

Article

Digital Entrepreneurship: Future Research Directions and Opportunities for New Business Model

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Abstract: Digital entrepreneurship is a technological advancement in infrastructure that creates various prospects for entrepreneurs. New digital enterprise models need attention in society, particularly concerning digital entrepreneurship opportunities, barriers, and success factors. Hence, this study gathers literature on digital entrepreneurship to compile methods and topics discussed by previous authors. Furthermore, this study illustrates research directions indicating opportunities for future scholars to work in this domain. A systematic approach across this study followed methodology and maintained a quality threshold by selecting 35 articles on digital entrepreneurship. Considering conceptual literature, the study identified six streams of digital entrepreneurship such as digital enterprise models, entrepreneurship procedure, strategical platform, ecosystem, entrepreneurship training, and social digital entrepreneurship. Hence, this study determines paths for recent research on digital entrepreneurship through a framework in different areas. Moreover, it also provides research opportunities through research directions to deeply understand the domain of digital entrepreneurship.

Keywords: opportunities; digital; entrepreneurship; framework; enterprise



Citation: Baig, U.; Hussain, B.M.; Meidute-Kavaliauskiene, I.; Davidavicius, S. Digital Entrepreneurship: Future Research Directions and Opportunities for New Business Model. *Sustainability* **2022**, *14*, 5004. <https://doi.org/10.3390/su14095004>

Academic Editor: João Carlos Correia Leitão

Received: 16 March 2022

Accepted: 20 April 2022

Published: 21 April 2022

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1. Introduction

Digital entrepreneurship has tremendously affected the business world globally. Google, Twitter, Facebook, Apple, and Microsoft have transformed communication. There is now a digital stage where artificial intelligence enhances decision-making quality and perception regarding real life. Reckoning, storing, and exploring information has become more accessible, flexible, and cost-effective because of cloud services and the internet, also called the “Internet of Things”. Refs. [1,2] Similarly, blockchain transition to the internet is projected in most technologies for newly designed products, and worldwide legal cryptocurrencies are traded internationally in the banking industry [3,4].

Since digitalization causes numerous inferences through transformative and rapid change, it is essential for entrepreneurship scholars and entrepreneurs to ensure associated outcomes to identify evolving opportunities in the business. This study defines entrepreneurship as the procedure to design, launch and run an emerging business or trade [5]. Hull et al. [6] explored how entrepreneurship with its distinctive attributes of creating new value is more than commencing a new business. Holistically, Palmer et al. [7] discussed entrepreneurial activities when institutions interplay with the education sector or developed businesses, entrepreneurs, and stakeholders. Digitalization has transformed developments in entrepreneurial business models and made drastic shifts to form new business digital opportunities. Similarly, general businesses have drifted to online busi-

ness. This study refers to digital entrepreneurship as a category that has transformed from traditional to digitized organization [6].

Guthrie [8] defined entrepreneurship as selling digital goods or services across automated networks. Similarly, digital entrepreneurship arises due to technological assets such as information technology. Furthermore, an entrepreneurial activity transferring traditional service, asset, or partial business into digitalization refers to digital entrepreneurship [9]. Digital entrepreneurs differ from traditional entrepreneurs. A significant disparity occurs between products, workplaces, and marketing activities. Digitalization has offered prospects for entrepreneurs. Therefore, entrepreneurs must be ready for sustainable advances [6]. Since the literature on digital entrepreneurship is scarcely discussed, most of the studies selected focus on a subcategory of digital entrepreneurship, academic literature, and a structured overview of the existing review. The research question of the study considers future developments of digital entrepreneurship. Thus, the theoretical approach regards digital entrepreneurship, and the research procedure follows the influence of technology on business models based on strategy platform, social and digital entrepreneurship processes, and the digital ecosystem. Studying past literature opportunities, barriers, and successful aspects of digital entrepreneurship are precisely discussed for scholars working in this domain, followed by research directions and limitations.

