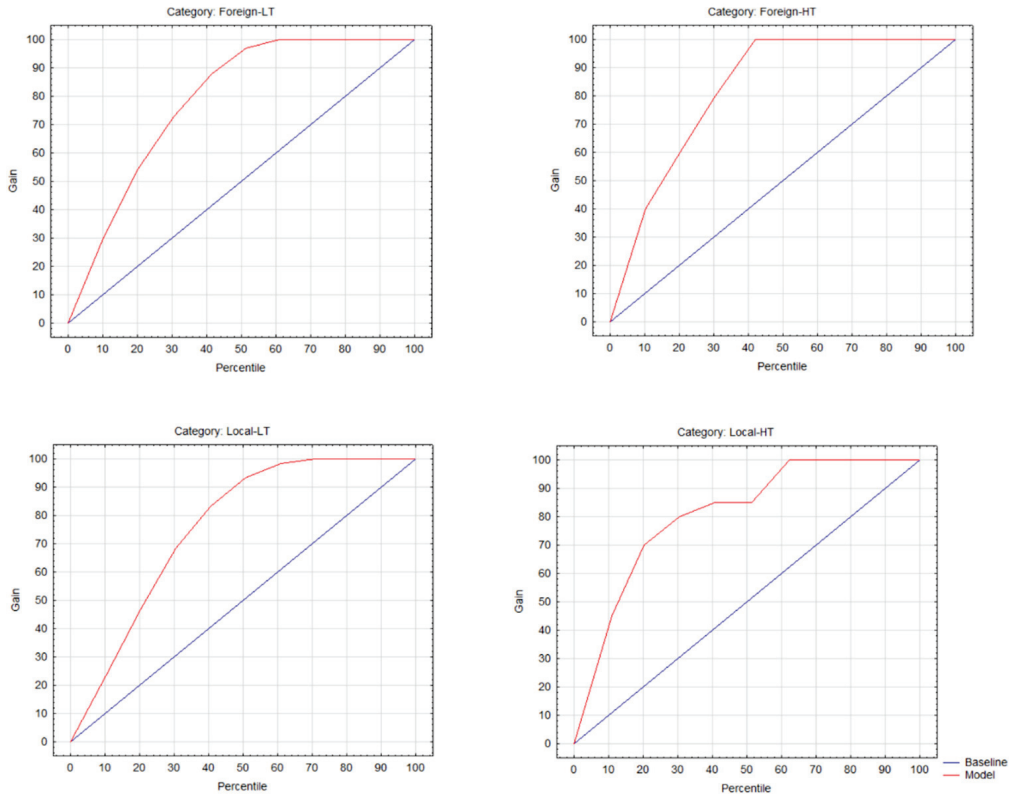

Figure 9. Gains chart for the test set sample (Response/Total Response %; Cumulative).

5. Conclusions

Our research proposed a new approach to the study of industry performance, supported by the random forests methodology, aimed at identifying the best predictors of EU-28 manufacturing industries' a priori classification based on two main attributes: ownership (foreign versus local) and technological intensity. An understanding of performance from both perspectives offers insight into industries' idiosyncrasies and opens the door for further research in the field.

EU foreign-owned businesses dominate locally owned ones in terms of size, which gives them an edge for higher profits, cash flows, and investments, on one hand, but also allows them to pay higher personnel costs. Locally owned businesses fare better in relative terms, as indicated by their higher value-added and investment share of turnover. Instead, the later have higher shares of personnel costs, which implies a more intensive or less efficient use of labour. High-tech industries record better performance than their low-tech counterparts, but the differences between them are significantly smaller compared to ownership as a discriminator, which makes ownership a more important differentiator of performance than the industry's technological level. Following on from here, the industry units that are foreign-owned and in the high-tech category have shown the best performance at the enterprise and employee level, while the locally owned low-tech industry units had the best performance in relative terms. On the other hand, the performance of foreign-owned high-tech manufacturing IUs across the EU is very heterogeneous, indicating particularities linked to technological level, ownership and even location that deserve to be further investigated. The best predictors of ownership—technological level classification are performance variables at the enterprise level and their importance is reinforced by the positive correlations between them. They are followed by variables at employee level and labour productivity. This result confirms that differences in size between industry units matter highly for their classification.

Besides size, our results show that a business' reality than is more diverse than suggested by the ownership–technological intensity framework. On the one hand, they point towards the presence of significant idiosyncrasies at industry level, which need to

be addressed from other perspectives and using additional variables. On the other hand, location plays a role for performance differentiation, particularly through the activities of MNEs in high-tech industries that transfer in Eastern EU countries activities and processes with lower technological intensity and higher labour intensity, while keeping in origin or more developed countries activities with higher levels of incorporated technology. At the same time, our findings imply that across the EU, but mostly in eastern countries, locally owned businesses, even within high-tech industries, are companies with lower technological levels.

Our results are relevant in terms of a wider understanding of the importance of technological advancements and foreign direct investments for economic growth and development and the formulation, in this framework, of economic policies. As the current pandemic demonstrates, technology plays a ubiquitous role in our lives and its role in economic progress will continue to rise. Moreover, the European Union's strategic competitive orientation towards digitalization accompanied by considerable funding in the Digital Europe Programme within the 2021–2027 Multiannual Financial Framework will certainly propel a sustained effort of businesses towards enhancing their technological level, hopefully mostly in the low-tech manufacturing industries. Given the important role played by foreign enterprises in the transfer of technology to local enterprises through horizontal and vertical business relationships, EU countries and particularly Eastern ones where the need for the Manufacturing sector transformation is demanding should adopt and promote measures to attract foreign direct investments aimed at supporting this changeover. Moreover, solid economic policies should be directed towards improving local firms' absorption capacities as a pre-requisite for positive technological spillover. Furthermore, the increased technological level of the manufacturing sector may mitigate one of the most challenging problems that we face, i.e., environmental degradation. Coupled with the positive impact of foreign direct investments on carbon emissions [64], there is plenty of room for central and local authorities to encourage foreign investments that support both an upgrading of the technological level in manufacturing industries and a decline in pollution.

There are a few limitations of our research, which we intend to address in future research on the topic. One limit refers to the FATS database, which includes under "foreign ownership" only companies where foreign investors hold a minimum of 50% of the affiliate capital. This might lead to distortions in the results, as enterprises that have a lower foreign investment share are classified as "locally owned", despite the significant presence of foreign ownership. Correcting for this limitation requires data at company level that will also open the possibility for including more performance variables in the analysis. The number and nature of industries included in the analysis represent another source of limitation. This was due only to data availability, and we hope that this will be remedied in the future. Furthermore, the business performance at employee level and considering different positions in the industry—i.e., the best or the worst performers—may also form the subject of further research, as well as the impact of economic integration with EU for business performance.

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The Enhancement of Sustainable Competitiveness of the CEE Regions at the Time of the COVID-19 Pandemic Instability

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Abstract: The promotion of competitiveness of regions is a key issue nowadays. However, because of the COVID-19 pandemic and the consequences of territorial dimension it caused, the approach towards the concept of regional competitiveness needs to be reformulated in which the sustainability perspective is underlined. Thus, the composition of factors that determine regional competitiveness should be redefined in a way that not only economic but to a greater degree social and concurrently environmental factors need to be considered. The objective of the paper is to discuss the concept of sustainable regional competitiveness and to identify factors that are of utmost importance for this regional competitiveness. The position of particular CEE regions in light of the selected indicators that could determine sustainable competitiveness has been examined. The analysis has allowed us to identify some factors that are crucial for sustainable regional competitiveness in the regions of CEE countries to enable achieving long-term growth in the sustainable manner. This study contributes to the research through proposing some factors that could reflect particular dimensions of sustainable competitiveness in CEE regions, by providing a measure of sustainable competitiveness and through identifying the position of CEE regions in terms of sustainable competitiveness. The support of these key factors may be taken into consideration while planning the interventions within the regional policy.

Keywords: sustainable competitiveness; regional competitiveness; COVID-19; regions; resilience; EU; Central and Eastern European countries

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1. Introduction

The COVID-19 pandemic brought about some instability in the world economy. There are different repercussions in many spheres, not only economic but social and environmental as well. They are diversified, also on the regional level. Especially the regions of Central and Eastern Europe (CEE) countries, which joined the EU in 2004 and which are characterised by a low level of economic development, could be severely affected and face serious challenges. Thus, they should make some efforts to enhance their resilience in the face of instability and changing external environment due to the pandemic. In the long term, they should increase their competitiveness.

The enhancement of competitiveness, including territorial units, through supporting some factors that marked such competitiveness is a key issue nowadays [1–4]. Regions should constantly improve their competitive position, also in relation to other regions located in different countries. However, the COVID-19 pandemic drew special attention to its social and environmental repercussions. Thus, the approach to competitiveness has been reformulated. The position of regions in the international environment should be shaped taking into consideration not only economic but also social and environmental perspectives. Competitiveness, also on the regional level, should be promoted in a sustainable manner and this approach is currently discussed [1] (p. 632).

The objective of this paper is to discuss the concept of sustainable regional competitiveness at the pandemic time and to identify factors that are crucial for this kind of regional

competitiveness. The position of particular CEE regions in light of the selected indicators has been examined.

Taking into consideration the aforementioned discussion, the following research questions were formulated:

Research Question 1 (RQ1): *What factors are essential for creating regional sustainable competitiveness?*

Research Question 2 (RQ2): *What is the position of CEE regions in terms of sustainable competitiveness?*

Nowadays, the concept of regional competitiveness, including sustainable competitiveness, is being discussed [1,2,5]. However, the novelty of this research is that it identifies factors that could reflect the dimensions of sustainable competitiveness in CEE regions and set their position. The measure of sustainable competitiveness has also been proposed. This comprehensive approach has been neglected in research so far.

The following thesis has been formulated: The enhancement of sustainable regional competitiveness requires the promotion of specific factors for each dimension of competitiveness in CEE regions.

The following methods were applied: the analysis of literature, induction and deduction, factor analysis.

The paper consists of three parts. The first part concentrates on the discussion concerning the concept of regional sustainable competitiveness and its role in promoting resilient regional economies at the time of COVID-19. The second part examines factors that characterise different dimensions of sustainable competitiveness in the CEE regions that are identified. The ranking of CEE regions in terms of sustainable competitiveness has also been presented. The next two parts of the paper include discussion and conclusions.

2. Promotion of Regional Sustainable Competitiveness in the COVID-19 Pandemic—Literature Review

2.1. A Regional Dimension of the Impact of the COVID-19 Pandemic

The COVID-19 pandemic impact is of unprecedented scale as it has affected more than 50 million people all over the world. Lockdowns and containment measures were imposed on more than half of the world's population [6] (pp. 2–3). The pandemic has had diversified effects on the development of countries and their regions. The impact on demand and supply and the negative effects on the world economy [7], not only in particular countries, is underlined. Particular fields such as international trade, foreign direct investment flows, global production, and employment affected by COVID-19 [8,9] have been discussed. The social impact of the pandemic reflected in poverty, mostly experienced by women, has been analysed [10]. The impact of the pandemic on ecology and the energy sector has also been presented [11].

Bailey et al. 2020 stresses that the impact of the pandemic geographically is unevenly distributed. It has been regional rather than national, and the variations of the impact and its intensity are high within countries [12,13] (pp. 32–37). Not only economic but social, employment, and demographic consequences are also recorded on the regional level [13] (pp. 73–76). OECD underlines the heterogeneity of the territorial impact of COVID-19, and it identifies its different dimensions related to health, economic, social, or fiscal impact [6]. The economic impact is reflected across the regions differently and is related to the exposure of regions to tradable sectors, to global value chains. Regional employment has also been affected [6]. The studies on the regional impact in certain countries confirm the heterogeneity of the local economic impact of COVID-19 in selected countries [14], i.e., in their specific areas both urban [15,16] and rural [17].

Böhme and Besana also point out high asymmetry of the territorial impact of COVID-19 and they underline that it is due to the health repercussion of COVID-19 and the territorial dimension of policy responses. The exposure and sensitivity to COVID-19 policy responses differ and, hence, the territorial impact of the pandemic varies [18] (pp. 3–10). It is the result of policy responses timing and the length of lockdowns. The restrictions on

mobility are also decisive for the differences in the intensity of the impact. The medium and long-term impact depends on the spread of the disease and its influence on the structure of the economy. The policy tools, also the financial ones, which support certain activities could influence the ability to reduce economic costs [12].

The impact of COVID-19 on subnational governments is worth mentioning. In the short- and medium-term, the impact on their finances due to a large increase in expenditures and decreasing revenues, so-called "scissors effect" is observed. The subnational governments have strong pressure to increase spending and the largest increase refers to social services, social benefits spending, including SMEs, the self-employed, public health, mostly these domains in which they have responsibilities. They are planning to borrow new funds to cover expenditures related to counteracting the negative effects of the pandemic instability and to introduce some recovery measures [19]. The multi-level governance framework is decisive for the scale of effect of the pandemic. If decentralisation is high, then a high impact on the subnational expenditures is also observed. The levels of government are affected differently, and delayed effects are recorded between regions due to the geographic localisation, socio-demographic profile, and their economic activities [6] (pp. 29–30).

Regional policies should respond to the current challenges, and top priorities for decision makers to be attained include access to basic services that are affordable and accessible across territories, promoting regional resilience, and counteracting digital divide. Regional and municipal respondents indicate that a transition to a sustainable and low-carbon economy is also important when elaborating the regional development policy [19].

2.2. Sustainable Regional Competitiveness at the Time of COVID-19 Instability

European Union regions present different growth patterns and, therefore, the core and periphery spatial regime could be distinguished. The determinants of their growth differ (examining growth dynamics 2009–2015). Most CEE regions were classified among the regions in the peripheral spatial regime [20]. Therefore, they could also present different growth patterns under the pandemic. The group of newly admitted countries to the EU after 2004 is diversified as far as GDP growth rate in 2020/2019 is concerned. Selected CEE countries recorded a strong decrease in terms of GDP. In Croatia, for example, the GDP growth rate dropped to −8.0 %, while in Lithuania to −0.9%, and Poland to −2.7%, due to pandemic repercussions [21]. The analysis of changes related to regional GDP in 2020 is not possible because of GDP data limitations on the EU regional level. However, the data concerning the unemployment rate are available and they show an increase in the unemployment rate to a varying extent (among people aged 15–74) in most of these regions compared to 2019. In about 31% of the regions, the unemployment rate fell in 2020 in comparison with the previous year [22].

Considering the diversified impacts of the pandemic on the territorial units, the question is how to promote resilient regions in this turbulent time. If we employ a systemic perspective, then the concept of system resistance to shocks returning to a previous state could be adopted. However, sometimes it is not desirable or possible. Therefore, the complex adaptive system approach underlines the non-linear dynamics and also the adaptive capacity. Thus, resilience is not related to returning to normality but could be perceived through the prism of the capacity to adapt [23] (pp. 94–95). Referring to the discussion above the notion of resilience as an adaptation to some challenges and hereinafter the capability of local places and its governments to withstand the global economic punches while respecting environmental limits, external changes, and assuring high levels of social inclusion is also underlined [24,25]. If we adapt the notion of resilience to external shocks, then the adaptability of the system means resilience and the adaptive cycle model was proposed [26] (pp. 1306–1315). Taking into account different approaches towards resilience, we can assume that resilience enables the system of the regional economy as such to absorb and rebound from a shock to improve its performance through some changes of different

nature (structural, functional, and organizational). Resilience of the particular region is reflected in its rate of growth [25], for example.

Promotion of competitiveness, which requires some changes to attain regional growth, can be regarded as a determinant of the resilience of the region [27]. The pandemic puts social and environmental issues [28,29] on the agenda, which should be reflected in the current approach towards competitiveness.

In light of the aforementioned discussion, the concept of sustainable competitiveness whose promotion could keep the regions resilient in the face of social problems, growing polarization of societies, and environmental problems is of particular importance during the COVID-19 pandemic.

Aiginger, Bärenthaler-Sieber, and Vogel underline the need to redefine the competitiveness concept in relation to a region as its ability "to deliver the beyond-GDP goals for its citizens" [30] (p. 1). This concept captures the transition of the economy towards a more dynamic path of growth, more socially inclusive and environmentally sustainable, where the ultimate aim is the welfare of citizens. Under the new perspective, the facets of competitiveness should not be reduced to price competitiveness. A broader approach and interpretation also embrace the quality/technological competitiveness through the prism of sources of competitiveness and their prospects. During the transition to a new growth path, there are some components that are important including the capability of the social system (social aspect), and the ecological aspect, which could be the driver of economic growth [30] (pp. 9–14).

Sustainability is also underlined in another definition of regional competitiveness, according to which it is "the ability to offer an attractive and sustainable environment for firms and residents to live and work" [31] (p. 4). Thus, also including commercial and well-being goals [31] (p. 4). Corrigan et al. stress that sustainable competitiveness is "the set of institutions, policies, and factors that make a nation productive over the longer term while ensuring social and environmental sustainability" [32] (p. 55) and this concept has been adopted for the purpose of this paper. Social and environmental sustainability constitute an integral part of the concept of sustainable competitiveness. The concept of regional sustainable competitiveness at the time of the pandemic is presented in Figure 1, which underlines three main pillars (spheres) of sustainable competitiveness: economic, social, and environmental, which are adopted in this study to operationalise this concept.

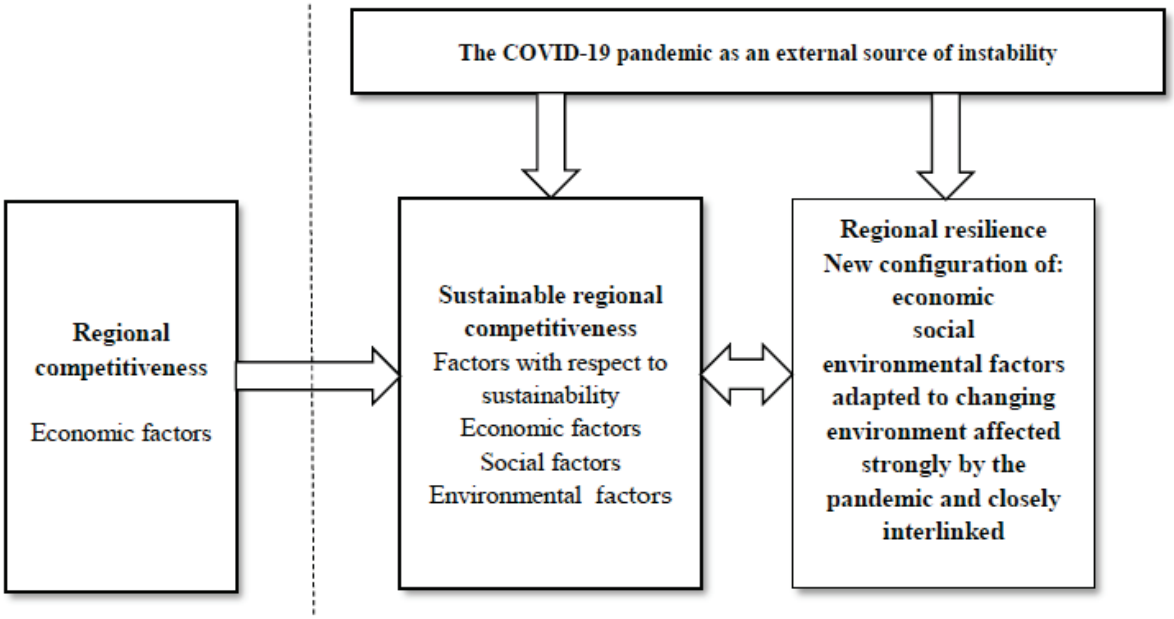

Figure 1. The concept of regional sustainable competitiveness at the time of the COVID-19 pandemic. Source: own elaboration.

The resilience of regions is inevitably associated with the sustainable competitiveness. There is a question concerning factors that could contribute to the regional competitiveness with respect to its sustainability. The factors explaining regional competitiveness is widely recognized, which try to capture the complexity of this competitiveness [33]. They can be presented as the model, e. g., formed the regional hat [3]. However, the causes of sustainable competitiveness, due to the complexity of this notion are difficult to capture. Doyle 2017 reviewed a wide range of indicators referring to sustainable competitiveness and describing them as a set of elements, with economic performance being the central pillar and the social and environmental the domains [34]. Aiginger 2013 grouped these factors into the income, social, and ecological pillars from the country perspective [30]. This country perspective was adopted in another study [35].