Digital Entrepreneurship

Hull et al. [6] and Le Dinh et al. [9] discussed that digital entrepreneurship refers to technological advancement with new ways of establishing and performing business. Hair et al. [10] pointed out comprehensive business models of digital entrepreneurship, for instance, products, workplace, or distribution transforming into a digital form of venture. In addition, Giones and Brem [11] added that doing business innovatively is to sell goods and services through the internet. Cloud services, big data, or artificial intelligence are types of digital entrepreneurship.

Similarly, authors have argued that “digital entrepreneurs are not confined to existing platforms. They involve digital engagement activities; for example, an Uber driver influences technology and avails opportunities in the flea market to increase efficiency and technological growth in the economy” [12].

“The pursuit of better prospects through using digital media and information technologies. Digital media and information technology are the best sources of opportunities for digital entrepreneurs. They transform to compete because they grab opportunities and proceed with the creative process of destruction in the digital economy” [13].

Correspondingly, “digital entrepreneurship comprises selling digital goods and services across electronic media or networks” [8].

2. Definitions of Digital Entrepreneurship

Table 1 illustrates definitions of digital entrepreneurship and digital entrepreneurship terminologies throughout the article, such as digital venture, enterprise, innovation, or business.

EBSCO (Elton B. Stephens Company, Birmingham, UK) was initially considered to gather information for this literature review. The study selected a readily available database from “Econlit”, “Premier of Business Source”, and “Source of Entrepreneurial Studies” by typing the keywords digital startup, digital entre, digital innovation, entre, etc. Only 94 studies were selected after filtering duplicate studies. Non-English language articles were excluded. Around 53 articles with abstracts based on entrepreneurial studies were included. A quality threshold following [1,2] enabled a selection of 35 articles from academic journals. Articles with good impact factors and Web of Science journals were selected. Table 2 illustrates the extraction of several scholarly articles, research method, region or country, research aim, and the outcomes. Thus, it was observed that an investigation on digital entrepreneurship needs to be focused. Therefore, articles based on the topic are not extensive.

Table 1. Definitions of digital entrepreneurship.

[8]	Digital entrepreneurship is an opportunity to pursue new ventures through internet technologies and media.
[14]	Digital entrepreneurship creates ventures for generating revenue electronically or digitally produced inventory.
[10]	Digital entrepreneurship is a venture that undertakes digital activities rather than traditional activities.
[6]	Digital entrepreneurship refers to digitized performance in the organization.
[9]	Digital entrepreneurship reconciles traditional entrepreneurial activities through creative and digitized entrepreneurial activities.
[15]	Monetizing business opportunities, occupying niches, and establishing innovative, risk-taking, and rational attitudes.
[12]	Digital entrepreneurship involves agents using commercial, government, social or corporate technologies.
[16]	Digital entrepreneurship also overcomes uncertainty by adopting innovative strategies like Food Panda, and Careem.
[17]	Entrepreneur originates from “entre” referring to enter, “pre” referring to before, and “neur” means nerve-center. Precisely, entering a venture to form significant change in the activity through a decision center or nerve.
[18]	It is establishing own business through an innovative attitude that is beneficial to mitigating poverty and enhancing living standards.

Table 2. Literature review on digital entrepreneurship.

Scholars	Research Method	Country	Research Aim	Findings
[19]	Qualitative and Quantitative		Rising business opportunity through the digital game and music industries across borders using an innovative approach based on network.	To develop new products by combining digital music and games in different regions. Moreover, creating a social network with key stakeholders.
[14]	Case study	USA	Sociomaterial enactment of digital entrepreneurship	Digital entrepreneurship opportunities through social interactions and entrepreneur’s motivational and success factors.
[20]	Qualitative		Digital mental mobility and online entrepreneur’s business from home.	Mental mobility procedure for individuals to navigate among digital and physical environments. Manipulation, spatial, reconciliation, emotional and temporal tensions in working environments.
[21]	Qualitative	France/UAE	Digital entrepreneurship in an underdeveloped and developed nation with an exploratory study in UAE and France.	Entrepreneurial intention underlying factors.
[22]	Qualitative	UK	Digital women entrepreneurs and theory of intersectionality.	Social disparities and discrimination of disadvantages make the internet a neutral place to work.
[23]	Theoretical		Leveraging a virtual model of innovative business and a structure for developing tools.	The structure was developed for the virtual enterprise model.

Table 2. Cont.

Scholars	Research Method	Country	Research Aim	Findings
[11]	Theoretical		Identification and description of technological entrepreneurs.	Technological entrepreneurship categorization.
[8]	Qualitative	France	Entrepreneurship training used through e-commerce in a European business school to launch a unique blog.	Cheap to commence digital business, especially for students enrolled in entrepreneurial education.
[10]	Theoretical		Digital market orientation along with benefits and barriers in the Web 2.0 networked world.	Digital entrepreneur's opportunities or barriers.
[24]	Quantitative		Digital disruption and transformation of health care online observational study.	Established organizations rely on innovation to support business models and engage in flexible startups to explore new market segments. This transformation offers startups a diversified value proposition and disruptive innovation in health care.
[5]	Theoretical		What benefits entrepreneurs can avail themselves of through an innovative platform-based ecosystem?	Structure of platform strategy and innovation
[25]	Case study	China	Building a digital ecosystem through institutional entrepreneurship: A "Red Collar Group (RCG)" case study.	Institutional entrepreneur's role in forming a digital ecosystem.
[26]	Theoretical and Case study		Forming social entrepreneurship to reduce poverty through digitalization: A case study conducted in Taiwan.	Digital division and social entrepreneurship literature where greater entrepreneurship gradually alleviates poverty among underprivileged people.
[6]	Theoretical		Digital entrepreneurship typologies.	Entrepreneurship typologies and differentiation among traditional and digital entrepreneurs.
[27]	Quantitative		Using e-innovations for new startups through go-to-market strategies.	Designing go-to-market strategies and e-innovation builds trust and allows long-term durability.
[9]	Theoretical		Living-lab promotion through digitalization procedures in entrepreneurship.	Promoting digital entrepreneurial procedure through presenting a framework.
[28]	Case Study		Technology management model with six categories based on the digital business industry.	Digital business industry insight shows the procedure and management of the innovative product in the industry when technological transformation occurs.
[29]	Quantitative		Presenting social innovative empirical study for new digital entrepreneurs.	An empirical study on social innovation activities conducted by SMEs and startups globally between 2001 and 2014. Complementarities and SI core business activities.
[30]	Theoretical		Intersecting digital entrepreneurship and technologies.	Overcoming uncertain aspects through digital entrepreneurship.
[31]	Case study		Makerspaces role and evolution in academic libraries.	Emerging makerspaces lead to new learning approaches and creating knowledge within the campus ecosystem and library.

Table 2. Cont.

Scholars	Research Method	Country	Research Aim	Findings
[32]	Case study	Denmark	Digital entrepreneurial procedure using pragmatic design.	Digital entrepreneurship procedures come across uncertainty. Therefore, effectuation and flexibility conditions must be handled.
[33]	Case study	USA/Finland/ France	Entrepreneurs create opportunities in forming business models under uncertain circumstances.	Developing business models theoretically.
[34]	Quantitative	Balearic Islands	Tourism e-entrepreneurship acceptance application in the context of educational Balearic Island.	E-entrepreneurship accepts underlying factors.
[15]	Theoretical		Models of digital entrepreneurs in the sharing economy.	Components of the sharing economy such as digital sharing, participation, and physical sharing.
[35]	Qualitative	Finland, Germany, and Liechtenstein	Innovative business models for digital entrepreneurs in the sharing economy.	Shared economy's drivers.
[36]	Theoretical		Civilian entrepreneurs' ecosystems emerge in intelligent cities such as Kansas City.	Barriers and opportunities faced by innovative domestic entrepreneurs.
[37]	Theoretical		Implementing digital connections such as online social capital.	Bonding and bridging through digital advancements.
[38]	Qualitative and Quantitative	USA/China/ Germany	Developing a business model, the social capital of the founder, and a successful emerging online startup is explained through the mixed methodology.	Influence of success factors in this domain.
[39]	Theoretical		Entrepreneur digital platform through the network-centric view.	Entrepreneurial activity platform success factors.
[12]	Theoretical		The ecosystem of digital entrepreneurs.	Understanding the concept of the digital entrepreneur ecosystem
[40]	Qualitative	Netherlands and Switzerland	Creating design for digital entrepreneurs and activities that form entrepreneurs' business models.	Activities performed in digital models of business. Moreover, transforming entrepreneurship to digital from traditional.
[41]	Theoretical		Trading digitally through entrepreneurial lawyering.	Lawyers must practice trade beyond the macro-level to ensure rising e-commerce is not leaving behind small and medium enterprises (SMEs) in least developed countries (LDCs).
[42]	Qualitative		Entrepreneurialism and enterprise in digital games.	An unstable labor market requires entrepreneurial behavior to find work.
[43]	Qualitative	International	Founder's aspect to achieve traction in digital business.	Successful factors in entrepreneurial practices.
[44]	Quantitative		The internationalization speed and deployment of e-business in the digitalization form of entrepreneurship.	Entrepreneur's qualities influence the internationalization speed of electronic business.