Aiginger and Frigo present the drivers of regional competitiveness in the new perspective, which are innovation, education, institutions, social cohesion, and ecological ambitions [36]. However, there is a lack of consensus regarding the factors underpinning the regional sustainable competitiveness and its measurement.

3. Materials and Methods

Taking into account the aforementioned discussion, the paper aims at presenting not only the concept of sustainable competitiveness at the time of the pandemic but also at identifying factors that are decisive for regional competitiveness. CEE regions could be classified as the group which on average present a similar spatial pattern of growth. It is assumed that similar factors could determine sustainable competitiveness for the whole group of CEE regions. To attain the specified objective the following research questions have been formulated:

Research Question 1 (RQ1): *What factors are essential for creating regional sustainable competitiveness?*

Research Question 2 (RQ2): *What is the position of CEE regions in terms of sustainable competitiveness?*

The following thesis has been identified and formulated: The enhancement of sustainable regional competitiveness requires the promotion of relevant factors for each dimension of competitiveness, specific for CEE regions.

The competitiveness has been analysed in the group of 57 regions NUTS 2 level from the following CEE countries: Bulgaria (6), Czechia (8), Croatia (2), Hungary (8), Latvia (2), Poland (17), Romania (8), Slovenia (2), and Slovakia (4).

In order to answer the above research questions and verify the thesis, a factor analysis technique was used. Numerous studies of a country or a regional dimension are also related to innovativeness applied to the factor analysis [37–40].

The following steps in factor analysis were applied, on the basis of the literature review [41–44].

A large number of variables were collected, which described each of the competitiveness dimension for CEE regions: economic, social, and environmental. The data was derived from the database from the European Social Progress Index on the European regional level [45] and from the European Statistical Office [46]. It covers the period before the pandemic years, 2015–2020, depending on the indicator. In total, 59 variables were taken into consideration.

Then the variables that showed low coefficient of variations 10% or less were removed. The variables were standardized because they were presented in different units of measurement, and it was difficult to compare them. The correlation matrix was prepared for each of the dimension, which allowed us to show a high correlation among several variables. The significance of those links could explain the existing correlation between variables, and, thus, the rationale for using factor analysis. However, the variables with the correlation above 90% were excluded.

Factor analysis was preceded by calculating the value of the Kaiser–Meyer–Olkin measure (KMO). The Bartlett's test of sphericity was also applied in order to confirm that

data reduction analysis produces a result that is meaningful. The Kaiser's criterion was used to select the number of factors.

The existing set of variables in each dimension was reduced to a certain number of hypothetical factors describing each of the dimension of sustainable competitiveness in the best possible way.

4. The Results

The economic dimension of competitiveness covers factors that contribute to high growth and productivity including institutions. The initial set of indicators covers 20 variables and finally, following the procedure indicated in the methodology part, they were reduced to 12 variables (Table 1). The analysis allows us to identify three factors characterising regional competitiveness that are related to education and human resources, institutions, and ICT development, which importance is confirmed in some studies.

The economic dimension of sustainable competitiveness comprises three factors (Table 1). Factor 1 referring to education and human resources well qualified. The first eigenvalue of 3.78 corresponds to this first factor that associated with 29% of the variance in the original data. The second eigenvalue is 3.13 and corresponds to 24% of the variance in the original data. The second factor relates to the institutional framework of regions. While the third eigenvalue is 3.93 and corresponds to 30.2% of the total variance in the data. Factor 3 consists of variables creating a conducive environment and framework for ICT development. The identified factor explained 83.2% of the initial variance of variable.

The achievement of a high social dimension of competitiveness determines high competitiveness because growth opportunities must be gained by each member of society. Therefore, the achievement of social inclusion and social cohesion is put on the agenda. If this dimension is associated with all the factors, institutions, and policies that make people healthy, active, and safe [32] (p. 55), a wide set of indicators could describe this dimension. This approach underlines that people enhance their potential to benefit from prosperity and they make some contribution [32] (p. 55). Initially, 35 indicators were selected for the analysis and they were reduced to twelve indicators (Table 2). The analysis revealed that three factors are important when social aspects are included in the concept of competitiveness. They are related to trust and support to government and the effectiveness of its activities, security, and environment, which is conducive to the development of the human-being.

The cumulative percentage of the total variance explained by the factors amounted to 76.1%. The first eigenvalue corresponding to the first factor was equal to 3.37 and corresponds to 28% of the variance in the original data. Factor 1 related to the support for the government and policy effectiveness covers indicators concerning trust in the national government, the legal system, and the effectiveness of the policy to assure security. The second eigenvalue of 1.77 corresponds to the second factor that associated with 14.7% of variance in the original data. Factor 2 is related to personal security and safety. The third eigenvalue is 4.01 and corresponds to 33.4% of the variance in the original data. Factor 3 refers to conducive regional environment for health.

Finally, the environmental dimension of sustainable competitiveness could be characterised by institutions, policies, and factors to assure the management of resources in an efficient way. However, the prosperity of generations must also be attained [32] (p. 55). Initially, four variables were taken into consideration, but they were reduced to three variables. The only one eigenvalue that was equal to 2.196 corresponds to 73.2% of the total variance in the original data (Table 3).

Table 1. Economic dimension of regional competitiveness—latent factors, and variables.

Variable	Factor 1 Education and Human Resources Well Qualified	Factor 2 Institutions	Factor 3 ICT Development	Total Variance Explained	KMO	Bartlett's Test of Sphericity		
Upper-secondary enrolment rate (percentage of 14–18-year-old students enrolled)	0.615				0.843	**Chi Squared**	**Df**	**Sigerception of competitiveness in the context of nificance**
Lower-secondary completion only (percentage of people aged 25 to 64 who have successfully completed, at most, lower-secondary education)	0.628					765.147	78	0.000
Tertiary education attainment (percentage of population aged 25–64 with tertiary education attainment)	0.949							
Human Resources in Science and Technology (persons with tertiary education and/or employed in science and technology as a percentage of active population)	0.914							
Disposable income in PPS per inhabitant	0.764							
Institution quality index (quality and accountability of government services)		0.784						
Institution corruption index (perceived level of corruption)		0.910						
Institution impartiality index (level of impartiality of government services)		0.836						
Online interaction with public authorities (percentage of individuals who used the internet to interact with public authorities)			0.773					
Internet access (share of people who declared they have access whether on a mobile phone, a computer, or another device)			0.880					
Lifelong learning (percentage of people aged 25 to 64 who stated that they have received education or training in the four weeks preceding the survey)			0.843					
Total intramural R&D expenditure as a % of GDP			0.738					
Eigenvalue	3.775	3.125	3.927					
% variance	29.0	24.0	30.2	83.2				

Source: own elaboration.

Table 2. Social dimension of regional competitiveness—latent factors and variables.

Variable	Factor 1 Support for Government and Policy Effectiveness	Factor 2 Personal Security	Factor 3 Regional Environment for Health-Nutrition, Basic Healthcare and Wellness	Total Variance Explained	KMO	Bartlett's Test of Sphericity		
Crime (percentage of people who declared they had faced the problem of crime, violence, or vandalism in the local area)	−0.712				0.761	**Chi Squared**	**Df**	**Significance**
Trust in the national government (share of people who have confidence in their national government)	0.882					532.256	66	0.000
Trust in the legal system (share of people who have confidence in their country's judicial system and court)	0.884							
Trust in the police (share of people who have confidence in their local police force)	0.676							
Money stolen (share of people who claimed that, within the last 12 months, they had money or property stolen from themselves or another household member)		0.804						
Assaulted/mugged (share of people who claimed they have been assaulted/mugged)		0.807						
Premature mortality < 65 (percentage ratio between the number of deaths below age 65 and the population below the age of 65)			0.921					
Infant mortality (per 1000 live births)			0.601					
Insufficient food (percentage of people claiming they are living in a household that cannot afford a meal with meat, chicken, fish every second day)			0.649					
Standardised cancer death rate (for those under 65 years old to cancer per 100,000 inhabitants)			0.707					
Standardised heart disease death rate (for those under 65 years old to ischemic heart diseases per 100,000 inhabitants)			0.837					
Leisure activities (percentage of people who regularly participated in leisure activity)			−0.918					
Eigenvalue	3.366	1.766	4.006					
% of variance	28.0	14.7	33.4	76.1				

Source: own elaboration.

Table 3. Environmental dimension of regional competitiveness—latent factor, and variables.

Variable	Factor 1
Air pollution NO_2	−0.616667
Air pollution $PM_{2.5}$	−0.938803
Air pollution PM_{10}	−0.966553
Eigenvalue	2196
% of variance	73.2

Source: own elaboration.

The question is (RQ2): What is the position of CEE regions in terms of sustainable competitiveness? To answer this question, we used the sum of standardized variables (SSV), which was calculated for each of the dimension of competitiveness and for sustainable competitiveness treated as the total and then presented them in the ranking (Tables 4 and 5). The Czech regions are characterized by high sustainable competitiveness. The highest position in the ranking was taken by the two Czech regions because they are characterised by the highest value of SSV. Six out of eight Czech regions were classified among the tenth best regions. The last positions in the general ranking of sustainable competitiveness were taken by Romanian and Bulgarian regions.

Table 4. The rank of regions in terms of sustainable competitiveness according to the sum of standardized variables.

NUTS 2 Region	Region's Name	Ranking	SSV
CZ01	Praha	1	1.0749
CZ06	Jihovýchod	2	0.9215
SI04	Zahodna Slovenija	3	0.8501
CZ03	Jihozápad	4	0.7706
SK01	Bratislavský kraj	5	0.7517
PL91	Warszawski stołeczny	6	0.7323
CZ02	Střední Čechy	7	0.7201
CZ07	Střední Morava	8	0.7152
CZ05	Severovýchod	9	0.6996
SI03	Vzhodna Slovenija	10	0.6904
LT01	Sostinės regionas	11	0.5441
PL63	Pomorskie	12	0.5111
PL21	Małopolskie	13	0.4853
LT02	Vidurio ir vakarų Lietuvos regionas	14	0.4579
PL84	Podlaskie	15	0.4417
CZ08	Moravskoslezsko	16	0.3954
PL92	Mazowiecki regionalny	17	0.3091
HU11	Budapest	18	0.2905
PL82	Podkarpackie	19	0.2839
PL81	Lubelskie	20	0.2757
PL51	Dolnośląskie	21	0.2710

Table 4. *Cont.*

NUTS 2 Region	Region's Name	Ranking	SSV
PL22	Śląskie	22	0.2262
PL41	Wielkopolskie	23	0.2059
PL52	Opolskie	24	0.2037
HU22	Nyugat-Dunántúl	25	0.1968
PL42	Zachodniopomorskie	26	0.1861
SK02	Západné Slovensko	27	0.1640
PL62	Warmińsko-mazurskie	28	0.1517
PL61	Kujawsko-pomorskie	29	0.1277
HR03	Jadranska Hrvatska	30	0.1228
HU21	Közép-Dunántúl	31	0.1141
PL72	Świętokrzyskie	32	0.1033
PL43	Lubuskie	33	0.0952
CZ04	Severozápad	34	0.0884
HU12	Pest	35	0.0574
PL71	Łódzkie	36	0.0123
HU33	Dél-Alföld	37	−0.0058
SK03	Stredné Slovensko	38	−0.0627
SK04	Východné Slovensko	39	−0.1325
HU23	Dél-Dunántúl	40	−0.1674
HR04	Kontinentalna Hrvatska	41	−0.2814
RO32	Bucureşti-Ilfov	42	−0.3907
HU32	Észak-Alföld	43	−0.3921
HU31	Észak-Magyarország	44	−0.5378
RO42	Vest	45	−0.6068
RO12	Centru	46	−0.7072
BG41	Yugozapaden	47	−0.7378
BG32	Severen tsentralen	48	−0.7705
RO11	Nord-Vest	49	−0.8034
RO31	Sud-Muntenia	50	−0.8810
RO41	Sud-Vest Oltenia	51	−0.8914
BG33	Severoiztochen	52	−0.9131
BG42	Yuzhen tsentralen	53	−1.0091
RO21	Nord-Est	54	−1.0311
BG34	Yugoiztochen	55	−1.2376
RO22	Sud-Est	56	−1.2539
BG31	Severozapaden	57	−1.4348

Source: own elaboration.

Table 5. Ranking of NUTS 2 regions of CEE countries according to each dimension of sustainable competitiveness with the use of the SSV.

Ranking	NUTS 2 Region	Economic	Ranking	NUTS2 Region	Social	Ranking	NUTS 2 Region	Environmental
54	BG31	−1.39948	57	BG31	−1.64569	48	BG31	−0.74413
46	BG32	−0.73272	52	BG32	−0.93928	40	BG32	−0.25924
48	BG33	−0.91128	55	BG33	−1.18319	21	BG33	0.159244
55	BG34	−1.42228	56	BG34	−1.24928	46	BG34	−0.39018
35	BG41	0.019788	54	BG41	−1.15619	57	BG41	−2.34691
49	BG42	−1.06238	51	BG42	−0.89043	52	BG42	−1.25313
1	CZ01	1.658575	3	CZ01	0.758667	38	CZ01	−0.18925
10	CZ02	0.724649	7	CZ02	0.706577	11	CZ02	0.754623
9	CZ03	0.727273	8	CZ03	0.686977	4	CZ03	1.293131
39	CZ04	−0.15606	30	CZ04	0.173765	9	CZ04	0.806084
11	CZ05	0.695327	5	CZ05	0.724501	13	CZ05	0.618932
5	CZ06	1.137309	6	CZ06	0.715604	8	CZ06	0.809928
7	CZ07	0.78231	2	CZ07	0.784509	24	CZ07	0.147501
14	CZ08	0.633401	14	CZ08	0.509657	50	CZ08	−1.09316
41	HR03	−0.35691	20	HR03	0.319109	2	HR03	1.416537
43	HR04	−0.4067	38	HR04	−0.12678	44	HR04	−0.35659
8	HU11	0.760505	26	HU11	0.211458	53	HU11	−1.42988
33	HU12	0.030678	27	HU12	0.197842	45	HU12	−0.38852
36	HU21	−0.02179	29	HU21	0.188534	18	HU21	0.405661
37	HU22	−0.03546	19	HU22	0.358298	15	HU22	0.557692
42	HU23	−0.39582	35	HU23	−0.00121	22	HU23	0.157532
45	HU31	−0.50113	45	HU31	−0.63387	42	HU31	−0.31289
44	HU32	−0.422	43	HU32	−0.43422	35	HU32	−0.09373
28	HU33	0.085499	37	HU33	−0.11039	32	HU33	0.016934
4	LT01	1.173505	41	LT01	−0.35365	3	LT01	1.407219
13	LT02	0.63728	39	LT02	−0.13458	1	LT02	2.050828
16	PL21	0.530898	1	PL21	0.934769	55	PL21	−1.51041
17	PL22	0.394384	11	PL22	0.578337	56	PL22	−1.91083
19	PL41	0.307177	25	PL41	0.226379	43	PL41	−0.31471
26	PL42	0.118591	33	PL42	0.061329	6	PL42	0.97777
32	PL43	0.034666	34	PL43	0.041059	14	PL43	0.574489
18	PL51	0.371919	22	PL51	0.264102	37	PL51	−0.13892
20	PL52	0.217502	18	PL52	0.367541	47	PL52	−0.51137
23	PL61	0.176533	31	PL61	0.118998	33	PL61	−0.0492
38	PL62	−0.03553	28	PL62	0.194855	10	PL62	0.790263
15	PL63	0.563143	21	PL63	0.307312	5	PL63	1.100353
25	PL71	0.155975	32	PL71	0.106845	49	PL71	−0.9881
30	PL72	0.05956	23	PL72	0.248393	41	PL72	−0.28799
24	PL81	0.168707	17	PL81	0.421576	23	PL81	0.156153
29	PL82	0.074035	12	PL82	0.576304	31	PL82	0.023956
22	PL84	0.177908	10	PL84	0.606749	7	PL84	0.924312
2	PL91	1.287123	9	PL91	0.608104	51	PL91	−1.17513
21	PL92	0.202574	16	PL92	0.478546	26	PL92	0.092696
50	RO11	−1.13899	47	RO11	−0.67062	25	RO11	0.120026
51	RO12	−1.16171	42	RO12	−0.41188	28	RO12	0.080779
56	RO21	−1.5331	50	RO21	−0.76727	27	RO21	0.088861
57	RO22	−1.69999	53	RO22	−1.09148	30	RO22	0.029882
52	RO31	−1.2569	48	RO31	−0.67468	34	RO31	−0.07738
27	RO32	0.091076	46	RO32	−0.64777	54	RO32	−1.4505
53	RO41	−1.2794	49	RO41	−0.70367	29	RO41	0.038669

Table 5. *Cont.*

Ranking	NUTS 2 Region	Economic	Ranking	NUTS2 Region	Social	Ranking	NUTS 2 Region	Environmental
47	RO42	−0.90951	44	RO42	−0.49557	19	RO42	0.260415
12	SI03	0.669559	4	SI03	0.727831	12	SI03	0.631216
3	SI04	1.26849	13	SI04	0.552863	20	SI04	0.226439
6	SK01	1.046799	15	SK01	0.50548	16	SK01	0.457943
34	SK02	0.029645	24	SK02	0.244602	17	SK02	0.423977
31	SK03	0.043716	40	SK03	−0.16206	36	SK03	−0.12605
40	SK04	−0.21694	36	SK04	−0.02372	39	SK04	−0.20182

Source: own calculation.

The rankings of regions according to each dimension of sustainable competitiveness allows us to identify some regions that have a similar position in terms of the economic and social dimensions. There are also regions whose positions in both rankings are diversified and this needs further studies.

To measure the strength and direction of relationship between two dimensions of sustainable competitiveness, Spearman's rank-order correlation was adopted. It showed monotonic association between economic and social dimension of sustainable competitiveness. Spearman's correlation coefficient stood at rs = 0.799002. However, there is no correlation between ranks of the environmental dimension of sustainable competitiveness and other dimensions, i.e., economic and social ones, assuming the adopted data.

5. Discussion

During an unstable economic situation, including a pandemic, the achievement of growth should be beneficial for all members of society and without a detrimental effect on the environment. Thus, the concept of sustainable regional competitiveness should be strongly promoted. There are some methods allowing us to measure competitiveness, e.g., a Cobb–Douglas production function [47], multiple-criteria decision making techniques [48], the taxonomic methods [49] or the factor analysis. The factor analysis applied in this study enabled us not only to reduce the number of variables but also to identify a limited number of factors—-pillars—-of each dimension of competitiveness. Then, the SSV allowed us to create the ranking of the regions of CEE countries.

The ranking of regions in terms of competitiveness have also been constructed, i.e., regional competitiveness index [33,50] and others [51]. However, it is difficult to make comparisons between rankings due to different factors/indicators included in the index.

The conducted analysis in this paper identified some factors specific for regional competitiveness, the importance of which was confirmed in some studies.

The economic dimension of sustainable competitiveness refers to human capital, fundamental for economic growth. Human capital is essential for the new economy and knowledge-based activities. It is reflected on the education level and its capacity for the modern economy supported by the available financial resources as well as in stock of human capital described by employment in high-tech sectors (human resources in science and technology). The level of education is an important driver of productivity [3] (pp. 3–35). Thus, human capital constitutes a driver of competitiveness being the primary factor in the regional investment climate [3] (pp. 2–37).

The factor: Institutions contribute to competitiveness. However, the further question is: what kind of institution matters? No one size fits all, different institutional arrangements are required, "there is a lack of consensus as to whether institutions are a prerequisite or a natural outcome of development" [52] (pp. 14–15). Institutions are crucial for facilitating the input to be transferred to high-value outcomes. Institutional enablers determine the potential for competitiveness, being the most important factor in the regional system [53]. High quality institutions have a significant impact on entrepreneurship and economic growth [54].