To present the structure of the outcomes within the preferred literature, the associated research titles were first categorized into six groups: digital enterprise model, digital entrepreneurship procedure, platform strategies, digital ecosystem, entrepreneurship training, and social digital entrepreneurship.

3. Digital Enterprise Model

The digital enterprise model is different to traditional models. Therefore, digital entrepreneurs must be familiar with the prevailing differences, threats, and opportunities to succeed. Otherwise, the digital venture would suffer the risk of failure [6]. Sahut et al. and Wind [13,45] explored how adopting digital strategies is a shift to network orchestration because communities and networks are essential for digital entrepreneurs. Articles including the concept of the digital enterprise model are dominant in the current literature. However, new business models directly or indirectly were followed in most of the articles having different methods dealing with different industrial sectors. This section identifies and discusses different enterprise models recognized by numerous authors, providing enough overview.

Dutot and Van Horne [21] defined the digital enterprise model as an activity dealing with products and services, digital distribution, digitized connection with stakeholders, and executing internal digital processes. Richter et al. [35] discussed the sharing economy. Ojala and Wright [33,42] explored new models of enterprise in the game industry. Di Domenico et al. [20] investigated online ventures from home and mental mobility. Kuester et al. [27] studied the latest trend regarding innovative service-based enterprise models. Herrmann et al. [24] explored modernization in the health industry. Troxler and Wolf [40] explained the design of community-based enterprise models. Similarly, Van der Ven [41] discussed lawyers' innovative digital enterprise models.

Scholars have discussed new enterprise digital models with their respective barriers and opportunities while establishing new digital enterprise models. Nambisan [30] studied modernizing of opportunities associated with digital entrepreneurship. Similarly, ref. [14] discussed emerging opportunities in the digital era. Castro Soeiro et al. [19] observed opportunities through digital consumption based on barriers and opportunities. Hair et al. [10] highlighted that strong market orientation is important for successful entrepreneurs to gain a competitive edge. The author further argued that digital ventures are more easily established rather than traditional ventures because of the cheap transaction cost [3,35]. Richter et al. [15] stated that the online sharing economy is a key source for new enterprise models, where the new capabilities of individuals are offered to others to get benefit in return for either monetary benefit or non-monetary benefit. However, new capabilities not only contribute to enterprise models but also exploit principles of sharing economies such as graphic creators or professional photographers to sell their services [40]. Hence, the online sharing economy is also the type of digital enterprise model for entrepreneurship research having digital platforms that provide new services in the sharing economy and add new enterprise models; for instance, Uber, Food Panda, Careem, AirBnB, and Wikipedia execute activities that are transformed into digital environments to share private equity with their digital world rivals. Preliminarily, these enterprise models include platforms that enable individuals to share their digital files without exchanging physical storage items.