ICT and the potential to develop in this dimension is key issue nowadays. The factor related to ICT is often neglected in the studies on regional competitiveness. Digital transformation can boost economic growth as well as economic cooperation, best exemplified by western Balkan countries [55]. Some studies underline the role of ICT for competitiveness [56,57]. However, they confirm that the promotion of regional competitiveness through ICT seems to be a difficult process, which could also lead to growing disparities [58]. The regions should be smart as well as cities [59].

The social aspect of competitiveness should be taken into consideration including qualitative factors. The conducted analysis revealed some decisive factors for the social aspect of regional competitiveness: nutrition, basic healthcare, health, and wellness, which constitute important factors for the social dimension of competitiveness. The identified factors are confirmed in the literature and relate to these factors that characterise social cohesion.

These factors refer to the favourable living conditions, quality of life. They also refer to social cohesion, which can be perceived and measured by the inequality dimension regarding the factors mentioned above, also promoting and reducing disparities in terms of health status and basic healthcare [60]. It can be perceived as and measured by the existing social disparities reflected in different indicators [61] (pp. 21–23) and related to social cohesion in terms of social relations and interconnectedness with a political outcome, wellbeing, equity, and political order [62] (p. 11). The Council of Europe perceived social cohesion through the prism of society's ability to secure long-term well-being [63] (p. 23).

The second identified factor, i.e., the support for the government and policy effectiveness covers variables related to security and trust in institutions, which in the analyses relates to social capital dimension [60]. Social cohesion or "a cohesive society is characterised by resilient social relations, a positive emotional connectedness between its members and the community and a pronounced focus on common goods" [64] (p. 13). Three domains can be mentioned here: connectedness, social networks and focus on the common goods [64], and, as Jenson indicates, social cohesion as trust [61] (p. 24). Besides, the level of crime in deprived areas is related to social cohesion [65].

The third factor relates to personal security reflected in the indicators referring to violence [66]. Good social protection, and quality of governance and public institutions are essential. It also describes social protection and state-building [62] (p. 5).

The social, environmental, and economic factors should be the mutual reinforcing dimensions that creates resilient regions.

The regions of CEE do not present a homogenous group in terms of sustainable competitiveness and could have the potential to create resilient economy at the time of the pandemic. They are differently equipped with all these factors and must create their own combination of factors that constitute this kind of regional competitiveness.

This study allows us to identify factors that could contribute to sustainable competitiveness in regions of the CEE countries. However, it is a preliminary study that needs further conceptualization, especially the significance of identified factors from the pandemic perspective. This study has some practical significance. The proposed factors characterising the dimension of sustainable competitiveness may be taken into consideration by public authorities while planning interventions in the regions. The created rankings in each sphere of competitiveness and generally in competitiveness allow us to identify the position of each region in the group and elaborate such activities to be implemented that may contribute to enhancing specific factors of competitiveness.

6. Conclusions

The COVID-19 pandemic affected regional economies in a diversified way. Its repercussions are reflected in many spheres: economic, social, and environmental. The concept of sustainable regional competitiveness is under consideration and deeply discussed particularly at this turbulent time when keeping resilience and enhancing growth in regions are necessary.

The analysis allows us to identify the factors that are decisive for each dimension of sustainable regional competitiveness in the regions of CEE countries, the promoting of which will allow us to achieve long-term growth beneficial not only from an economic but also social and environmental perspectives. The regions of the CEE countries that were taken into consideration are diversified as far as all the dimensions of sustainable competitiveness are concerned. However, while ranking of regions in terms of competitiveness in relation to social and economic dimensions, the relationship was proved. The study could be a starting point for discussion on measurement of regional competitiveness from the sustainability perspective.

The conducted study has various limitations. Firstly, the limitations of data that is available and its completeness. Especially the environmental dimension of regional competitiveness requires its extension of variables. Secondly, the analysed period, which refers to the time before the COVID-19 pandemic, should be extended to the pandemic time as soon as the data is available to capture the changes that were observed.

This research has some policy implications. It gives us some preliminary indication of what should be done to promote sustainable competitiveness of regions, but it requires further studies.

Further research should cover a wider period of time to present the changes that took place during the pandemic. The research should not be limited to the regions of countries admitted to the EU in 2004 and after 2004, but to the regions of other EU countries in order to verify if the factors selected are the same for the group of regions from the countries that are diversified in terms of sustainable competitiveness. The dynamic analysis is also recommended. All this will be taken into consideration in the further research.

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Sustainable Competitiveness of Tourism in the Algarve Region. Critical Stakeholders' Perception of the Supply Sector

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Abstract: The Algarve region, located in the south of Portugal, is a well-known tourism destination that seeks to be sustainable and competitive. The local administration looks to establish a collaborative network, where stakeholders take a crucial role. The research aims to appeal to the accommodations and food services stakeholders to have a shared vision of the issues and priorities related to sustainable tourism development. Their perception is a critical factor in making decisions regarding the region's competitiveness. Algarve's two major and leading associations of the tourism supply sector AIHSA and AHETA were invited to participate in the study. Based on the responses of an online questionnaire, an artificial intelligence algorithm was applied to the data to identify the common and divergent aspects. The conceptual model developed is based on a simplified model of psychological ownership. The results highlight a convergent perspective regarding sustainability challenges, namely, natural resources and biodiversity, safety, and supply chain. However, hotels and restaurants do not reflect the same perception regarding sustainability initiatives, e-tourism, or free internet access. These divergences are essential results since they indicated which issues require local authorities' priority intervention.

Keywords: sustainable tourism; destination competitiveness; stakeholder's perception; Algarve region; artificial intelligence

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1. Introduction

Tourism is becoming undoubtedly a driving force for economic growth. This industry plays a crucial role in creating employment opportunities and regional development. Still, it should also be a vehicle to protect and restore earth biodiversity and build bridges between people and cultures [1] to ensure the tourism sector's long-term sustainability.

For this dynamic tourism, searching sustainability is essential to understand the underlying structure and the feedback mechanisms that influence the functioning of tourism over time [2]. While the economic benefits are clear, it is essential to understand the repercussions on the environmental, sociocultural, and institutional aspects.

According to Nadalipour et al. [3], sustainable competitiveness requires two major aspects: (i) economic, sociocultural, and ecological dimensions of tourism, and (ii) the stakeholders' view that participates in the tourism process.

To search tourism sustainability objectives, it is necessary to develop collective actions. However, supposing the stakeholders, e.g., a part that has an interest and can either affect or be affected by the sector policy, do not have shared visions on sustainability, in this

case, governance faces significant obstacles, such as the difficulty to influence the private sector and different interests and priorities of the relevant stakeholders. These difficulties in sustainable tourism policies should be better understood to design adequate measures and plans [4] and are among the most critical challenges when improving the sustainability of a region [5]. According to Benur and Framwell [6], there is a need for consensus between the government and stakeholders to ensure an integrated and sustainable strategy. The role of stakeholders in sustainable tourism strategies is critical [7]. Kornilaki et al. [8] reported the importance of "perceived self-efficacy influence" and the "capabilities and motivation to behave sustainably".

A higher level of sustainability and competitiveness may be achieved if there is cooperative governance assuring the engagement of stakeholders [9]. One of the least analyzed perspectives is understanding the supply side of the tourism equation, like hotels and restaurants [9].

In the destination competitiveness, Abreu-Novais et al. [10] highlight one of the gaps in how different stakeholders conceptualize destination competitiveness. Understanding the shared vision and differences is essential to build sustainable and competitive tourism in the region, namely, the leading sustainability factors (e.g., water, energy) and competitive advantages (e.g., safety, price).

The research problem is to analyze if stakeholders on the supply side (accommodations and food services stakeholders) have a shared vision of the issues and priorities on sustainable tourism development to assess the competitiveness of the region, i.e., do accommodations and food services stakeholders have a different perspective depending on the type of activity, size, category, and other key factors?

The region of Algarve represents 31% of the Portuguese hotel's beds, receiving in 2019 15.92 million visits of foreign tourists and 5.03 million visits of national tourists. Thus, it was selected for the case analysis and since sustainable growth of the region is a relevant concern for public decision-makers and the private sector, mainly the supply services.

For supporting and monitoring the search of sustainability, Algarve has a web platform, designated, Observatory of Sustainability of the Algarve Region for Tourism (OBSERVE) [11], where the most relevant sustainability indicators in four main domains—environmental, economic, sociocultural, and institutional [12]—allow the analysis and assessment of the Algarve region, helping government and stakeholders to make the right decisions.

Within the OBSERVE platform's scope, a survey was developed to assess the sustainable competitiveness of the tourism sector in the region of Algarve. Stakeholders from the supply service (e.g., hotels, restaurant) were invited to answer specific questions and share their vision concerning the environmental, sociocultural, economic, and institutional domains.

The paper structure presents a literature review of competitive tourism advantages, stakeholders' perception and factors in sustainable tourism (Section 2), the methodology framework (Section 3), the results obtained (Section 4), in Section 5, the discussion and research limitations, and finally, the conclusions and further research paths (Section 6). Appendix A presents the complete questionnaire.

2. Tourism Competitive Advantages, Stakeholders' Perception, and Factors in Sustainable Tourism

2.1. Sustainable Tourism and Competitive Tourism Advantages

Competitiveness "is one of the core issues for tourism destinations and regional stakeholders" [13], where an appropriate level of development in terms of services (i.e., connectivity, infrastructure, safety, attractions, excursions, hotels, restaurants, and others) is achieved [14].

Tourism destination competitiveness has several definitions and perspectives [15]. The concept of destination competitiveness, has in the classical perspective, the focus on the capacity to attract visitors, assure revenues, obtain a favorable position [16] to a memorable

experience and balance with the wellbeing of destinations residents and natural capital of the future generations [17].

In their seminal work, Ritchie and Crouch [18] claimed that a competitive destination "promotes the maximum wellbeing for its inhabitants in a sustainable way". They also emphasized the importance of the destination management organization "in providing leadership and coordination the many destination stakeholders that must contribute and work together".

The traditional market perspective sustainable competitive advantage is "an advantage that allows a business to be more successful than its competitors over a long period of time" [19], and extended to a new increasing trend where the competitiveness is connecting with sustainability [15], considering the perspective environmental and sustainable development [20] with other economic and social dimensions. Therefore, improving the competitiveness of a destination should be done by analyzing the more significant beneficial impact obtained with the limitation of resources [21].

Sustainable tourism responds to the need for more responsible policies and forms of corporate governance [22]. A green marketing strategy based on a shared vision can help to define and implement a sound strategy [23] and cultivate a shared environmental vision while harnessing the capability of fast response to new environmental technologies and challenges [24].

In 2000, the United Nation Economic and Social Council stated that "the tourism development has to be built on an ecological base on the long-term and the economic and social levels of the local societies" [25]. In its modern definition, sustainable development does not exclude tourism as a sensitive sector that seems to be a new global direction. Nowadays, creating a solid base for this industry targets its transformation in achieving sustainable development. The objectives of sustainable tourism are [26]

- Maintenance and protection of the natural, cultural, social, historical, and patrimonial heritage of a region, including the gastronomy, the dances, the dress code, the ancestral festivals, among others. These aspects will allow the perpetuation of traditions and the involvement of the local residents, giving them a sense of community. It will also personalize the destination and allow closer contact between tourists and locals;
- Minimizing the pressure caused by tourism on the natural environment. Protection and mitigation of the impact generated by the sector on water (water quality, water availability); coastal and fluvial waters and beaches quality; the ecosystem of the region (fragile by nature since it depends on an equilibrium between species); soils, cliffs, and wetlands (pollution, erosion); forest, wildlife, and climate;
- Rationalizing the resources used by the tourists. Tourism is changing, and touristic destinations must evolve and adapt to the new challenges.

For a long time, economic development used to be the major factor in tourist destinations. A progressively sustainable touristic destination concept is related to creating a destination with lasting livelihoods while minimizing resource depletion, environmental damage, cultural instability, and social disruption [6].

Many tourism destination visions lack consistency, and only a few address sustainability itself [27]. The tourism sector in some countries is developing comprehensive policies that have medium- and long-term effects while avoiding short-term development plans, working on putting long-term studies and plans to create a kind of stability and establishment for this sector [28].

The development of a model of destination competitiveness cloud is assessed by a set of indicators that allows the identification of the relative strengths and weaknesses of different tourism destinations and can be used by industry and governments to increase tourism numbers and expenditure and enhance socioeconomic prosperity [29].

Destinations must learn how to think, more like businesses, and develop new products, markets, and customers. Simultaneously, how different governance systems and destinations with varying levels of development compete, mainly if they are cooperative or managerial [9].

Governance to sustainable tourism should take into consideration a shared vision, goal congruence, and interaction [30], engage stakeholders, beginning with the supply side services that could also be a partner or press to innovation [31], and adopt sustainable practices [32]. A sustainable touristic destination concept is related to creating a destination with lasting livelihoods while minimizing resource depletion, environmental damage, cultural instability, and social disruption [6].

2.2. Stakeholders' Perception and Factors in Sustainable Tourism

Sustainability of tourism, and specifically of destination, relies on the basic assumption of tourist sustainability, which is concerned with fulfilling the needs of all groups of tourism stakeholders in a given destination; the structural idiosyncrasy of a cultural, political, and socioeconomic context influences the perceptions of the local tourism industry regarding tourism sustainability [33].

The World Tourism Organization (WTO) has stated that tourism development activities have to be planned, managed, and developed, taking into account the needs and attitudes of the stakeholders towards tourism development [34].

In the tourism industry of some regions, the relevant stakeholders are not concerned about environmental and sustainability matters. However, with most of them, natural attractions are a crucial and distinctive part of the experience [14]. The behavior of the residents is essential for the sustainability of a destination brand, and positive ownership affects the protective behavior [35]. The residents' perception of the benefits of tourism, economic, sociocultural, and environmental sustainability affect the consolidation and development and could limit the involvement stages of community-based tourism development [36].

Local ownership patterns and destination governance play critical roles in defining a destination's direction/pace of development, steering it towards or away from tourism-led inclusive growth [37] and to sustainability.

Collaborative policymaking is needed among stakeholders, namely, local and government agencies/authorities, as well as native and enterprise communities, which should work together under the same purpose [38,39] to achieve sustainable tourism development. Furthermore, multi-stakeholder engagement and the significance of partnerships between government, businesses, local residents, and visitors could be a way of contributing to competitive tourism advantages [40].

A shared vision of the stakeholders is a critical point for implementing specific policies to promote the sustainability and competitiveness of a destination [23].

The evolution of stakeholders' influence and involvement in tourism destinations help to understand the three aspects of stakeholder theory of Donaldson and Preston [41]. Geiger [42] summarizes it as:

- Descriptive/empiric aspect—describes the past, present, and future state of the organization. In tourism, this might be stakeholders in a destination, their relationships, but also the history of touristic development and how it influenced the present;
- Instrumental aspect—highlights the connections between actions in stakeholder management and the resulting outcomes. In tourism, this might be the appearance of a new competitor in a sector and the subsequent redistribution of market shares;
- Normative aspect—used to interpret the corporation's function, including identifying moral or philosophical guidelines for the operation and management of corporations [41] and according to Byrd [43] is the fundamental core of the stakeholder theory. The normative aspect dictates that all stakeholders and their interests must be viewed as targets and, therefore, be involved in the development destination.

For this process to succeed, all stakeholder interests must be recognized and comprehended in all their facets, even though not all stakeholders need to be involved equally in decision-making processes [41]. The omission of the interest of even one primary stakeholder can prevent the success of the process as a whole [44]. Therefore, policy-decision

stakeholders should try to hear and understand the interests of each stakeholder group; otherwise, stakeholders with less power might lose interest in the process [45].

In the last three decades, researchers have been recommending a broader integration of all stakeholders in the planning process of touristic development. Byrd [46] points out that studies are divided into two different perspectives: (i) a more business-oriented, calling for a stakeholder inclusion model based on their respective power and influence in a destination; (ii) a collaborative idea of stakeholder involvement, not associated with individual stakeholders' power-level. This last approach is based on community-based tourism development [47], which is the normative aspect of the Stakeholder Theory, summarized by Sautter and Leisen [45]. To enable stakeholders to achieve the goal of equalizing their influence and power levels is also an important role of governmental agencies [48].

The importance of understanding stakeholders' vision and their perceptions, attitudes and involvement can influence tourism development, minimizing the negative impacts and maximizing its benefits, leading to community development and greater support for tourism [49].

The need for stakeholder involvement is especially high in a destination that has a sustainable development goal since it considers the different aspects of sustainability, allowing all stakeholders' participation in the decision-making processes, and pointing out their influence and importance to achieve the overall goal. However, conflicts may occur among stakeholders with different interests and perspectives [50–53]. Therefore, it is important to alert stakeholders that some of the decisions might prevent them from obtaining their targets in the short-term, but they will probably gain more in a long-term analysis [50].

According to Byrd et al. [54], sustainable tourism is achieved and successful only when stakeholders' perceptions are accessed and their ideas and interests are integrated and respected in the planning and management process. Stakeholders' analysis provides a means to start understanding the environmental and social problems and identify different stakeholder group perspectives and stakeholder interests at different levels [51].

However, Freeman et al. [52] state that stakeholder groups are characterized by their relationships between diverse groups and individuals; from this definition, it was evident that stakeholders' views may be incredibly broad and diverse. Cooperation is one of the stages in the collaborative process but does not solve the fragmented nature of tourism [53]. Considering a large number of stakeholders and interests together might increase complexity and difficulties in the process; however, it is an important stage to establish an effective collaborative process [55].

According to Ven [56]: "stakeholders' participation in tourism development is necessary to form an essential ingredient in the 'hospitality atmosphere' of any destination". Ven also suggests that initially, stakeholders have a homogenous attitude towards tourism development, and over time, their attitude becomes heterogeneous, especially in the community stakeholders' perception.

Therefore, it is preferable to assess stakeholders' attitudes on consolidated touristic destinations or regions. March and Wilkinson [57] report that the complex interrelationships between stakeholders is important and should be considered, since the level of cohesion among them is directly related to the performance of a tourism destination. Unfortunately, sometimes they do not show cohesive and active support and favorable attitudes to achieve the target objective [58,59].

Regarding their attitudes, Ellis and Sheridan [60] state that stakeholders' positiveness leads to favorable behavior towards tourism development. Their argument is supported by the Theory of Reasoned Action [61], which states that attitude influences behavioral intention leading to particular behaviors. Moreover, as per the social exchange theory, when stakeholders perceive that the benefits of tourism development are higher than the cost, they will be motivated to support it [58].

Therefore, one aspect of stakeholders' management that needs to be understood is the type of involvement stakeholders will have in the tourism development process. The

different interests of each stakeholder group must be considered to have the greatest chance of success. Based on this understanding, planners can then find specific indicators for each group and their perception relative to those issues [53].

Hence, in these last years, segmentation approaches to assess stakeholders' perceptions and attitudes towards tourism development have been performed, generating important information for tourism policy-makers [40,59,60,62]. Cluster analysis is one of the most used techniques to classify stakeholders that have different attitudes and perceptions towards tourism development [63–66].

Liu and Ma [67] present a list of research studies conducted on a tourism stakeholder's perception, which allowed them to understand the diffusion of issues and, consequently, several stakeholder groups.

Abdelgadir et al. [28] define two important steps that need to be put into practice to consider the influence of stakeholders' perception and factors on sustainable tourism, namely:

- Listening to different stakeholder groups that are primary participants from the tourism industry, defining strategies according to it and remaining committed to it [45];
- Advancing to the involvement of different stakeholder groups for promoting steady growth of tourism in areas where four stakeholders are involved: inhabitants, executives, government functionaries, and tourists [43].

Leonidou et al. [23] analyze resources and capabilities as drivers for an environmental marketing survey to answer several hypotheses explaining organizational resources (physical, financial, experiential) and organizational capabilities (share vision, relationship and technology) as supporting an environmental marketing strategy. They also approach the implications of an environmental marketing strategy to assure competitive advantage, influenced by the competitive intensity and market dynamics, and how to take those advantages.

A simplified model of psychological ownership, modified from Pierce et al. [68], is presented in Figure 1. The results of Leonidou et al. [23] study link (besides others) the shared vision (A) with the environmental marketing strategy and the adoption of it as positively related to the achievement of competitive advantage (B). The study is in line with Porter and Linde [62] that consider "companies must go further in innovation and resource productivity to assure the greatest benefits".

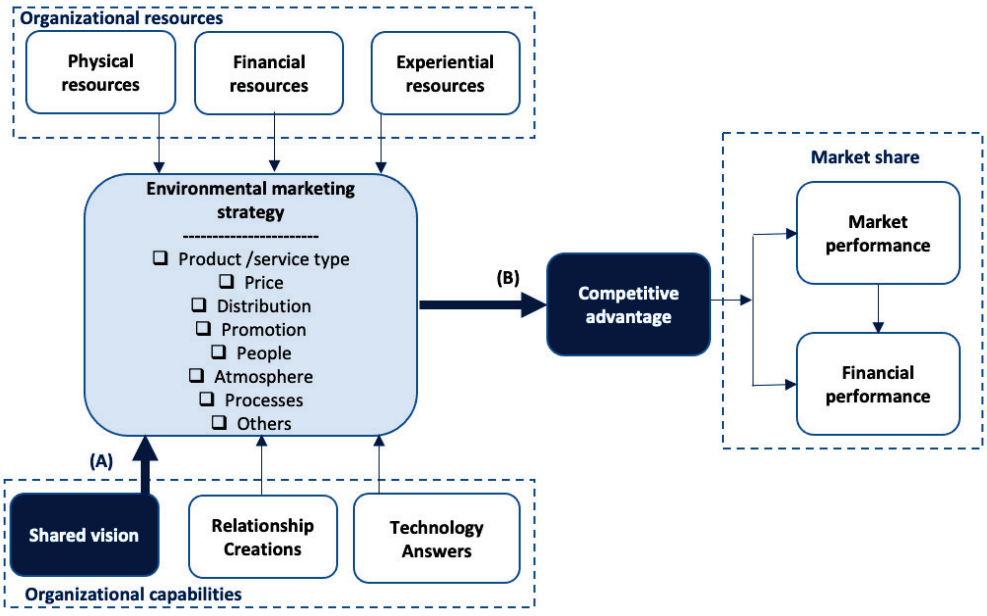

Figure 1. Conceptual model to competitive advantages.

The study of Leonidou et al. [23] also highlights that some touristic stakeholders (e.g., hotels) have a shared vision—the presence of common ideas, commitment, and dedication among the firm's employees toward the achievement of green organizational objectives [63]—and could be essential to implementing environmental marketing strategies and potential support sustainable tourism.

Figure 2 shows the relationship between formal ownership, attitudes, and behaviors as the base to create competitive advantages in developing a sustainable tourism destination, adjusted from framework structure proposed by Pierce et al. [68].

Figure 2. Ownership and attitudes to potential competitive advantages.

The bibliographic research, highlight studies, and surveys have been conducted to understand tourists and residential community perception regarding sustainable tourism destinations and their future perspectives. There are fewer research studies and a foggy perception of their vision and from the supply stakeholders' perceptions.

3. Methodology Framework

3.1. Global Approach

The shared vision could be essential as the base of the supply sector (e.g., hotels, restaurant). Therefore, it is critical to understand the key market stakeholders in the supply service, if they have a shared vision about sustainability and if it is mainly common or different in some key factors.

Using the simplified model of psychological ownership from Pierce et al. [68] as the base context, focusing on the relationships indicated by the solid lines, the conceptual model for the developed research is proposed, which is presented in Figure 3.

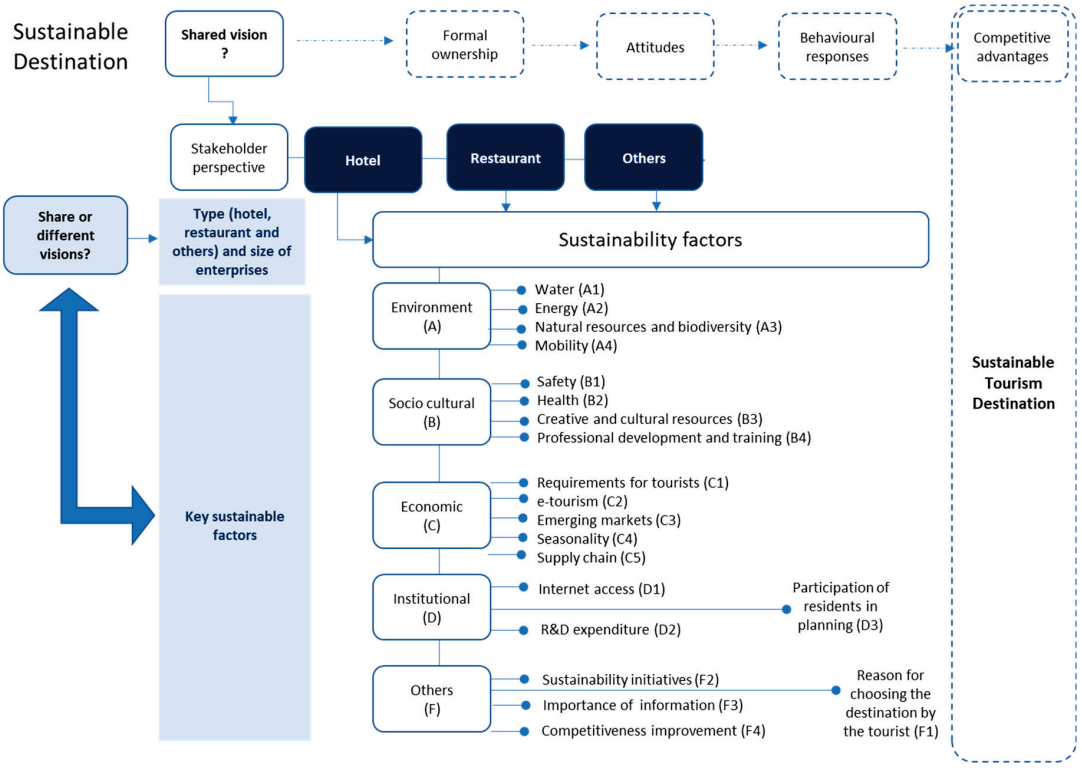

Figure 3. Conceptual challenges for the research.

3.2. Survey Approach

To assess the perspective of the supply agents, like, hotels and restaurants, a specific survey was carried out from September to November 2019. The survey was designed and launched with the support of two of the most important associations of enterprises with activity on the touristic sector in the region of Algarve, namely, the Association of Hotels and Tourist Resorts in the Algarve (AHETA) and the Association of Hotel and Similar Industrialists in the Algarve (AIHSA).

The questionnaire has six groups of questions, four being on the principal domains of sustainability, namely, environment, sociocultural, economic, and institutional, and two on areas that are relevant for the tourism in the region, namely, gastronomy and a set of other issues related to themes that lead tourists to choose the destination, information about on-going initiative among others. Table 1 shows the major topics covered in the survey. Appendix A presents the full questionnaire (Table A1).

Table 1. Subjects covered in the survey disseminated electronically by the associates of AHISA and AHETA.

Company Identification
A—Environmental
A1—Water; A2—Energy; A3—Natural resources and biodiversity; A4—Mobility.
B—Sociocultural
B1—Safety; B2—Health care; B3—Creative and cultural resources; B4—Professional development and training.
C—Economic
C1—Formalities for incoming tourists; C2—E-tourism; C3—Diversification of the markets and emerging markets; C4—Seasonality; C5—Supply chain.
D—Institutional
D1—Internet access; D2—Expenses in R&D; D3—Participation of residents in the planning process.
E—Gastronomic Tourism **
E1—Relevance of the gastronomic tourism in the region of Algarve; E2—Sustainability of the catering industry; E3—Relevance of the catering industry on the employment; E4—Mediterranean diet; E5—Circular economy; E6—Effect of the gastronomic tourism on the quality of life of the local population.
F—Other Issues
F1—Destination demand; F2—On-going initiatives to increase the sustainability of the region of Algarve; F3—Acquisition and processing of data; F4—Sustainable development and improvement of competitiveness.

** Only in the questionnaire sent to AHISA associates.

AHETA has 177 associates, representing 411 hotels and tourist resorts, and AIHSA counts about 600 associates, distributed by hotels, restaurants, and bars throughout the Algarve.

The online questionnaire was disseminated electronically among their associates between September and November 2019. Eighty-eight responses were received, 45 and 43, respectively, from AHETA and AIHSA associates. These responses represent 46,535 beds, which correspond to 33% of the 141,000 officially classified beds in hotels and tourist resorts of the Algarve region.

Since the survey is anonymous and the questions about

1. the type and size of the company;
2. the professional category of the person who answered the questionnaire;

are not mandatory, it was decided to analyze the results of the survey carried out without evaluating the relationships between the type and size of the company but giving special attention to the relations between the type of activity of the companies and the answers related to the environmental, sociocultural, economic, and institutional domains.

3.3. Artificial Intelligence Analysis

For the analysis of the relationships between the size and type of the company with the answers given, a decision tree algorithm was used. Decision trees are a data-mining algorithm that develops classification models with an inverted tree scheme: the nodes are the variables, the lines are the values of each variable. Finally, the leaves are the output value (Figure 4).

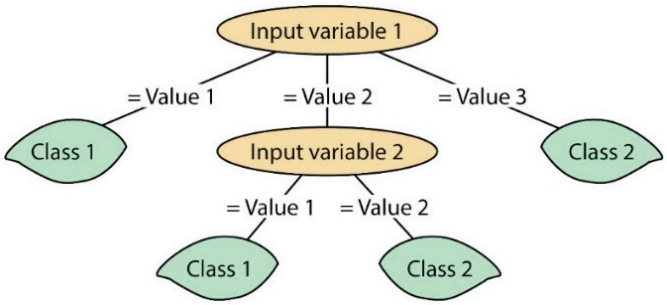

Figure 4. Sketch of the decision tree algorithm C4.5 model.

Thus, they allow determining the system's response following the rules that are followed from the nodes to one of its leaves. Decision trees divide the dataset into subsets until the structure of the model is determined.

In the family of decision's trees, two algorithms mainly stand out: ID3 and C4.5. The ID3 algorithm was the first one designed by Quinlan [64] and allows decision trees to be developed through a training sample. The development of the ID3 algorithm is found in algorithm C4.5, published by Quinlan [65]. These algorithms determine the best variable at each step using the concept of information gain of Claude Shannon [66]. For this, it is essential to first determine the entropy, which determines the degree of uncertainty of the sample. The probabilities of each value of the classification variable are used to calculate the entropy:

$$E(S) = -\sum_{i=1}^{c} p_i log_2(p_i) \quad (1)$$

where c is the number of values of the classification variable, and p_i is the probability that the set of samples belongs to i-value of the classification variable. If the sample is homogeneous, that is, all the values belong to the same class, the entropy is null, while if the sample is proportional, the entropy is maximum.

The information gain $IG(S, A)$ is based on the decrease in entropy caused by participating in a training set S, concerning an attribute A (Equation (2)). Thus, the algorithm constructs the model looking for those attributes that return the highest possible information gain:

$$IG(S, A) = E(S) - \sum_{v \in V(A)}^{c} \frac{S_v}{S} E(S_v) \quad (2)$$

where S_v is the subset of the set of samples with those instances that in attribute A have the value v, and $V(A)$ is the set of values of attribute A.

Traditionally, it is the most widely used supervised inductive learning classification technique used in the decision-making process and has the advantage that the connections between nodes can be expressed at the computational level as if-then rules, which facilitates their programming in different programming languages [69]. Due to this aspect, it is possible to establish the relationships between the input and output variables that best

group the data set. Thus, for the purposes of this research, individual models were developed for each of the output variables using the size and type of company as input variables. The models were developed without establishing specifications for tree size and pruning so that the relationships between the input values can be established to better group the responses given by the respondents. This aspect allowed establishing patterns of similarity in the answers given by the respondents. Likewise, a true positive (*TP*) ratio (Equation (3)) and a false positive (*FP*) ratio (Equation (4)) were used to evaluate the quality of the obtained models. Such parameters were used to determine the validity of the relationships established with C4.5. Therefore, high values of a *TP* ratio (close to 1) indicate a pattern between the input variables and the response. In contrast, low values indicate a lack of relationship between the size and type of company and the given response.

$$TP = \frac{Instances\ correctly\ classified}{Total\ number\ of\ instances} \tag{3}$$

$$FP = \frac{Instances\ incorrectly\ classified}{Total\ number\ of\ instances} \tag{4}$$

4. Results

Figures 5 and 6 present the histograms, for all the 35 questions, obtained during the survey for AHETA (blue) and AIHSA (red), respectively. In most questions, the results are quite similar.

Analyzing the histograms and considering the situation in which there are dissimilarities in the most voted option, the differences are presented in Table 2.

Table 2. Main dissimilarities between AHISA and AHETA answers.

A—Environmental Domain
A2—Energy: A2.1—The energy dependency of the Algarve may compromise in the future the competitively of the touristic sector AHETA—agree; AHISA—neutral
B—Sociocultural Domain
B4—Vocational development and training: B4.2—The professionals in the touristic activities are valorized and keep working in the same sector AHETA—disagree; AHISA—neutral
D—Institutional Domain
D2.1—The investment in I&D in the Algarve boosts the competitiveness of the companies AHETA—agree; AHISA—neutral
F—Other Issues
F1—Destination demand: Sort by the degree of importance the themes that lead tourists to choose the Algarve as their destination F1.2—Gastronomy AHETA—fairly important; AHISA—important F1.6—Nature AHETA—fairly important; AHISA—important

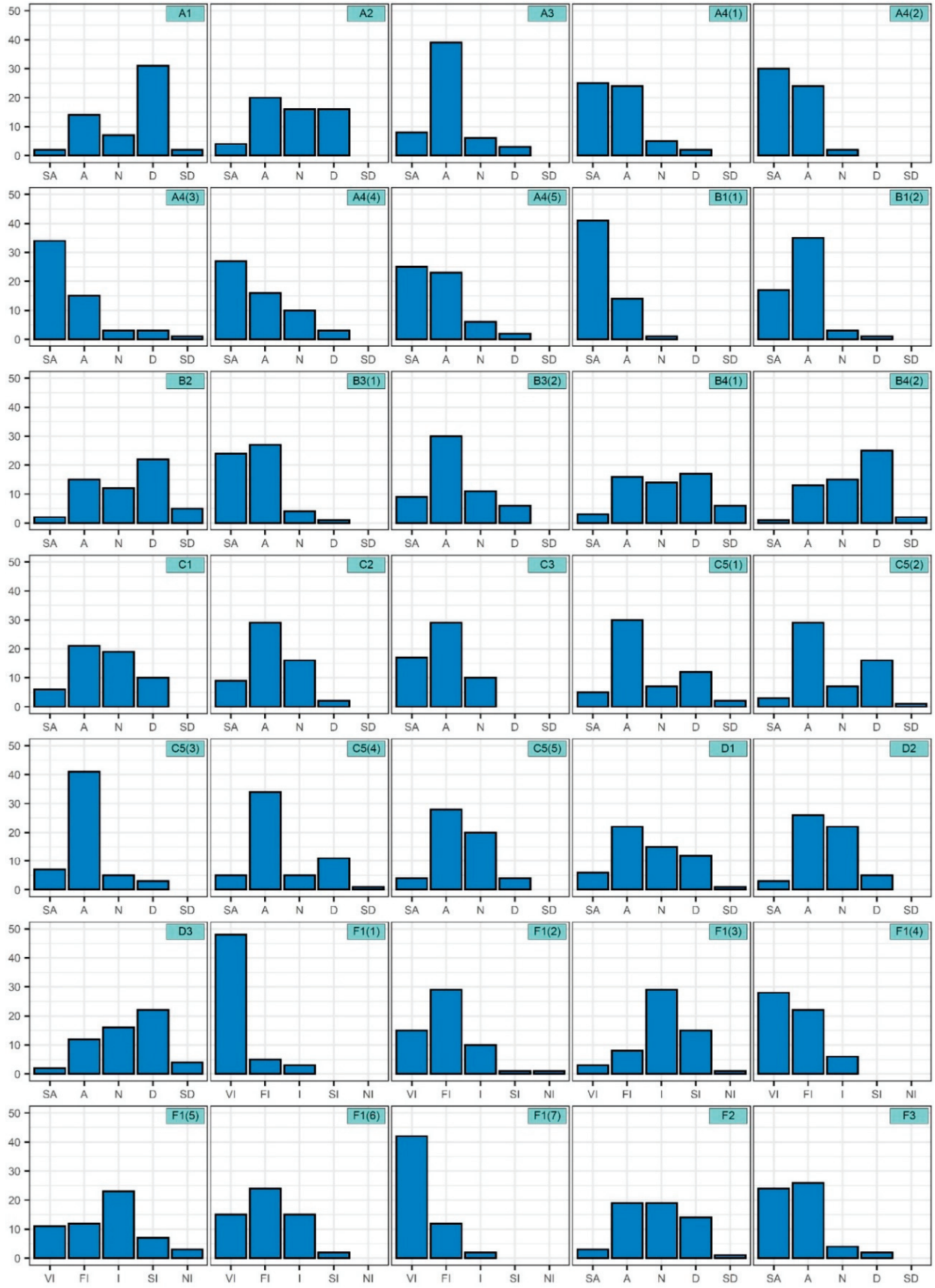

Figure 5. Histograms with the answers of the AHETA questionnaire.

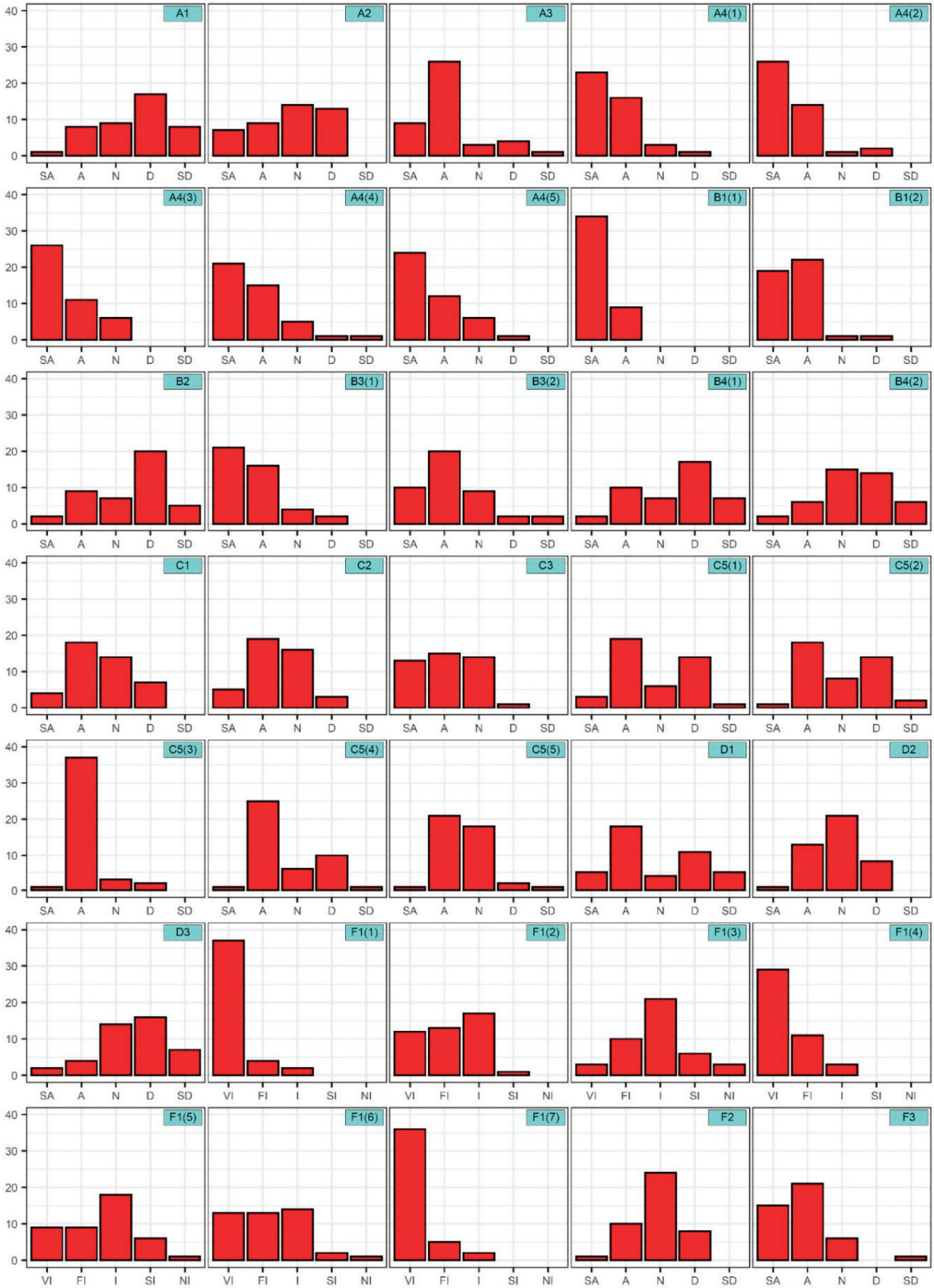

Figure 6. Histograms with the answers of the AIHSA questionnaire.