Therefore, Richter et al. [35] pointed out that exchanging and sharing information in the sharing economy is reliable to share information through technology and Web 2.0. They also identified a trustworthy enterprise model and customers' ability to use it. This improved living standards, decreased urbanity and identified an open mindset. Theoretically, their work introduced various definitions of "shared economy" using the [46,47] approach to commence their qualitative research. Kempf [48] gave three dimensions to engage in the sharing economy: digital content sharing, tangible goods sharing, and crowdfunding. They conducted qualitative interviews with fourteen entrepreneurial companies in Austria, Switzerland, and Germany. Hence, a significant attribute of a shared economy is an individual's win-win condition engaged in the digital enterprise because consumer and owner

do not have a hierarchy; instead, they are at par with one other. A shared economy brings sound trustworthiness where users find out or observe either to depend on other users or shut down enterprise. Therefore, rating systems application must be set as a sample.

Le Dinh et al. [9] stated that the shared entrepreneurial economy is increasing gradually to enhance connections and technical competencies for sharing rational information; moreover, it provides the digital enterprise model. Hence, to pursue a digital enterprise model, crowdfunding enables generating capital. Crowdsourcing helps to perform the task efficiently by transferring work to third parties [3,15]. Di Domenico et al. [20] analyzed online home-based ventures to study the concept of mental mobility to explain navigation proximity through autonomous, social and flexible technology. Online home-based ventures desire to achieve self-management and self-control. Thus, the authors revealed that entrepreneurial digitalization disruptively transforms the performances. Hull et al. and Liao et al. [6,28] distinguished among mild, moderate, and extreme digital entrepreneurship when evaluating the digital enterprise model. It refers to using digital assets in business operations. Mild digital entrepreneurs deal with digital products delivery to execute enterprise. Extreme digital entrepreneurs execute the whole enterprise model online. These digital pioneers digitize the products or services and transform business operations like production, distribution, advertising, transaction, and customer relations. Transforming entrepreneurship into extreme digitization provides new barriers for entrepreneurs who wish to use emerging opportunities and barriers emerging shortly. Giones and Brem [11] studied three combinations of technological entrepreneurship: technological, digital, and digital entrepreneurship. The authors defined digital technological entrepreneurship as an enterprise model of digital entrepreneurship. Digital technology offers a new infrastructure to entrepreneurs with multiple opportunities. Digital platforms, 3D printing, and crowdfunding are a few digital assets that contribute to digital technology entrepreneurs [30].

Technological modular systems provide attractive technological surroundings. Likewise, digital technological elements are combined in separate configurations and offer flexibility to entrepreneurs. Moreover, platforms also offer flexibility in functions and separate digital configurations. Thus, high modularity enhances entrepreneurial activities to produce innovative modules combined with digital technologies [39].

3.1. Digital Entrepreneurship Procedure

Several articles deal with the term “entrepreneurial procedure”. Le Dinh et al. [9] discussed the development of digital enterprise models such as sub-stages, idea generation and establishing a startup, and finally, managing an entrepreneurial business. The idea generation phase includes the entrepreneur’s contemplation regarding benefits, feasibility, cost, and application. The startup establishment phase incorporates strategic planning and entrepreneurial team formation to share responsibilities and expand skills and knowledge. Testing a good or service is also considered at this stage. After registering intellectual property, the startup phase runs into entrepreneurial management. Innovation, improved services, and products are activities performed by entrepreneurs to develop digital business, and moreover to refine products or services, and implement innovations in the business management procedure. Thus, enterprise development is regarded as the business cycle for continuously reshaping it [23].

Dutot and Van Horne [21] offered a procedure regarding the digital enterprise model examined through interviews taken in France and UAE digital startups. Entrepreneurs used technologies to connect with different stakeholders to study innovative consumer demands. Similarly, digital technology helps in storing and acquiring information about enterprise procedures. Innovativeness is fostered when entrepreneurs utilize information gathered on digital platforms rather than traditional networking. Digital technologies have made smooth enterprise development procedures. Platforms rely on self-generated communal interactions and follow a procedure of self-generation. Consequently, entrepreneurial outcomes and activities suffer uncertainty. Product development and innovation are dependent on digital enterprise. Innovation is supported by processing and developing

communications technology and information. An entrepreneur uses specific digital technology or platforms, so technology shapes their possibility of further innovating. On the contrary, uncertainty and network effects also cause ambiguity in digital enterprise models [30].