Although the answers are not exactly the same, there is no diverging position in any of the domains. For example, for A1—Water question: The long-term water supply is assured, and the normal development of the touristic activity will not be affected by water scarcity, the most chosen option was the disagreement, meaning that stakeholders consider that the long-term water supply in the region is not protected and could affect tourism activity.

Once the results of the histograms were analyzed, algorithm C4.5 was applied to the data obtained from the survey. The analysis was carried out merging data for the AIHSA and AHETA surveys. In each of these data sets, independent models were designed for each of the 35 indicators evaluated in the survey (Appendix A, Table A1) and the size and type of companies were used as input variables. Therefore, 105 analyses were carried out. Figure 7 shows an example of the models obtained for indicator A1—Water: The long-term water supply is assured, and the normal development of the touristic activity will not be affected by water scarcity and Table 3 shows the *TP* and *FP* ratios.

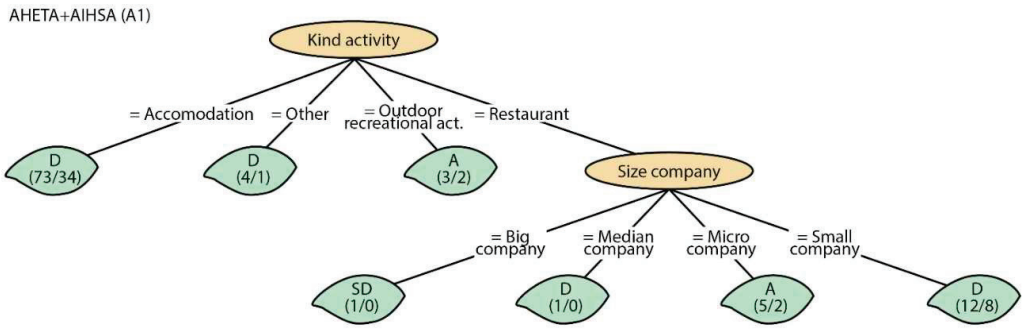

Figure 7. Sketch of the model obtained for answer A1—Water.

Table 3. *TP* and *FP* results obtained in each variable for answer A1—Water.

Variable	*TP* [%]	*FP* [%]	Variable	*TP* [%]	*FP* [%]
A1	52.5	47.5	C5 (1)	52.5	47.5
A2	41.4	58.6	C5 (2)	51.5	48.5
A3	66.7	33.3	C5 (3)	78.8	21.2
A4 (1)	56.6	43.4	C5 (4)	60.6	39.4
A4 (2)	64.6	35.4	C5 (5)	57.6	42.4
A4 (3)	63.6	36.4	D1 (1)	45.5	54.5
A4 (4)	52.5	47.5	D2	54.5	45.5
A4 (5)	57.6	42.4	D3	49.5	50.5
B1 (1)	76.8	23.2	F1 (1)	85.9	14.1
B1 (2)	61.6	38.4	F1 (2)	49.5	50.5
B2	44.4	55.6	F1 (3)	57.6	42.4
B3 (1)	54.5	45.5	F1 (4)	63.6	36.4
B3 (2)	51.5	48.5	F1 (5)	44.4	55.6
B4 (1)	42.4	57.6	F1 (6)	48.5	51.5
B4 (2)	43.4	56.6	F1 (7)	80.8	19.2
C1	43.4	56.6	F2	53.5	46.5
C2	50.5	49.5	F3	56.6	43.4
C3	54.5	45.5			

As can be seen with the results of the statistical parameters, the *TP* presents two behaviors depending on the indicator: (i) one of the groups of indicators presented a *TP* ratio of less than 55% and (ii) other indicators presented a higher *TP* ratio (greater than 60%).

As indicated in Section 3.3, a lower *TP* ratio is an indicator of lower robustness of the relationships created with the algorithm, and for the purposes of this study, is an indicator of the disparity of responses given by the stakeholders based on the input variables (i.e., companies of the same type and size give different answers). Thus, for most indicators: A1, A2, A4 (1), A4 (4), A4 (5), B2, B3 (1), B3 (2), B4 (1), B4 (2), C1, C2, C3, C5 (1), C5 (2), C5

(5), D1, D2, D3, F1 (2), F1 (3), F1 (5), F1 (6), F2, and F3 do not have robust relationships between the companies and the responses. This aspect may suggest the influence it has on the answer given the beliefs and customs of the respondent.

Therefore, stakeholders that are more aware of sustainable water management may disagree with current management, while the less aware person may have different perceptions. In this sense, and as can be seen in Figure 7, most of the classifications made by the C4.5 models have a disagreement response, although in all cases, incorrectly classified instances are detected (e.g., in the case of accommodations, 46.57% of companies have other response).

However, some relationships could be detected. For example, in the case of environmental indicators, the type of company was detected as the main classification variable, while the size of the company is used by the algorithm as a secondary variable to make classifications.

In indicator A1—Water, it has been detected how the type of activity allows classifications of the most common response detected, except in the case of restaurants where it is necessary to make a distinction based on the size of the company. A similar trend is identified in the case of indicator A2—Energy: The energy dependency of the Algarve may compromise in the future touristic sector competitiveness, although a distinction is made based on the size of the accommodation. At this point, it is convenient to highlight that the medium-sized accommodations disagreed with question A2, while the rest of the accommodations agreed. Something similar occurs for indicator A2 with the restaurant's stakeholders, since those of large- and micro-sized selected the neutral response, while medium and small companies disagreed.

Therefore, it was not possible to establish trends in the responses based on the size of the stakeholders' accommodation or restaurants. In indicator A4 (1)—Mobility: The mobility infrastructure limits the touristic development, the flatness of the response detected in the histograms towards a firm agreement with the question generated that the ramifications generated by the model had a homogeneous response, although it is interesting to note how the other recreational activities surveyed selected the option "Neutral". Something similar occurs with indicators:

- A4 (4)—Mobility: The lack of information and an efficient payment system for the A22 tolls has an effect on the tourist's entrance by the border of Vila Real de Santo António;
- A4 (5)—Mobility: The increase in the number of bike lanes and pedestrian zones contributes to the touristic development of the region in which there is a majority response of "Agreement" or "Strongly agree", except in the large- or medium-sized restaurants that responded differently.

In the case of sociocultural indicators with a lower *TP*, it was detected as the first input variable that allows classifications to be made is the size of the company and depending on the analyzed indicator, it is possible to establish ramifications in each of the labels of company size. Thus, it is detected how the assessment of the sociocultural dimension of the region by companies tends to present trends more related to the size of the company than to the type of activity.

By analyzing the indicators individually, it was detected, in B2—Health: The existing health care infrastructure (private and public) is adequate and does not affect the choice of the Algarve negatively as a touristic destination that recreational activities responded differently to the most common response given by other activities, selecting "Strongly agree" or "Agree" while in the rest the most common response was "Disagree". This reflects how different stakeholders value in different way facilities in the region.

In the case of indicator B4 (1)—Vocational development and training: The vocational training infrastructures for the touristic sector are adequate, it was detected that the most general response due to the size of the company did not present a clear trend, in such a way that large and micro-companies answered "Disagree" and small companies answered, "Agree".

Likewise, in the case of medium-sized companies, distinctions are made according to the type of company in such a way that the hotels and restaurants' stakeholders responded in disagreement while the other activities agreed. This analysis reflects the difficulties in establishing logical relationships of size and type of company with the answers given, although, in general terms, it was detected how the size of the company has a greater influence on the responses of the stakeholders.

In the case of economic indicators (C), it was identified that the importance of the size or type of company varies depending on the variable. In such a way, that for indicators:

- *C1—Formalities for incoming tourists: C1.1—The formalities for the incoming tourists from outside of the space Schengen may limit the economic attractiveness of the Algarve destination;*
- *C5—Supply chain: There are in the Algarve suppliers able to respond to the demand of the touristic activity, namely in the field of, C5.1—Building construction, maintenance and rehabilitation, and C5.2—Equipment supply, maintenance and repair.*

The size of the company has a greater relationship with the answers given by the companies, while in the other economic indicators, it is the type of company. This same aspect was detected in the indicator F—Other issues in which the indicators F1—Other issues: Destination demand: Sort by the degree of importance the themes that lead tourists to choose the Algarve as their destination (4) Safety and (5) Health care, are better classified by company size, while the rest are classified using the type of company. Finally, the institutional domain indicators (D) show that the variable that best classifies is the type of activity.

5. Discussion and Research Limitations

To identify a common vision, the similarities and the relation of true positive (TP) were used. The indicators with a high TP ratio are due to a homogeneous and very similar response given by the different stakeholders. In this sense, in the case of indicator A3—Natural resources and biodiversity: The actions for the preservation of the biodiversity and natural resources contribute to the development of the touristic activity, most companies respond to the option of agreement. Thus, the high TP value shows a homogeneous trend in the response given by stakeholders. In any case, the performance results obtained by the C4.5 models show that establishing relationships between the size and type of company with the answers given in the surveys do not allow establishing solid relationships. In this sense, it is possible to conclude that there are aspects related to the customs and beliefs of the respondents, which may influence the responses.

Therefore, conducting surveys of different workers and managers of the same company could give different answers, which would lead to great heterogeneity in the perception of the importance of the different indicators analyzed. New interesting research steps could be geared towards asking respondents more questions about their beliefs and customs.

It should be noted that from the analysis of the histograms and the relationships established by C4.5, it has been detected that there are certain similarities between the answers given by the accommodations and restaurants stakeholders and with difficulties in establishing relationships due to their characteristics. In order to know this aspect better, it was decided to carry out cluster analyses between the lodging and catering companies. The analyses were carried out by examining the responses considered in each of the domain (A—Environmental, B—Sociocultural, C—Economic, D—Institutional, and F—Other issues). Figure 8 illustrates the dendrogram of environmental indicators. By analyzing all the dendrograms obtained, there are two main trends:

- The dendrograms of the A—Environmental, B—Sociocultural, C—Economic and F—Other issue domain showed different trends in the similarity between companies. In this sense, the dendrograms obtained companies of different types and sizes that were similar to different companies (e.g., the similarity between medium accommodation and a small restaurant);

- The Institutional domain (D) dendrogram shows a more ordered structure. This aspect allows us to more clearly detect the similarities between companies of different types that have been observed in the other domains.

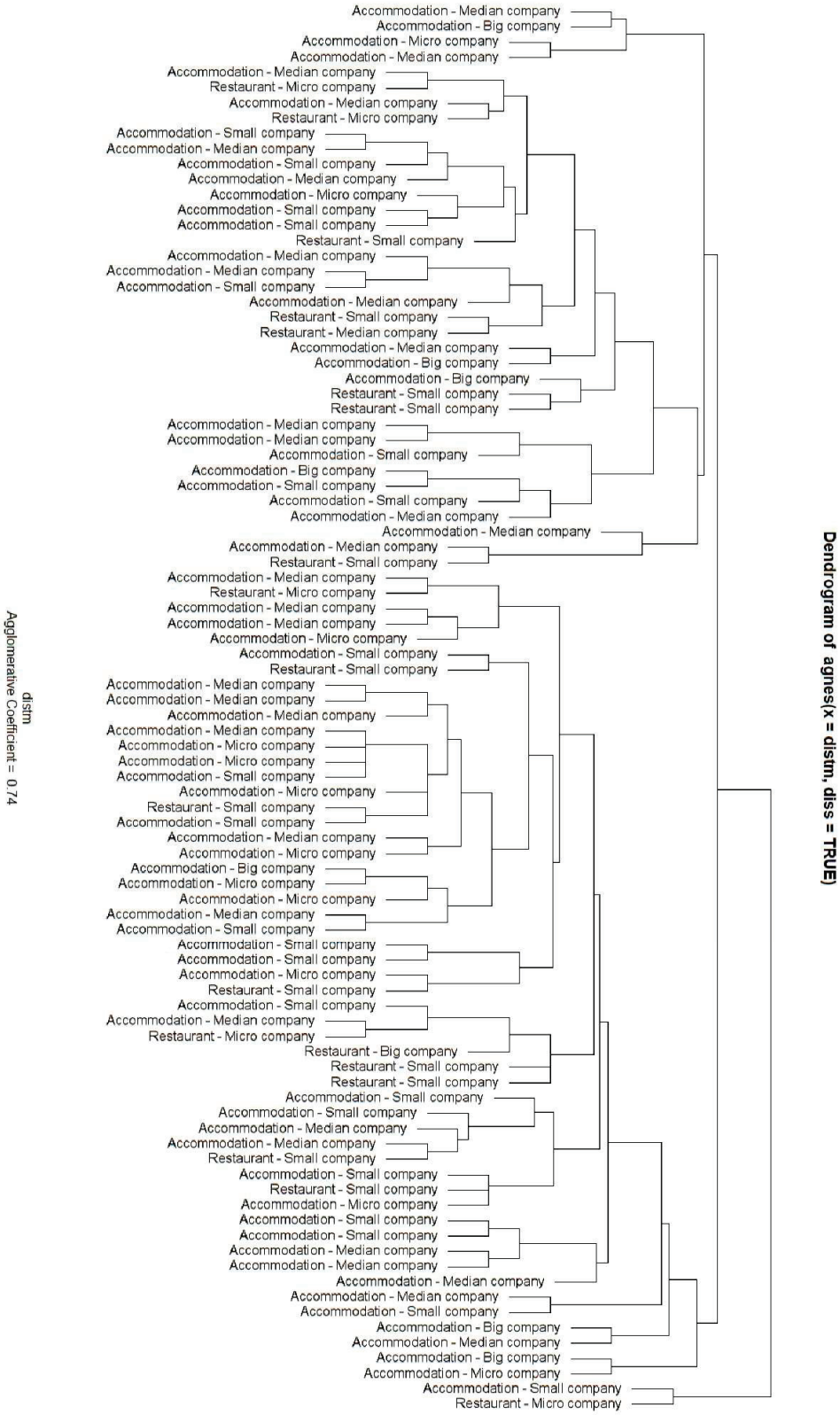

Figure 8. Dendrogram of environmental indicators.

Therefore, the relationships established between the stakeholders are quite similar in the domains analyzed. In this sense, groupings between activities of the same type, but with different sizes (e.g., large and small accommodations), as well as groupings between accommodation and restaurants of different sizes (e.g., similarities between large and small restaurants).

It is possible to conclude that stakeholders with the same characteristics have a great similarity. This aspect corroborates what was detected with the histogram and C4.5 analyses and shows the heterogeneity of the responses given between companies with the same characteristics and as, between accommodations and restaurants, there are similarities without a clear relationship with the size of the company.

The results show that the relationships established between the Algarve stakeholders are similar in most of the sustainability domains. Furthermore, assessing if these similarities will be the same with different characteristics, two analysis were conducted:

- For the same type, with different sizes (e.g., large and small accommodations);
- Between accommodation and restaurants of different sizes (e.g., similarities between large and small restaurants).

It was also identified that the stakeholders' group with the same characteristics have a great similarity, i.e., there are similarities without a clear relationship with the size of the company. The results highlight a convergent view in most sustainability challenges, like, natural resources and biodiversity, safety, and supply chain.

Nevertheless, when compared with restaurants and other services, it is not considered as a shared view: the formalities for incoming tourists (C1); e-tourism (C2); internet access (D1); sustainability initiatives (F2), and the importance of information (F3).

The limitations are mainly associated with the responses obtained since they represent a third of the 141,000 officially classified beds in hotels and tourist resorts of the Algarve region. In addition to this one, the relationship between the type and size of the company can be pointed out, as well as the relationship between the type of activity of the companies and the answers related to the environmental, sociocultural, economic, and institutional domains. These aspects were already discussed.

Likewise, it is to be expected that the role of the people surveyed may lead to variations in the responses. Thus, employers may have different perceptions than workers. This aspect can have a great impact on the sustainability perceptions of the sector.

In addition, it is convenient to highlight the advantages associated with the data analysis approach used. This type of analysis can establish relationships between the variables analyzed, establishing the routes or paths detected in the data. However, outliers may influence the results. The use of a data set with a larger number of individuals or with more variables could improve the establishment of relationships. This could improve the values associated with TP and FP obtained in the study.

In any case, the results of the study have made it possible to detect relationships between the variables that make it possible to improve the existing knowledge about the perception of sustainability.

6. Conclusions and Further Research Paths

In the Algarve region, economic activity is mainly driven by the tourism sector. Due to its importance and in line with the defined strategy, it is essential to know the perceptions of the interesting parts of the region in relation to how they value sustainability dimensions of the region, such as environmental, sociocultural, economic, or institutional aspects.

The review highlights the importance of stakeholders' perceptions to have a shared vision to assume good governance in search of sustainable tourism in the region of Algarve, beginning with the supply side, where hotels (Algarve has 31% of the Portuguese hotels' beds) could be a critical point. A common vision of problems and priorities on sustainable tourism development will allow the promotion of the region's competitiveness respecting the natural environment with the balance of economics and local social development.

A survey for the supply side of the tourism sector, with a specific artificial intelligence algorithm, analyze if hotels and restaurants have a common or different perspective depending on the type of activity, size, category, and other key factors. The hotel's answers correspond to 33% of Algarve's beds, involving large to small lodgings.

The results concluded that, in general, there is a broad consensus, e.g., importance of natural resources and biodiversity, safety, and supply chain. It was also possible to verify a great agreement with the different questions asked, although, in some aspects, such as the importance of energy and water, there is no such marked trend in the importance of these aspects.

With the engagement of the most important companies in the tourism sector of Algarve—accommodations and restaurants, it was observed that the valuations of the interested parties are varied, and there are no clear relationships between the type and size of the company with the responses.

Thus, there are similarities in the perception of sustainability in the region between companies as different as large accommodation and small restaurants. This aspect may indicate the importance of the customs and beliefs of all interested parties in the assessment of the importance of sustainability in the tourism sector. Still, a clear relationship with the type of company was not found.

One fundamental aspect of these results is the need to improve and protect the vulnerability that the tourism sector may have in the face of the different dimensions analyzed. Enhancing the competitiveness of the tourism sector in each country is to improve the sustainable growth of the respective economy and, ultimately, enhance citizens' prosperity.

There is a need for alignment on infrastructure investment, natural resources safety, and mobility for the sustainable competitiveness of the sector. The tourism industry has taken active steps to reduce its impact on the environment and continue to do so while implementing better measurement tools.

The implications for research are that the trend of a shared vision in several aspects begin to exist in local suppliers (hotel and restaurants) and must be used to leverage a higher level of sustainability and resilience. The results are in line with Alonso-Almeida [70] that the awareness of environmental aspects and positive economic and practices in hotels could be seen as evidence of the maturity of sustainable tourism.

The results open the possibility for developing a more collaborative action plan and program, aiming to a higher level of sustainability. Therefore, it is essential to expand the analysis to other local stakeholders to ensure a more sustainable local base tourism destination with increased value, innovation, and regional development.

In further studies, it would be interesting to compare hotels from different categories, which would lead to even more specific recommendation destinations [70] and spread to other services. At a more strategic level analyzing if collaborative and associative forms of governance among tourism companies and other related agents are growing in importance in the drive for sustainable and environmentally sensitive tourism [71], namely, in Algarve.

COVID-19 brought the enormous problem of resilience to infectious outbreaks and its tremendous consequence to which the tourism sector cannot be indifferent and must immediately anticipate solutions. Potential measures as, for example, tourism density adjustments could allow a transition to more sustainable tourism. Innovation is an important base for tourism and hospitality [72]. The search for innovative solutions to challenging problems is essential, including better integration of information technology, since the importance of the emergence of information technologies (IT) for sustainable tourism is increasing [71], as well as to assure climate resilience, are indubitable contemporary drivers of sustainable development [73].

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Appendix A

Table A1. Online questionnaire disseminated electronically by the associates of AHISA and AHETA from September to November 2019.

Question	Response Options
Company Identification	
Entity/Group name:	ST
Area of activity: *	Hotel/Restaurant or bar/Outdoor activities/Other
If the previous answer is other, please specify:	ST
Company size: *	Big (n > 250 employees) Medium (50 < n < 250 employees) Small (10 < n < 50) Micro (n < 10)
Position:	ST
E-mail:	ST
A—Environmental Domain	
A1—Water: A1.1—The long-term water supply is assured and the normal development of the touristic activity will not be affected by water scarcity. *	SA/A/N/D/SD
A2—Energy: A2.2—The energy dependency of the Algarve may compromise in the future the competitively of the touristic sector. *	SA/A/N/D/SD
A2.2.1—If the previous response is positive, please identify the issues.	
A3—Natural resources and biodiversity: A3.3—The actions for the preservation of the biodiversity and natural resources contribute to the development of the touristic activity. *	SA/A/N/D/SD
A4—Mobility: A4.1—The mobility infrastructure limits the touristic development. *	SA/A/N/D/SD
A4.2—During the summer season, the mobility infrastructure affects negatively the tourist satisfaction. *	SA/A/N/D/SD
A4.3—The existence of an efficient railway infrastructure would contribute positively to the competitiveness of the region. *	SA/A/N/D/SD
A4.4—The lack of information and an efficient payment system for the A22 tolls has effect on the tourist entrance by the border of Vila Real de Santo António. *	SA/A/N/D/SD
A4.5—The increase in the number of bike lanes and pedestrian zones contributes for the touristic development of the region. *	SA/A/N/D/SD

Table A1. *Cont.*

Question	Response Options
B—Sociocultural Domain	
B1—Safety:	
B1.1—The safety is important in the choice of the Algarve destination. *	SA/A/N/D/SD
B1.2—The perception of the safety by the tourists is positive. *	SA/A/N/D/SD
B2—Health care:	
B2.1—The existing health care infrastructure (private and public) is adequate and does not affect negatively the choice of the Algarve as a touristic destination. *	SA/A/N/D/SD
B3—Creative and cultural resources:	
B3.1—The cultural and creative resources in the region must be improved and preserved in order to attract more and new tourists. *	SA/A/N/D/SD
B3.2—The tourism has been contributing to the preservation of the identity, culture and heritage of the Algarve. *	SA/A/N/D/SD
B4—Vocational development and training:	
B4.1—The vocational training infrastructures for the touristic sector are adequate. *	SA/A/N/D/SD
B4.2—The professionals in the touristic activities are valorized and keep working in the same sector. *	SA/A/N/D/SD
C—Economic Domain	
C1—Formalities for incoming tourists:	
C1.1—The formalities for the incoming tourists from outside of the space Schengen may limit the economic attractiveness of the Algarve destination. *	SA/A/N/D/SD
C2—E-tourism:	
C2.1—The region is preparing a progressive and continuous digital transition (Apps, Mupis, services, and points of interest in digital platforms). *	SA/A/N/D/SD
C3—Diversification of the markets and emerging markets:	
C3.1—There are emerging markets where it is necessary to promote more efficiently the Algarve destination. *	SA/A/N/D/SD
C3.1.1—If the previous response is positive, please identify the issues.	ST
C4—Seasonality:	
C4.1—Identify the opportunities that the region may develop to mitigate the seasonality.	LT
C5—Supply chain: There are in the Algarve suppliers able to respond to the demand of the touristic activity, namely in the field of	
C5.1—Building construction, maintenance, and rehabilitation. *	SA/A/N/D/SD
C5.2—Equipment supply, maintenance and repair. *	SA/A/N/D/SD
C5.3—Food supply. *	SA/A/N/D/SD
C5.4—Cleaning services. *	SA/A/N/D/SD
C5.5—Other consumables. *	SA/A/N/D/SD
D—Institutional Domain	
D1—Internet access:	
D1.1—The Wi-Fi and 4G coverage is efficient. *	SA/A/N/D/SD
D2—Expenses in I&D from institutions and companies:	
D2.1—The investment in R&D in the Algarve boosts the competitiveness of the companies. *	SA/A/N/D/SD
D3—Participation of the local population in the planning:	
D3.1—The local population is evolved and has effect, influence the tourism planning, and development. *	SA/A/N/D/SD

Table A1. *Cont.*

Question	Response Options
E—Gastronomic Tourism **	
E1—Relevance of the gastronomic tourism on the region of Algarve:	
E1.1—The gastronomic tourism is an attraction to visit the region of Algarve. *	SA/A/N/D/SD
E2—Sustainability of the catering industry:	
E2.1—The gastronomic tourism (catering) industry is sustainable. *	SA/A/N/D/SD
E3—Relevance of the catering industry on the employment in the region of Algarve:	
E3.1—The industry of catering promote the fixation of the employees and provide vocational training. *	SA/A/N/D/SD
E4—Mediterranean diet:	
E4.1—The Mediterranean diet is and attraction to visit the region of Algarve. *	SA/A/N/D/SD
E5—Circular economy:	
E5.1—The catering industry may be important to the development of the circular economy. *	SA/A/N/D/SD
E6—Effect of the gastronomic tourism on the quality of life of local population:	
E6.1—The industry of catering is oriented to local population (menus, price and attendance). *	SA/A/N/D/SD
F—Other Issues	
F1—Destination demand: Sort by degree of importance the themes that lead tourists to choose the Algarve as their destination	
F1.1—Beach. *	ER/VR/R/MR/NR
F1.2—Gastronomy. *	ER/VR/R/MR/NR
F1.3—Cultural programs. *	ER/VR/R/MR/NR
F1.4—Safety. *	ER/VR/R/MR/NR
F1.5—Health care. *	ER/VR/R/MR/NR
F1.6—Nature. *	ER/VR/R/MR/NR
F1.7—Climate. *	ER/VR/R/MR/NR
F2—On-going initiatives to increase the sustainability on the region of Algarve:	
F2.1—I know about the on-going initiatives to increase the sustainability in the region of Algarve. *	SA/A/N/D/SD
F3—Acquisition and processing of data:	
F3.1—Having information on the trends of various indicators and their temporal and spatial evolution can contribute to improving decision-making and competitiveness in the region. *	SA/A/N/D/SD
F4—Sustainable development and improvement of competitiveness:	
F4.1—List other issues to consider for the improvement of the competitiveness of the tourism sector and the sustainable development of the region.	LT

SA—Strongly agree; A—Agree; N—Neutral; D—Disagree; SD—Strongly disagree; ER—Extremely relevant; VR—Very relevant; R—Relevant; MR—Marginal relevance; NR—Not relevant; *n*—number of employees; LT—Long text; ST—Short text; * Mandatory question; ** Only in the questionnaire sent to AHISA associates.

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Managerial Competencies & Polish SMEs' Response to the COVID-19 Pandemic: An Insight

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Abstract: The COVID-19 pandemic and its implications have had a devastating impact on the business sector worldwide, especially on the SMEs' sector. By highlighting the evolution, and so the specificity, of the Polish SMEs' sector, by reference to the concept of learning organization, this paper queried the sources of the Polish SMEs' unsatisfactory response to the COVID-19 pandemic and its implications. A survey (n = 147) conducted among a sample of Polish SMEs revealed that the Polish SMEs, in general, did not recognize the salience of managerial skills in building their capacity to withstand a crisis. Creating growth opportunities, rather than accumulating and operationalizing their organization's knowledge, were stressed as the way of navigating challenges. This paper offers an insight into selected factors that influenced Polish SMEs' sector during the COVID-19 pandemic, and suggests some ways of addressing problems thus identified.

Keywords: COVID-19; SMEs; Poland; crisis; learning organization; resilience

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1. Introduction

The COVID-19 pandemic and its implications in the form of restrictions on mobility, negative psychology of the market, decreased and, eventually, changed structure of demand for goods and services, domestically and internationally, have had a devastating impact on the business sector worldwide. The small and medium-sized enterprises (SMEs) represent a very interesting case in this context, in that, traditionally, the size and thus the assumed flexibility were frequently hailed in the literature as the SMEs' sector secret tool to withstand crises [1,2]. More recent research, however, tends to stress different factors, such as strategic flexibility, business model innovation (BMI), agile leadership, as the sources of SMEs' capacity to effectively respond to crises [3–5]. This paper seeks to make sense of the broad debate on SMEs and their capacity to withstand crises by querying the specific case of Polish SMEs and their response to the COVID-19 pandemic and its implications. Drawing from the outcomes of a series of interviews and a questionnaire, this this paper offers an insight into the specific factors that may have influenced the Polish SMEs' ability to respond to challenges inflicted in their external environment by the outbreak of the COVID-19 pandemic.

Research reported and elaborated on in this paper builds on the recognition that the Polish SMEs' sector reveals a unique trajectory of growth and development, in part reflecting the specificity of Polish transition and transformation that begun in the early 1990s. In other words, the growth of the SMEs sector was rapid, steered simultaneously by bottom-up and top-down processes, geared by the imperative to deliver goods and service, offer employment and generate revenue. The spectacular growth of the sector throughout the 1990s (and to some extent afterwards) reflected on the one hand, the spirit of the day, i.e., the joy of freedom regained and the return of *homo entrepreneurus*, and on the other

hand, a period of unprecedented growth and development that Poland experienced over the period 1989–2019. In these circumstances, the priorities and, thus strategies that the SMEs followed were focused on product and service delivery, rather than on managerial competencies acquisition. The COVID-19 pandemic and the sector's inability to embark on efficient risk management strategies, understood through the terms of resilience and antifragility [1,2], blatantly revealed it. The objective of this paper is to identify factors that may have led to the Polish SMEs' sector relative inability to respond to the crisis situation efficiently. The reminder of the paper structured as follows. The following section outlines the conceptual framework of this study, i.e., the concept of learning organization. In the next step, the specificity of the Polish SMEs' sector is discussed. In Section 4 the research model, research methodology and materials are elaborated. Discussion and conclusions follow in Sections 5 and 6.

2. Learning Organization as the Conceptual Framework of This Study: Highlights and Controversies

The definitional and conceptual framework of this study brings together two issues, i.e., on the one hand, SMEs and the "learning organization" (LO) approach. A case is that made by the LO approach allow a more precise insight into developments taking place within organizations, especially should they be exposed to challenges in their external environment. "Learning organization" [4–6] is an organization that continually expands possibilities of creating its future, strives for excellence, adapts to changing conditions, and ensures members' constant improvement by acquiring new skills, opportunities, and performance patterns. For the discussion in this paper, SMEs focused on development through permanent learning and adaptation to changing and relatively risky conditions of the Polish economy will be viewed as learning organizations.

The essence of Senge's theory of a learning organization is the organization's ability to learn—regardless of challenging developments in the organization's environment—due to the improvement and acquisition of new competencies by the managerial staff at all levels of the organization. What follows is that not only must managers across an organizations' levels have knowledge and skills, but also, they must be able to continuously improve the set of knowledge and skills, preferably faster and more effectively than their competitors [7–9].

Hence, on what "critical points" in the organizational structure should that knowledge be accumulated? The first organization's "critical point" is the chief manager (in the case of Polish small and medium-sized enterprises usually their owner), who, apart from the vision of development and knowledge of market conditions, should have formal competencies documented with university and course diplomas and show flexibility in action. Besides, he/she must be perceived as a planner, organizer, leader, controller, trainer motivating development, and an administrator enabling the team to function efficiently. Motivation understood from the perspective of Halzberg's two-factor theory [10], created by motivators and hygiene factors, is crucial. In the light of the theory, not only wage and non-wage motivators influence the tendency to improve qualifications but also the so-called organizational climate associated with the manager's authority, a sense of community and organizational identity, as well as proper team relationships.

Personal mastery, i.e., a commitment to lifelong learning for the benefit of the organization, is essential for analyzing the factors determining the success of Polish small and medium-sized enterprises. It has a reproductive function, i.e., it allows the knowledge of an experienced manager to be transferred to lower management levels. The formal and charismatic manager's authority correlates with the thought/mental model, i.e., with the process of self-reflection on one's own identity and identification with the organization. It fits in with personal mastery and paves the way for subordinates to build their multi-directional self-identification with the organization. That allows creating a shared vision and team thinking built on the community's pillars, cooperation, collectivism in action, and the organization's future. Thereby, the most critical matter is revealed, namely systemic

thinking, allowing activating the implementation of the learning organization, integrating the team, and avoiding blaming for failures.

The subsequent addition to the debate on LO highlights eleven features that determine the transformation of an "ordinary" organization into a LO [11]. These features include: a learning-based approach to the company's strategy, participation in shaping the company's policy, universality and availability of information, educational accounting and control function, internal exchange, flexible and creative rewarding, structuring, environmental monitoring, inter-organizational cooperation, learning-friendly atmosphere, and creating development opportunities [11]. The variables mentioned above are framed by double loops operating in four areas determined by the dimensions of individual and team learning and vision and action. They form a matrix composed of ideas, organizational policies, functions, and operational activities [11].

The concept of LO is controversial among some researchers [12–15]. Doubts concern primarily the subject (an individual, group, or organization understood as a system) of learning and the nature of its environment, its stability, or level of variability [12]. Ambient dualism can have either positive or negative consequences. On the one hand, the environment's volatility may have a function that stimulates changes, searching for new solutions, and increasing its efficiency. On the other hand, the excessive complexity and dynamics of changes in the environment may lead to misinterpretation and evaluation of processes and phenomena occurring in it, thus leading to wrong decisions [13]. Therefore, an essential element of the organization's vision is the full and optimal use of periods of environmental stability, thanks to which the so-called "organizational memory," understood as a way to accumulate and redistribute knowledge within an organization, is built, usually with the support of information technology [13]. Moreover, the period of the environment's stability is the time of establishing the company's brand, learning based on experience, and "reflective practice" [14]. Experience and reflective practice, or 'experiential learning' is primarily related to the previously mentioned personal mastery. The common denominator is created by the manager's intuition, whose role is to set staff improvement directions. It can happen in two ways. The first one is to simplify the chain of events and phenomena in the organization's environment. The other one, promoting specialization, focuses on all-level managers' specific, narrow competencies [15].

3. The Specificity of the SMEs' Sector in Poland

3.1. General Issues

The following definition and typology of SMEs was adopted in this study. Small enterprises are companies with less than 50 employees and an annual turnover or balance sheet total not exceeding EUR 10 million. Medium-sized enterprises employ no more than 250 employees and have an annual turnover or total balance sheet not more than EUR 50 million.

SMEs, due to their size, their assumed ability of swift response to changes taking places in their external environment, and perhaps most importantly due to their high demography's dynamics, tend to represent the most dynamic part of any given economy [16–20]. This is also the case of Poland. Over the 1989–2019, the SMEs' sector, slowly but increasingly, contributed to the GDP formation by means of creating new jobs, productivity increases, investment outlays, and economic development [21,22]. For instance, in 2014 the SMEs' sector share in GDP was 16% [23]. Even before the outbreak of the COVID-19 pandemic, the Polish SMEs' sector, as compared to other EU member-states, would not outperform, yet would not be considered a laggard. The secondary implications of the global financial crisis, and the resulting liquidity squeeze, further exacerbated by Poland remaining outside the euro area, gradually undermined SMEs access to capital. Indeed, the decomposition of the value added growth suggests that growth in the Polish SMEs was driven mainly by productivity increases (2%), rather than by capital (1.4%) [3]. Overall, however, by 2018, the Polish SMEs sector would record a 5 -year survival rate of nearly 40%, i.e., was just below the EU average [24]. The outbreak of the COVID-19

pandemic marks a watershed for the Polish SMEs' sector even if it would be too early to gauge if the culprit is only the COVID-19 pandemic. In other words, other factors at play in the SMEs' operating environment, may have played an equally important role.

From a different perspective, a quality that characterizes SMEs in Poland is their relative economic and legal autonomy and independence from large corporations. This has clearly to do with transparency and the effectiveness of competition policy. Their other feature is operating in a relatively turbulent and risky legal and economic environment (related to the instability of legal regulations and fluctuations in the Polish currency). Regardless of those factors, extraordinary freedom of action, high flexibility in adapting to market conditions, quick and simplified decision-making, stubbornness, and consistency in achieving the intended goals on the part of managers, most frequently the business owners, characterize the companies [23].

The analysis of conceptual approaches to managerial competencies in a learning organization forces the reflection on the nature of Polish SMEs operating in a changing and risky economic and legal environment and in a specific socio-cultural environment. The evolution of the sector is associated with two turning points in Poland's recent economic history. The first one is related to the twin processes of transition and transformation that begun in 1989 [24–27], while the second concerns Poland's accession to the European Union (EU) in 2004. The development of the SMEs sector, the number of which increased from 494,000 in 1991 to over 3.3 million in 2001, with an average share in the economic turnover at the level of 99.54%, became the alternative for the Polish economy [28–30]. Notably, not all SMEs that were established were successful. For example, in 2000, only 55.5% of the 1.76 million registered enterprises participated in Poland's economic turnover. A very similar percentage was recorded in 2001 when 49.4% (1.69 million) out of the total of 3.35 million enterprises were inactive [31].

Since Poland's accession to the EU, the number of active SMEs increased from 1.71 million in 2004 to 1.84 million in 2014. Noteworthily, micro-enterprises dominated the sector. Four significant changes in SMEs' demographics were recorded over the period 2005–2014, namely a decrease to 1.67 million in 2005, an increase to 1.85 million in 2008, another to 1.72 million in 2010, and an increase to the level of 1.84 million in 2014 [32]. Those changes resulted from the natural business cycles on the Polish market, and in 2010 also from the long-term effects of the global economic crisis. From 2014, there was an upward trend, which in 2017 reached the level of 2.08 million enterprises, including micro—2.0 million, small—53.8 thousand, medium—15.3 thousand, and large companies—3.6 thousand. In the year under review, the share of small and medium-sized enterprises in generating GDP was on the average level of 48% of the entire enterprise sector and gave 3.96 million jobs (57.5%), including the service sector—37% of the labor market [33,34]. It should be stressed that small enterprises had the lowest (3%) share in shaping GDP and 12.2% one in the labor market of the entire SMEs' sector.

Moreover, Polish SMEs featured a low investment ratio, e.g., in 2017 it amounted to approximately 9% of the total investment of the private enterprise sector, as well as low innovative activity, i.e., both in the group of industrial (12.5%) and service companies (8.3%). Medium-sized enterprises, which recorded 0.7% of the entire sector in 2017, made a much more visible contribution to Polish economic growth and development. Their share in generating GDP was 11%, the investment ratio was around 20%, and the average expenditure on innovation was PLN 2.6 million in the entire sector [33]. In 2018, there was a slight increase in the number of all enterprises by 3.5%, i.e., to the level of approximately 2.15 million (including 52.7 thousand small and 15 thousand medium-sized ones), mostly in the services sector—52.1% [33]. In 2019, their number grew by another 2.9% to 2.2 million, of which 99.8% were micro (96.5%), small and medium-sized enterprises (3.3%) [32].