Digital entrepreneurship highly discussed entrepreneurial procedure. Most of the studies are found on entrepreneurs' digital enterprises. Digital startup development needs to be focused on. Therefore, finding appropriate and stable individuals for a team mean that it will succeed. Changing things and agility through the trial-and-error enterprise development stage is essential. Similarly, boosting early success in a digital startup requires networking and building valuable social capital [38]. Ojala [33] displays a thoughtful effect of digitalization that can be viewed in the time frames of an entrepreneur's procedures. Digital technologies create, alter and repeat the product development stage faster. Experimenting and implementing procedures are augmented in digital economies and restarted shortly. Hence, Nambisan [30] explored that today's digital entrepreneurs do not follow a predefined business plan; instead, the digital economy has initiated, created, and changed the digital entrepreneurial procedure to overcome dynamic paths ascertained by varied activities within an unexpected time frame.

3.2. Strategic Platform

Entrepreneurs use digital platforms to promote their businesses. Digital networks provide advanced technologies. On the contrary, fast growth may cause risk because competitors use more innovative technology to destroy the enterprise model [11]. Hsieh and Wu [5] discussed platforms in different contexts of developing and commercializing the products. Platforms are digital spaces that allow businesses to link with one another and customers. Authors characterized platforms into three types: first, innovation platforms offered by Apple or Google, where entrepreneurs from complementary goods or services within a digital ecosystem. Apple or Google uses digital ecosystems through App developers such as Google Android or Apple iOS to develop new products. Hence, the platform strategy uses third-party developers who appear as competitors in digital ecosystems, emphasizing the production of digital products.

Nambisan [30] pointed out Ford's SYNC3 (Third generation infotainment system) platform that provides services similar to Google and Apple, designed for car entertainment that offer multiple App developers to establish services and promote them. To become an entrepreneur on a digital platform is possible if one is specialized in a particular technological field. Second, commercial activities are fostered by transaction platforms such as online retail services. Third, a mixture of innovation and transaction platforms through integration platforms enable entrepreneurs to create and innovate new technologies to use these technological advancements. Successful strategic platforms as a digital entrepreneur requires the placement of goods and services uniquely on online networks to connect diverse consumers and business owners [39]. To develop and execute a strategic platform, it is necessary to build a digital ecosystem. The strategic platform is traced within numerous branches and industries. The strategic platform is pursued through social media, human resources, finance, accommodation, e-commerce, transportation, and digital payment in digital enterprises [5]. Entrepreneurs and customers working on digital platforms participate in creating value on the digital network to build a digital ecosystem [39].

Digital entrepreneurship also uses online blogs for community management, discussions, or as a tool for group education. Currently, digital businesses are run through bloggers, promoting goods and services, and executing marketing activities for third-party products by advertising them on the online community or their respective platform channels for monetary benefit [8]. The strategic platform helps to pursue success through positioning digital platforms in the digital ecosystem, designing platforms based on technology and architecture, and building relationships to create legitimacy. Hence, platforms are likely to prosper if they connect to legitimate actors, big players, and high-status platforms in the digital ecosystem [39].

The ecosystem provides multiple actors to connect and build solid links for entrepreneurs. Moreover, the uniqueness of the platform compared with competitors contributes to its success. Design parameters, either architectural or technological, influence entrepreneurial opportunities when interacting with digital ecosystems [34]. Openness, correct decisions, and shaping the right behavior within digital platforms such as Google's Android digital integration brought more innovative and new applications than Apple's iOS. Therefore, interaction possibilities of entrepreneurs on platforms with the digital ecosystems shape a company's capabilities and thus their business performance. Whether a digital entrepreneur successfully pursues business activities depends on the interaction possibilities offered by the platform [30].