3.2. Managerial Competencies in Polish SMEs

Due to the sheer size of the SMEs' sector in Poland, its contribution to Poland's socio-economic growth, and its entanglement with domestic, regional and international

regulatory frameworks, it is imperative to explore the sector and its evolution in detail. While the twin processes and transition and transformation have had a decisive impact on defining the broad regulatory context, in which SMEs operate, Poland's accession to the EU have had further far-reaching ramifications for SMEs. The scale of challenges that SMEs thus faced are best reflected by the demographics of SMEs creation prior to and right after Poland's accession to the EU, i.e., over the period 1997–2003, on average 180 thousand SMEs were registered annually; in contrast over the period 2004–2007, only 18 thousand SMEs were registered per year [33]. The numbers might suggest that the market players, considered it challenging to face, and possibly adapt, to a new business environment that Poland's accession to the EU generated [34]. By means of facilitating the business sector adaptation, several initiatives were launched, including:

- 4th Multiannual Program for Enterprises and Entrepreneurship" (initially covering the period 2001–2005, and then extended until the end of 2006), one of support areas of which was the development of innovative activities and computerization [35];
- European Business Support Program in Poland", under which, among others, the Lower Silesian Regional Development Support Agency (DAAR) [36] operates.
- Small Business Act" for Europe (SBA) of 25 June 2008 [37].
- Moreover, owing to the EU support, the Polish Agency for Enterprise Development [32] and the Centre for the Development of Small and Medium Enterprises [38] were established. The following training and umbrella programs were subsequently launched: the "Academy of the Manager of Small and Medium Enterprises" [39], and the "National Training Fund" (KFS).

As a result, innovation and managerial skills in Polish SMEs slightly improved by the end of 2019. Overall, however, owing to high growth rates that Poland recorded over the period 1989–2019, a relatively big domestic market driven by growing domestic demand, Polish SMEs enjoyed a relatively good performance and thus neglected the need to invest in improving their managerial competencies. Indeed, the March 2020 outbreak of the COVID-19 pandemic in Europe revealed that apart from financial liquidity problems, Polish SMEs lacked managerial know-how and expertise in fields and areas that would allow them to effectively respond to the pandemic and its implications. In other words, while strategies embracing the notions of SMEs' resilience and antifragility [1,2] would be very much welcome, a great majority of Polish SMEs lacked the necessary skills, expertise, and mindset.

4. Research Model, Research Methods and Materials

4.1. The Assumptions Underpinning This Study, the Hypotheses and the Research Model

Against the backdrop of our prior research [24,26,27], the relevance and validity of conducting in-depth analysis of the performance of the Polish SMEs was confirmed. In this context, initial desk-research, and pilot study, including a focus group, revealed the necessity to query the evolution of managerial competencies in Polish SMEs. In particular, the need to examine the relationship between managerial competencies and SMEs' performance was recognized. The COVID-19 pandemic added an unexpected twist to the initial research design in that it allowed us to juxtapose the findings of the research collected prior to the crisis, i.e., in an economic environment characterized by a relative stability and prosperity, with developments shaped in times of the COVID-19 inflicted instability, uncertainty, and economic slowdown. Accordingly, our study was underpinned by two key assumptions, i.e., that (i) managerial competencies (formal and resulting from experience) acquired in good market conditions should serve as bridge-capital for an organization's ability to cope with a crisis situation, and (ii) the period of the pandemic should be treated as an opportunity to learn how to operate in periods of emergency. These two assumptions have been further adjusted to the specific case of SMEs. These led us to a two-pronged hypothesis, i.e., (i) does SMEs capacity to respond to crisis situations differ from non-SMEs; and (ii) what is the role of managerial competencies in SMEs' capacity to manage a crisis situation.

4.2. The Research Methodology

With regards to the research model that this study followed, the research was carried out in three stages based on the triangulation of qualitative and quantitative methods. The first stage included analysing sources and secondary data (desk research) concerning the sector and problems related to the adaptation to the EU context. The second stage was based on quantitative research conducted in Fall 2019 prior to the outbreak of the COVID-19 pandemic. The objective of these two stages of the research process was (i) to identify the directions of necessary improvement and enhancement of managerial competencies in Polish SMEs, and (ii) to identify problems and risk areas as seen from the managers' perspective. The third stage of the study included two sub-stages, i.e., first, desk-research was conducted (reports and press coverage) on the "condition" of SMEs during the pandemic, and second, semi-structured interviews were conducted with managers in the SMEs sector, operating in the region of Lower Silesia, Poland, over the period April-June 2020. The Lower Silesia region is ranked 4th in terms of economic performance and entrepreneurship in Poland.

For quantitative research, a purposeful sample was adopted based on selecting research objects from the population of managers of various levels employed in small and medium-sized enterprises and post-graduate students of enterprise management who plan to apply for managerial positions in the future. For the sample, N = 147, respondents with higher education were selected, including primarily those (64%—94 respondents) involved in business management, logistics, economy, or economic law. Different educational background, from agricultural, through technical, to social sciences and humanities, was declared by 53 respondents (36%). For the research purposes, the N sample was divided into five categories:

- middle managers in medium-sized enterprises—n_1 = 78 (53%);
- entrepreneurs of small businesses (usually their owners)—n_2 = 35 (23%);
- nominated post holders (persons at lower managerial positions in the organization):
  - in a small enterprise—n_3 = 8 (5.4%);
  - in a medium-sized enterprise—n_4 = 10 (6.8%),
- studying at managerial postgraduate studies—n_5 = 16 (10.8%).

It should be stressed that out of all 131 respondents holding positions in enterprises (including those nominated for promotion to a higher position), as many as 92% (121 respondents) completed postgraduate studies and specialist training, including all respondents with education other than related to management enterprise. About 11% were respondents not related to work in the company but studying to change job. Table 1 presents the characteristics of the respondents.

A disproportionate gender distribution characterised the sample (N). It consisted of 48 women (32.6%) and 99 men (67.4%), and varied professional experience described by three time periods: up to 5 years, 5–10 years, and more than 10 years of work (it does not apply to 16 respondents studying at postgraduate studies). The smallest group comprised respondents with work experience of up to 5 years, i.e., 18 respondents (12.2%), including 6 women and 12 men. The number of respondents representing the other two ranges of working years was substantially higher. In other words, the range of 5–10 years of work was represented by 57 respondents, including 15 women and 42 men, which constituted 43.5% of all 131 working respondents, while 56–42.8%—of them represented the range of over 10 years of work.

Table 1. Characteristics of the respondents N = 147.

Job Position	**Mid-Level Managers**						**Small-Business Entrepreneurs**						**Nominated for the Position (People Holding Lower Positions in the Enterprise)**												**Postgraduate Students**	
Enterprise type	Medium-sized enterprise-from 51 to 250 employees						Small enterprise—from 11 up to 50 employees						In small enterprise				In medium-sized enterprise									
Number/percentage of employees	$n_1 = 78$						$n_2 = 35$						$n_3 = 8$				$n_4 = 10$								$n_5 = 16$	
													$n_{\Sigma 3,4} = 18$													
	53%						23%						5.4%				6.8%								10.8%	
													12.2%													
Work experience/gender	Up to 5 years		5–10 years		Over 10 years		Up to 5 years		5–10 years		Over 10 years		Up to 5 years		5–10 years		Over 10 years		Up to 5 years		5–10 years		Over 10 years			
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
	2	5	3	34	19	15	2	5	11	4	5	8	1	1	0	2	1	3	1	1	1	2	0	5	2	14
	Σ = 7		Σ = 37		Σ = 34		Σ = 7		Σ = 15		Σ = 13		Σ = 2		Σ = 2		Σ = 4		Σ = 2		Σ = 3		Σ = 5		Σ = 16	
N = 147 (48F/99M)																										

Source: Own study based on the research carried out in the second half of 2019 in the Lower Silesia region, Poland.

The quantitative research applied the method of a diagnostic survey conducted using the questionnaire technique in electronic form. It aimed at identifying areas of improvement and potential effects of managers' failure to develop and/or acquire managerial skills during a period of economic boom and market stability. The questionnaire questions were open-ended, conjunctive—single-choice, or disjunctive—multiple-choice based on a cafeteria of response options. The qualitative research used partially structured interviews and the analysis of secondary data (desk research) from reports on the condition of Polish enterprises during the pandemic. The interviewees were 6 entrepreneurs, mainly owners of small enterprises, and 6 managers of medium-sized enterprises. The survey aimed to obtain answers to questions focused on the following problems:

- premises for improving competencies—the need for improvement and effectiveness of managers' lifelong learning in relation to the position held and tasks performed in the enterprise;
- forms of improvement of managerial skills and its subject scope in relation to the present and future challenges;
- time management for improving qualifications and opportunities to improve competencies;
- vision of the company's future and risk prediction.

The interviews aimed at ex-post evaluation and comparative analysis of the quantitative research results in a confrontation with the enterprises' situation during the pandemic; all this mainly in terms of expectations of state support and development barriers for enterprises.

5. Results

The survey results analysis proved that before the COVID-19 pandemic, the respondents saw the need for managers' continuous improvement as a necessary condition to achieve the company's success and guarantee its economic stability and development. The respondents had the opportunity to select 3 out of 5 variants included in the cafeteria of answers (see Table 2). Among the indicated reasons for improvement, they most often identified the internationalisation of knowledge and managerial skills, which were seen as the primary determinant of economic success and stability on the market (119 respondents—81%), instability of the exchange rate and its impact on the Polish currency exchange rate (117 respondents—80%), and programs supporting entrepreneurship in the EU (103 respondents—70%).

A detailed analysis shows that the internationalisation of managerial knowledge and skills was significant for postgraduate students—15 out of 16 respondents (r = 0.7), managers of medium-sized enterprises in the range of 5 to 10 years of work experience—31 out of 37 respondents (r = 0, 6), and those with over 10-years professional experience—27 out of 34 respondents (r = 0.5), entrepreneurs and managers of small enterprises with 5–10 years of work—11 out of 15 respondents (r = 0.5) and with over 10 years of work—9 out of 13 respondents (r = 0.5). That premise was also indicated by most managers expected to be nominated for a higher company position.

Table 2. Premises for the managers' improvement. (Pearson r-correlation coefficient $|r| \leq 0.5$ at the significance level $\alpha = 0.05$, α-Cronbach ≤ 0.7), N = 147.

Independent Variable →		**Enterprise Type**									**Postgraduate Students**	**Σ**
		Medium-Sized Enterprise—From 51 to 250 Employees			**Small Enterprise—From 11 up to 50 Employees**			**Nominated for the Position in Small n_3 and Medium-Sized n_4 Enterprises**				
		Up to 5 Years	**5–10 Years**	**Over 10 Years**	**Up to 5 Years**	**5–10 Years**	**Over 10 Years**	**Up to 5 Years**	**5–10 Years**	**Over 10 Years**		
		7	**37**	**34**	**7**	**15**	**13**	**4**	**5**	**9**	**$n_5 = 16$**	**147**
	$\Sigma_{E,M}$		**$n_1 = 78$**			**$n_2 = 35$**			**$n_{\Sigma 3,4} = 18$**			
	%N	**4.8%**	**25.2%**	**23.1%**	**4.8%**	**10.2%**	**8.8%**	**2.7%**	**3.4%**	**6.1%**	**10.8%**	**100%**
↓ Dependent variable		Prerequisites for the improvement of managerial competencies										
Internationalisation of managerial knowledge and skills		5	31	27	5	11	9	4	5	7	15	119
	r-Pearson	0.3	0.6	0.5	0.3	0.5	0.5	0.5	0.6	0.5	0.7	81%
The volatility of the international environment		2	25	21	4	9	5	4	4	5	15	94
	r-Pearson	0.2	0.5	0.5	0.3	0.5	0.3	0.6	0.6	0.4	0.7	64%
The volatility of domestic law		5	15	23	3	9	9	2	2	3	11	82
	r-Pearson	0.6	0.4	0.5	0.2	0.5	0.6	0.3	0.3	0.4	0.6	56%
Entrepreneurship support programs from the EU		6	21	27	6	10	9	3	3	5	13	103
	r-Pearson	0.7	0.5	0.5	0.7	0.5	0.5	0.6	0.5	0.3	0.5	70%
Exchange rate instability (no prospect of adopting the euro)		6	25	30	6	12	11	3	3	7	14	117
	r-Pearson	0.7	0.6	0.7	0.7	0.7	0.7	0.6	0.5	0.6	0.7	80%
α-Cronbach		0.65	0.74	0.76	0.72	0.74	0.74	0.64	0.65	0.59	0.77	

Source: Own study based on the research carried out in the second half of 2019 in the Lower Silesia region, Poland.

Moreover, similar indicators concerned the variability of the company's international environment, resulting primarily from changes in EU law. They were indicated by managers of medium-sized enterprises with 5–10 years of work experience—25 out of 37 respondents (r = 0.5) and over 10 years of work—21 out of 34 respondents (r = 0.5), as well as persons scheduled for promotion—8 out of 9 respondents (r = 0.6) and postgraduate students—15 out of 16 respondents (r = 0.7). An essential premise for improving managerial competencies is to know the mechanisms shaping the exchange rates and predicting their impact on the Polish currency. All surveyed persons, irrespective of the size and type of enterprise, length of seniority, and gender, as well as postgraduate students, indicated that variable. EU programs dedicated to entrepreneurship are another essential factor in the managers' improvement. Apart from those nominated for senior positions who declared more than 10 years of work experience (r = 0.3), all respondents selected the dependent variable as significant for the company's success. To assess the internal consistency of the variables, reliability analyses were run, and Cronbach's alphas (ranges from 0 to 1) were obtained, where value above 0.7 indicate a sufficient reliability.

The second problem examined concerned the forms of improvement of managerial skills and the time devoted to self-improvement. The research results show that Polish managers perceive a deficit of time devoted to improving their qualifications. The above is conditioned by the workload of professional tasks, the pace of knowledge growth, the volatility of legal regulations, and market conditions. The question about the time expended in self-improvement was dedicated only to those working in their profession—131 respondents, and it was conjunctive. The clear majority—64 respondents (49%) indicated spontaneous self-improvement resulting from the need to establish the business. That was most frequently indicated by managers of medium-sized enterprises with 5–10 years of work experience—14 out of 37 respondents (r = 0.5), small business entrepreneurs with 5–10 years of work experience—10 out of 15 respondents (r = 0.5) and over 10-year seniority—10 out of 13 respondents (r = 0.6). The research outcomes prove that the respondents spend far too little time on personal development. Only 15%—20 out of 131 working respondents—declared the average weekly time for self-improvement at the level of 3 h, and 36%—47 respondents—less than 1 h.

Another issue that was explored was an improvement, including its forms, of managerial skills preferred by the respondents (Table 3). As in the case of premises for improvement, the question was disjunctive with the possibility of choosing three variants from the cafeteria of answers. Most respondents stated that the model of a master-mentor (managerial mastery), who teaches a profession and shares own experience, combined with improvement through experience and business contacts, is the most significant for their competencies. The first variable was indicated by 117 surveyed persons—89%, and the other one by 118—90%. The managerial championship was mentioned by the respondents of almost every category, with the most numerous group being managers of medium-sized enterprises with 5–10 years of seniority—31 out of 37 respondents (r = 0.6) and over 10 years of work experience—32 out of 34 respondents (r = 0.7), as well as entrepreneurs and managers of small enterprises, mostly with 5–10 years—14 out of 15 respondents (r = 0.8) and over 10 years of work—12 out of 13 respondents (r = 0.7). Quite similar results concern improvement through business experience. They were most often mentioned by managers of medium-sized enterprises with 5–10 years of professional experience—35 out of 37 respondents (r = 0.7) and over 10 years of work—31 out of 34 respondents (r = 0.6), as well as small business entrepreneurs representing the same seniority ranges (r = 0.5).

Table 3. Time devoted to self-improvement. (Pearson r-correlation coefficient $|r| \leq 0.5$ at the significance level $\alpha = 0.05$, α-Cronbach ≤ 0.7), N = 147.

Independent Variable →		**Enterprise Type**									**Postgraduate Students**	**Σ**
		Medium-Sized Enterprise—From 51 to 250 Employees			**Small Enterprise—From 11 up to 50 Employees**			**Nominated for the Position in Small n_3 and Medium-Sized n_4 Enterprises**				
		Up to 5 Years	**5–10 Years**	**OVER 10 Years**	**Up to 5 Years**	**5–10 Years**	**Over 10 Years**	**Up to 5 Years**	**5–10 Years**	**Over 10 Years**		
		7	**37**	**34**	**7**	**15**	**13**	**4**	**5**	**9**	**$n_5 = 16$**	**147**
	$\Sigma_{F,M}$		**$n_1 = 78$**			**$n_2 = 35$**			**$n_{\Sigma 3,4} = 18$**			
	%N	**4.8%**	**25.2%**	**23.1%**	**4.8%**	**10.2%**	**8.8%**	**2.7%**	**3.4%**	**6.1%**	**10.8%**	**100%**
↓ Dependent variable		Time devoted to self-improvement (not applicable to students): N-16 = 131)										
About 3 h		1	4	4	1	3	3	2	1	1		20
	r-Pearson	0.04	0.01	0.01	0.1	0.1	0.1	0.4	0.2	0.1		15%
	α-Cronbach	0.52	0.51	0.52	0.49	0.51	0.50	0.55	0.49	0.50		
About 1 h		5	10	16	3	5	3	2	2	1		47
	r-Pearson	0.6	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.07		36%
Spontaneous—as needed or through business experience		5	14	11	6	10	10	2	4	2		64
	r-Pearson	0.6	0.5	0.3	0.7	0.5	0.6	0.5	0.7	0.3		49%
α-Cronbach		0.74	0.75	0.65	0.72	0.77	0.78	0.57	0.72	0.61		

Source: Own study based on the research carried out in the second half of 2019 in the Lower Silesia region, Poland.

Managerial mastery and business experience usually occurred in the configuration with the third option concerning traditional training indicated by 78%—102 respondents or the exchange/circulation of knowledge within the company—57% (75). That variable was indicated mainly by entrepreneurs and managers of small companies, regardless of the length of work and gender. Online training was given the lowest rank. The latter form of improvement was mentioned by only 30 (23%) respondents, mainly people scheduled for nomination to a higher position. The other extreme was the respondents' interest in traditional training courses, as was indicated by 78% (102), and specialised courses preferred by 54% (71). In the first case, managers of medium-sized enterprises were most interested in them, including those with 5–10 years of work experience—35 out of 37 respondents (r = 0.7) and over 10-year seniority—29 out of 34 respondents (r = 0.6), as well as most of the people intended for promotion to a higher position. The second type of traditional training concerned mainly medium-sized enterprise managers with over 10 years of professional experience—25 out of 34 respondents (r = 0.5). Less interest in specialist courses results from a more extended period devoted to improving qualifications, associated with exclusion from professional activity. The position corresponds to the findings of other studies, which prove that the most popular and accessible method of raising qualifications is multi-day training for employees.

The third issue remaining in the orbit of the research interest under discussion was identifying areas for improving managerial competences (Tables 4 and 5). The research results indicate that the respondents assigned the highest rank to legal issues, which is connected to one of the declared premises for improvement of managerial skills. Regardless of the type of enterprise, length of seniority, and gender, that issue was the most critical variable influencing the company's success, as was stated by as many as 88% (129) of the respondents. The biggest group indicating that variable included managers of medium-sized enterprises representing work experience in the range of 5–10 years—33 out of 37 respondents (r = 0.5) and over 10 years of employment—31 out of 34 respondents (r = 0.6), as well as entrepreneurs and small business managers in all seniority ranges (r = 0.7). Regardless of the type of business (including post-graduate students), the respondents see the need to improve competencies in the field of technologies and IT systems supporting the enterprise's functioning. The variable was indicated by 78% (115) of the respondents, notwithstanding the type of enterprise and managers' seniority. Professional improvement of managerial competencies, indicated by 67% (98), turned out to be a significant independent variable. In addition to managers of medium-sized companies, entrepreneurs and managers of small companies representing all seniority ranges and people expected to be promoted to a higher position were interested in professional managerial training. Mastering a foreign language captured the least interest—35% (51) of the surveyed sample.

Table 4. Forms of improvement. (Pearson r-correlation coefficient $|r| \leq 0.5$ at the significance level $\alpha = 0.05$, α-Cronbach ≤ 0.7), N = 147.

Independent Variable →	Enterprise Type									Postgraduate Students	Σ
		Medium-Sized Enterprise—From 51 to 250 Employees			Small Enterprise—From 11 up to 50 Employees			Nominated for the Position in Small n_3 and Medium-Sized n_4 Enterprises			
		Up to 5 Years	5–10 Years	Over 10 Years	Up to 5 Years	5–10 Years	Over 10 Years	Up to 5 Years	5–10 Years	Over 10 Years	
		7	37	34	7	15	13	4	5	9	$n_5 = 16$	147
	$\Sigma_{E,M}$	$n_1 = 78$			$n_2 = 35$			$n_{\Sigma 3,4} = 18$				
	%N	4.8%	25.2%	23.1%	4.8%	10.2%	8.8%	2.7%	3.4%	6.1%	10.8%	100%
Forms of improvement												
Traditional training		4	22	25	1	2	2	3	4	8		71
	r-Pearson	0.5	0.4	0.5	0.03	0.02	0.03	0.6	0.6	0.7		54%
	α-Cronbach	0.71	0.70	0.74	0.34	0.34	0.35	0.71	0.72	0.76		
Online training		1	2	5	0	1	2	4	4	6		30
	r-Pearson	0.02	0.01	0.1	-	0.01	0.03	0.7	0.7	0.6		23%
Traditional training		6	35	29	5	7	5	3	4	8		102
	r-Pearson	0.7	0.7	0.6	0.6	0.4	0.3	0.7	0.6	0.7		78%
Improvement through business experience		5	35	31	6	11	11	3	5	1		118
	r-Pearson	0.5	0.7	0.6	0.6	0.5	0.5	0.6	0.7	0.2		90%
Models/managerial mastery of the manager or other people		5	31	32	7	14	12	2	5	9		117
	r-Pearson	0.6	0.6	0.7	0.8	0.8	0.7	0.3	0.7	0.7		89%
Knowledge exchange/circulation within the enterprise		3	19	17	5	12	11	2	3	2		75
	r-Pearson	0.4	0.4	0.4	0.5	0.7	0.7	0.4	0.4	0.2		57%
α-Cronbach		0.71	0.78	0.76	0.70	0.82	0.78	0.70	0.71	0.67		

Source: Own study based on the research carried out in the second half of 2019 in the Lower Silesia region, Poland.

Table 5. Areas of improvement of managerial competencies. (Pearson r-correlation coefficient $|r| \leq 0.5$ at the significance level $\alpha = 0.05$, α-Cronbach ≤ 0.7), N = 147.

Independent Variable →	**Enterprise Type**									**Postgraduate Students**	**Σ**
		Medium-Sized Enterprise—From 51 to 250 Employees			**Small Enterprise—From 11 up to 50 Employees**			**Nominated for the Position in Small n_3 and Medium-Sized n_4 Enterprises**			
		Up to 5 Years	**5–10 Years**	**Over 10 Years**	**Up to 5 Years**	**5–10 Years**	**Over 10 Years**	**Up to 5 Years**	**5–10 Years**	**Over 10 Years**	
		7	**37**	**34**	**7**	**15**	**13**	**4**	**5**	**9**	**$n_5 = 16$**	**147**
	$\Sigma_{E,M}$		**$n_1 = 78$**			**$n_2 = 35$**			**$n_{\Sigma 3.4} = 18$**			
	%N	**4.8%**	**25.2%**	**23.1%**	**4.8%**	**10.2%**	**8.8%**	**2.7%**	**3.4%**	**6.1%**	**10.8%**	**100%**
Areas of improvement of managerial competencies												
Improving/learning a foreign language		4	15	8	2	10	3	2	1	1	5	51
	r-Pearson	0.4	0.4	0.1	0.2	0.4	0.1	0.4	0.2	0.07	0.3	35%
Improvement in the field of law		5	33	31	6	13	12	3	4	8	14	129
	r-Pearson	0.7	0.5	0.6	0.7	0.7	0.7	0.6	0.7	0.7	0.7	88%
Professional (managerial) development		3	26	24	5	12	11	3	4	7	3	98
	r-Pearson	0.3	0.4	0.3	0.6	0.5	0.5	0.6	0.7	0.6	0.08	67%
Professional and managerial development		4	33	33	4	9	7	2	3	6	14	115
	r-Pearson	0.5	0.5	0.7	0.7	0.7	0.7	0.6	0.5	0.6	0.7	78%
α-Cronbach		0.59	0.68	0.74	0.61	0.60	0.70	0.51	0.72	0.75	0.71	

Source: Own study based on the research carried out in the second half of 2019 in the Lower Silesia region, Poland.

Furthermore, the vision of the company's future and the anticipated threats to its development were examined. The respondents' indications to open questions in the 2019 questionnaire were used for the analysis. Among the responses regarding enterprises' future, the most optimistic visions were related to expanding sales markets abroad (61%) and Poland's economic growth (56%). A significant percentage of the respondents (52%) also indicated the inflow of foreign capital to Poland as an opportunity for cooperation (43%) and the impact of subsidies from the EU fund on the development of the Polish enterprise sector (39%). Only 2% of the respondents saw opportunities in raising qualifications and improving competencies by entrepreneurs and managers. The most frequently mentioned responses to threats to enterprises and their development referred to political and legal issues, extensive bureaucracy in Poland and the EU, too high (compared with qualifications) remuneration and social requirements of employees from Ukraine, and foreign competition. None of the respondents expressed concerns about an extraordinary state or crisis that could threaten the company's economic stability and inhibit its development. Given the statements in the open questions, it can be concluded that in the second half of 2019, there was optimism among Polish entrepreneurs related to the good economic situation and the prospect of expanding the market to foreign countries.

6. Discussion

Two key types of barriers to an enterprises' development exist. These include internal and external ones understood as destructors of the learning organization's future. In the literature, internal barriers relate to the enterprise's functioning, and concern its size, strategy, structure (organizational and, for example, cost structure), technology and production possibilities, competencies of owners and management, and employees' qualifications. In the Polish market conditions, they involve weaknesses regarding competencies, business owners and staff's knowledge and capabilities, and insufficient transfer of knowledge from science institutions to new companies [40]. The external barriers refer to macroeconomic conditions and socio-cultural factors, which include the Polish society's mentality and the cultural environment of the enterprise.

Both types of barriers were reflected in the findings of 2015 study [41] on a representative sample of 1.1 thousand owners, managers, and people responsible for running micro (from 1 to 9 employees), small (10–49 employees), and medium-sized (50-249 employees) companies. The research results prove that the most significant problem the enterprises are facing is external factors, including mainly legal and strictly economic ones, and, to a lesser extent, errors in enterprises' strategies and employee selection. What is more, they indicate the almost complete marginalization of development barriers related to the managers' competencies and the need to improve and raise their qualifications [41]. The above probably stems from the good economic situation on the Polish market in the years preceding the pandemic, which revealed all dysfunctions resulting from negligence in improving and raising managerial competencies at all enterprise management levels and its development stages. It can be achieved, among others, by entrepreneurship, executive, and specialist training, classified as stimulators of the company's development in three phases (according to LE Greiner's model): start-up, growth, and maturity [42]. The model allows for identifying potential dangers and problems arising in various stages of the life cycle.

Much neglect has also been revealed in the internationalization of managerial competencies. Their absence results in Polish SMEs' resistance to the expansion of economic activity to foreign markets; a trend identifiable already in the 1990s [43]. Clearly, several other factors weigh in in the analysis, i.e., the size of the Polish market, the size and dynamic of domestic demand and other. The entrepreneurs and managers themselves argue that the relatively low degree of internationalization of their business exposure is to be linked to the high costs of foreign market entry. The latter also includes the cost of the lack of knowledge of the regulatory frameworks etc., especially in such domains as subsidies to interest paid for export credits, co-financing participation in fairs and exhibitions,

promotion instruments of Polish brands, and export support [44]. By comparison, sectors capable of benefiting from the regulatory (support) frameworks in place, e.g., transport, carpentry (furniture and windows), poultry food, children's equipment (prams and car seats), jewelry, and the IT industry, have been successfully penetrating foreign markets.

The relatively good economic situation of SMEs changed dramatically as a result of the COVID-19 pandemic. In general, the COVID-19 related restrictions to mobility, both domestically and internationally, resulted in an almost complete stagnation of the Polish economy. The SMEs' sector was particularly affected. In the first phase of the pandemic, i.e., until the end of May 2020, 46% of small and 37% of SMEs sought refuge in state aid. Due to that, 56% of these SMEs succeeded to return to the level of turnover from the period before the pandemic as early as August 2020, and 44% recorded decrease in turnover. The highest percentage of companies declaring a decrease in turnover concerned the transport sector—54.8% and the service sector—46.5%, while the least – the construction sector—23.3% [45]. A survey [46] conducted in 8–14 April 2020, on a representative sample of 566 respondents—owners of SMEs—revealed anxiety about the companies' future related to the deterioration of the economic situation due to the development of the pandemic. Such a forecast was declared by 85% of the respondents, with 15% being optimistic. The pessimists (45%) also pointed to their company's alarming situation, and 55% negatively assessed the state aid under the "Anti-Crisis Shield". Among many aid postulates, 19% of the entrepreneurs saw the need for the state to initiate financial outlays intended to raise the employee competencies in the new conditions for companies' operation [46]. It should be stressed that in the period since April 2020, the supply of various types of training in remote have mode increased, the result of which is the current increase in Polish entrepreneurs' interest in them [47]. However, the business sector representatives pointed to the necessity to adapt the training programs to the demands of the economy functioning under crisis conditions and, therefore, distinguish between the needs of micro, small, and medium-sized enterprises. Subsequent studies conducted in the first phase of the pandemic (April–June 2020) verified the surveyed entrepreneurs' optimism related to the permanent changes in the law on state aid packages and delays in their implementation [48].

The results of this study to a great extent correspond with the points mentioned above. Twelve interviewees were selected (6 managers of medium-sized enterprises and 6 entrepreneurs of small enterprises) from among 147 respondents to the survey that aimed to obtain a comparative opinion on the problems of enterprises' operation before and during the pandemic. They were asked about the expectations of state aid for entrepreneurs, development barriers for enterprises during the pandemic, and the scope and forms of improving managerial competencies. Table 6 displays the synthesis (paraphrased and generalized) of the respondents' indications resulting from the transcription of interviews carried out using the content analysis technique.

Based on partially structured interviews with managers of medium-sized enterprises and entrepreneurs of small enterprises, the outcomes of this study offer an incomplete insight into the reality faced by the respondents during the pandemic. During the second wave of the pandemic, Polish SMEs experienced a severe crisis. Despite optimism that prevailed in Spring 2020 concerning effective state aid measures, the third quarter of 2020 turned out to be the worst in the history for Polish companies. Several SMEs announced bankruptcy or the need of restructuring [49]. The least favorable situation concerns the micro- and small-sized enterprises. Data suggests that the Spring 2020 optimism of Polish entrepreneurs, and moderate optimism still discernible in Summer 2020, nosedived during the second wave of the COVID-19 pandemic [13]. Research shows that the number of companies believing in improving the situation soon is decreasing. Most, namely, 54%, of the entrepreneurs believe that their economic situation will not change in the next three months. At the same time, 70% of enterprises (mainly micro and small ones) are waiting for aid from government programs, and three-quarters of them do not plan any investments. Among the enterprises that use or plan to benefit from state aid, 15.3% intends to invest in the company's development and human capital [13].

Table 6. Synthesis of the interviewees' responses.

Managers of Medium-Sized Enterprises N = 6		Small Business Entrepreneurs N = 6	
Before the Pandemic	**During the Pandemic**	**Before the Pandemic**	**During the Pandemic**
Entrepreneurs' Expectations for Training Provided by the State			
none	-creating a "government" educational platform for distance learning in the field of changes in legal provisions under the "Anti-Crisis Shield"; -establishing a fund for managers to improve qualifications; -establishing cooperation with commercial educational platforms for entrepreneurs; -organisation of cyclical on-line training for managers.	none	-organisation of training for owners -entrepreneurs of small businesses in the field of obtaining funds from national and EU programs for support during the pandemic; -creating a training fund dedicated exclusively to small and micro enterprises; -organisation of trainings and courses aimed at changing the branch or diversifying business activities
Development barriers for enterprises and a vision of the future			
-lack of time for improvement related to professional duties; -learning lessons as part of gaining work experience;-bureaucracy at the Polish and EU level; -the still unclear prospect of Poland joining the Euro zone; -increasing competition of foreign companies on the domestic market.	-difficulties in contacts with customers; -lower effectiveness of online work, especially in team management; -delays related to the implementation of aid packages by the state; -decline in profitability related to the loss or contraction of the sales market; -ineffective government support programs; -superiors' selfishness and lack of willingness to share knowledge; -malfunctioning information and knowledge flow channels; -ineffective IT systems of company management or insufficient knowledge of these systems; -lack of a shared vision of success and disintegration of teams—the advantage of individual actions for own success; -no precise forecast of the end of the crisis; -decrease in employee motivation and their creativity in acquiring new customers; -legal chaos; -moral panic and fear of the pandemic.	-political instability of the state; -no time for improvementand upgrading qualifications; -minimal training offer for small businesses; -gaps in the command of foreign languages; -insufficient knowledge of legal regulations and their changeability; -strong competition on the domestic and foreign market; -too high wage conditions for employees from Ukraine, inadequate to their competencies; -too high costs of the so-called employees (health and pension contributions) and lack of any idea by the state to relieve entrepreneurs on the verge of profitability; -instability of the Polish currency exchange rate.	-insufficient manger's authority shaped by non-professional knowledge and intuition; -too rigid and conservative structures, even authoritarian business relationships; -restrictions on employing competent employees; -re-evaluation of profit "here and now" over investing in human capital and the future of the company; -resistance to changing the business profile; -mangers' reluctance to develop in online mode; -pessimism about the chances of surviving the crisis; -lack of preparation to operate in the e-business sphere; -low level of identification with the enterprise and sense of group identity; -reluctance to change the sector or diversify the business profile.

Table 6. *Cont.*

Managers of Medium-Sized Enterprises N = 6		Small Business Entrepreneurs N = 6	
Before the Pandemic	**During the Pandemic**	**Before the Pandemic**	**During the Pandemic**
Entrepreneurs' Expectations for Training Provided by the State			
The scope and directions of improving managerial competencies			
-issues in the field of law and IT; -improving managerial competencies.	-adjusting on-line training packages to specific industries; -professional consultancy provided by the state and commercial companies in expanding the business profile; -free training packages offered by the state and reimbursement of high training costs provided by commercial companies; -digitisation of administrative procedures and simplification of bureaucracy; -application of good business management practices proven in other enterprises, including foreign ones; -optimal use of the pandemic time for professional development and improving managers and employees' qualifications—treating the pandemic as "time to invest in human capital".	-management education and training; -legal and IT issues; -language improvement.	-use of state aid measures for vocational training of employees partially excluded from the company's activity; -investing in improving language, managerial, and IT competencies; -creating a friendly climate inside the company and a sense of community that will allow surviving during the crisis; -training in acquiring funds from the EU for changing the industry or diversifying the business profile.

7. Conclusions

The objective of this paper was to offer an insight into specific developments in the Polish SMEs' sector. While initially the objective was to conduct a general query of the Polish SMEs through the conceptual lens of a learning organization, the onset of the COVID-19 pandemic, created an opportunity to extend the study. Accordingly, the COVID-19 pandemic was conceived of as a watershed, as a threshold to juxtapose specific features of the Polish SMEs before and after the pandemic. For the purpose of the examination conducted in this study at the conceptual level, the classical theories and approaches to a learning organization were employed. These were then combined with secondary data derived from industry reports etc. Against this backdrop, a focus group was conducted and a questionnaire was built. A total of 147 respondents, including managers located at diverse levels of the organizational structure, were involved in the study.

The analysis of the results thus obtained suggests that it is close to impossible to refer to Polish SMEs, as learning organizations. In other words, the analysis of the responses collected suggest that the Polish SMEs sector displays a substantial deficit in the following dimensions central in Senge's concept of a learning organization, i.e., mental models, team learning, and system thinking [4,5]. As for the remaining dimensions of the learning organization approach, i.e., personal mastery and a shared vision, the respondents revealed a sense of understanding and/or identification with.

Furthermore, considering the learning organization debate [11] it is very difficult to make a case that Polish SMEs possess the features necessary to transform from an "ordinary" organization into a "learning organization". In other words, the respondents almost completely ignored such issues as the importance of strategic approach based on learning as well as team-related criteria necessary for shaping the future of the organization. In turn, the respondents stressed the role of the universality and availability of information, sharing of information, and so-called atmosphere at work. Finally, the respondents stressed the salience of creating development opportunities as a sine qua non condition for success and survival in crisis conditions. This, once again, suggests a basic lack of understanding that simply moving forward, thus surviving, does not guarantee sustainable growth.

The COVID-19 pandemic, was viewed here as an emergency, or a crisis, taking place in the company's external environment. As such it was assumed that, at the company level, it would encourage, attempts aimed at gaining new knowledge, skills and experiences. These would be required to adapt and respond to the changing features of the context in which SMEs operate, including social, political and economic uncertainty. In line with the prescriptions entailed in the concept of learning organization, central in this process of adaptation should be the ability to use knowledge and managerial skills accumulated/built prior to the emergency/crisis situation. In turn, the latter should be the source of new experiences, new pieces of knowledge and new sets of skills that are necessary for a company's "survival". In this case, the so-called "organizational memory", understood as a mechanisms of accumulating and redistributing knowledge within an organization is crucial [50].

The results of the study reported here suggest that in regard to Polish SMEs, it is difficult to talk about "consumption" of the accumulated in the organization knowledge. It is because, so the results of the study, that knowledge was insufficient for the SMEs to face the challenges inflicted by the COVID-19 pandemic. Even if several respondents stressed 'intuitive thinking' as a way of coping with the crisis, it cannot be seen as a reflection knowledge capital already present in the organization. Rather, it may be seen as an instance of a spontaneous acquisition of professional experience. It would make sense if it did not concern only individual managers' actions (which was pointed out by the interviewed people) but if it had the character of deliberate, coordinated action on a team- or, preferably, on the organizational-level [51].

Overall, the outcomes of this study offer several insights into the specificity of the Polish SMEs and the SMEs' sector. Specifically, by framing the analysis in context of the learning organization debate, this paper demonstrated that a substantial deficit exists in

the Polish SMEs' sector as regards the recognition of the salience of organizational learning. Interestingly, that the respondents stressed the notions of availability of information, information flow and atmosphere at work, as well as the imperative of creating development opportunities, suggests a form of a 'shallow' or "nascent" understanding of the key business functions and factors determining an organization's performance. This in turn reveals a deficit in managerial skills. What can we learn from these findings? Two points are necessary to address this question. On the one hand, the question is why the Polish SMEs' sector displays a certain neglect of the centrality of managerial skills? The other question that needs to be asked is how to address this situation? Or which measures to undertake to improve the status quo?

While detailed answers to these questions would require an in-depth study, at this point suffice it to say that inasmuch as the organic, bottom-up growth of the SMEs' sector in Poland is responsible for the sector's success, it is also a source of its today's challenges. In other words, a great number of SMEs in Poland were established as a direct response to a need, be it the lack of income and/or unemployment. This suggests that individuals establishing these SMEs were not necessarily subjected to any prior training or equipped with any managerial skills. That these SMEs survived over the years was facilitated by the benign macroeconomic environment over the past thirty years and by an overall business friendliness of the regulatory framework. Under conditions of the COVID-19 related economic strain, and exacerbated by increasing government intervention, much more was required for specific SMEs not only to survive but to thrive. Furthermore, it would be interesting to explore whether the specific sector of an SME's engagement, e.g., information and communication technology (ICT) versus provision of basic services, may have played a role in this context. More research is needed to explore the notion of managerial skills in connection to the specific sector a given SME represents. The notion of location might play a role too. That being said, the question is what could be done? Two sets of actions are needed, i.e., actions addressing the problem systemically, and actions targeting individual SMEs. As for the systemic way of navigating the problem, it is necessary to distinguish between short- (tax incentives for training and education in the SMEs' sector) and long-term strategies (entrepreneurship education). With regards to responses targeting individual SMEs, several tools are already available. These include, advisory services for those who are interested. To increase the motivation of SMEs to embark on these schemes, a form of conditionality should be attached to loan and/or export insurance contracts.

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