3.3. Digital Ecosystem

Digital entrepreneurship builds when the digital ecosystem is developed. Sussan and Acs [12] explained that the digital ecosystem is a self-organized, sustainable and scalable system that comprises heterogeneous digital bodies and their interrelations to focus on interactions between entities to raise utility systems, encourage information sharing, gain benefits, inner cooperation, and innovation system. Participants of the digital ecosystem can access devices, for example, desktop computers, tablets, laptops, mobiles, and tablets. The World Wide Web provides easy access to reliable information, data, and free cheap labor. In digital ecosystems, users act as providers and offer great opportunities for entrepreneurs [12]. The digital ecosystem involves complex processes such as internal and external stakeholders. Moreover, the authors identified multiple successful factors in developing digital ecosystems such as institutional entrepreneurship, digital technology, transaction costs, and online social capital [25].

Sussan and Acs [12] ascertained the ability to link customers of distinct groups to decrease transaction costs and establish successful ventures. Authors have linked the digital ecosystem with the entrepreneurial ecosystem and integrated agents and users for the digital entrepreneurial ecosystem. It helps users and agents use the innovative digital governance ecosystem and business management ecosystem and reduce the transaction cost. Entrepreneurs value digital ecosystems because they serve as innovation platforms that offer innovators an environment to try different ideas and provide digital solutions through collaboration [5]. However, at this point, we need to make a critical remark that different business models provide value to their customers. For example, Facebook was criticized because it misused personal data; therefore, policymakers globally introduced new rules and policies for security. Similarly, Airbnb and Uber were criticized for tax evasion internationally because they did not meet the tax requirements and misused private data; this eventually led to unsustainability at times of extreme digitalization. Hence, digitalization provides businesses with fundamental infrastructure that brings users and business owners together to build a digital ecosystem, interactive and virtual. Oumlil and Juiz [34] also explored how information technology is developed by e-entrepreneurship. Similarly, Nambisan [30] declared that the digital ecosystem fosters digital entrepreneurship; moreover, digital networks enhance innovation and generate ideas among a group of entrepreneurs. Davidson and Vaast [14] emphasized and focused on social interactions in the context of digital technology. Digital ecosystems mutually adjust goods, services, and locations that shape digital entrepreneurship activities.

Similarly, digital ecosystems, as online social capital, support entrepreneurs in creating ideas, allocating enough resources, recognizing, taking advantage of digital market opportunities, collecting appropriate information, and creating innovative legitimacy to maintain flexibility and prevent the digital enterprise from disaster. Smith et al. [37] defined the digital ecosystem as the interaction that provides entrepreneurs with sufficient resources to attain desired outcomes. Digital ecosystems are based on bonding and bridging concepts. Bridging denotes connecting individuals within a network to access innovative knowledge. Bonding refers to an individual's behavior within a network to provide emotional support, share solidarity, and enrich associations to form committees and create high bonding.

3.4. Entrepreneurship Training

Entrepreneurship training comes with lower running costs and startup costs. Entrepreneurship training is focused on educational environments, and it addresses real-life students. Guthrie [8] took experience from a student's blog in a major subject e-commerce learning project and provided entrepreneurship digital skills in the production, promotion, and distribution phases of the product life cycle. The author failed to confer possible outcomes regarding structured research on digital entrepreneurial education. Similarly, Nichols et al. [31] made a supportive contribution to academic libraries to provide entrepreneurs with research opportunities. Le Dinh et al. [9] disclosed research opportunities regarding the living lab approach, but sufficient data and entrepreneurship education are still missing. Thus, it indicates that scholars need to research further in this regard.

3.5. Social Digital Entrepreneurship

A case study in Taiwan mentioned how low-income individuals are motivated when they engage in social digital opportunities [26]. Similarly, comparing empirical methods with the organization would be advantageous for future research, allowing policymakers to effectively bridge the digital gap between the poor. Furthermore, Maiolini et al. [29] briefly discussed small enterprises and new startup innovative and social activities between 2001 and 2014. The authors identified drivers of social digital entrepreneurship categorized into three groups: marketing, e-commerce, and education to interplay with different industries and technologies longitudinally. Moreover, the author studied the successful practices of companies to satisfy social needs and sustain innovations in social digital entrepreneurship.

Sarma and Sunny [36] explored that social digital entrepreneurship results in an intelligent environment. Therefore, entrepreneurs and policymakers must study success factors in developing an intelligent environment. Similarly, Smith et al. [37] investigated the specific nature of social digital entrepreneurship that encouraged different research areas such as the affordable digital search to bridge social capital, affordability, transparent networks, and the user's Digital profile. Dy et al. [22] also provided direction for women's entrepreneurship. The authors found a platform for entrepreneurial practices to build an online business based on equality without related resource constraints. Thus, these issues need to be focused primarily on female social digital entrepreneurs that could benefit them in emerging digital opportunities.

4. Theoretical Integration and Discussion

This study analyzes new enterprise models. Since the digital entrepreneurship environment is changing rapidly and it seems that academia is trying to catch up with prevailing industrial developments, the findings of the literature review briefly summarize the opportunities, barriers, and success factors of digital entrepreneurship.

4.1. Opportunities

The existing academic literature on digital entrepreneurship briefly discusses opportunities that arise through multiple relevant opportunities, such as the digital environment where businesses and consumers work together to provide considerable information to companies that will enable them to exploit their business. This access to information helps entrepreneurs analyze potential customers, which traditional entrepreneurs cannot [10]. Similarly, Digital organizations use algorithms and big data to serve potential consumers and manipulate their preferences and attitudes through selective and customized promotion and advertising. Moreover, information on digital platforms results in high users with incredible network effects where the digital ecosystem plays a crucial role. Network effects supported by users adopting technology, their interactions, and relevant responses from digital society provide sustainability to digital entrepreneurs. Hence, the successful launching phase of an enterprise relies on a digital society to grow and sustain [39].

4.2. Barriers

Along with opportunities, digital entrepreneurs also come up with specific barriers. New business models such as Google and Facebook demonstrate a powerful digital platform for entrepreneurship with a high level of uncertainty regarding technological advancement and the risk of legal or tax policies after establishing a business. Digital organizations operating globally have country-specific rules and regulations with exceptional risk. Hence, technological advances occur with high uncertainty and sometimes failures, whereas some lead to unpredictable directions [46]. Therefore, it is necessary to receive continuous responses from the market for the rapid development of services, products, and infrastructure to overcome uncertainty [33].

Similarly, with uncertainty, finding an appropriate investor also occurs to generate revenue for the organizations. Thus, according to Srinivasan and Venkatraman [39], one must closely build relationships to get support from high-status people to create legitimacy for different enterprise models. This will also help investors become financially strong because investors often trust prominent people.

Correspondingly, the technological advancement platform needs rapid development. In a hostile environment, digital entrepreneurs come across considerable threats; therefore, they need to innovate continuously and use differentiation strategies. They must differ according to the technological possibilities offered [39]. The study reveals another considerable threat for digital entrepreneurs when new technology is launched on an integration platform, such as Android, that needs to be developed and launched before a competitor produces or launch it. Thus, it is tough for digital entrepreneurs to keep pace with speedy advancements within and outside platforms [39].

Digital entrepreneurs also face barriers while developing trust among market players to establish a sustainable business. The issue of trust is prevalent in offline and digital businesses that also causes misunderstandings. Therefore, the trust of a customer is essential to running a business. Customer feedback is known to all market participants to build trust among business partners and potential customers. Thus, participants in the traditional or digital market must associate directly with the feedback of specific customers to increase trust [10]. Despite different opinions that digital surroundings pull down barriers for new entrepreneurs, Dy et al. [22] explored that social inequalities or hierarchies restrict the possibilities of digital entrepreneurs. Barriers that come across an entrepreneur regarding social structures are also present in the digital activities of an entrepreneur.

4.3. Successful Factors

Positioning a platform contributes to the success of a business where it is built. Therefore, success relies not only on the business itself, but also on the technology it adopts and the architectural decisions a company takes. A platform with good positioning and a high reputation improves the success of the built-upon business [39]. Moreover, relationship capital is also crucial for digital entrepreneurs. An entrepreneur with sound personal relations and sustainable business connections and interactions with participants and users on the platforms forms legitimacy for its business and actively assembles necessary resources to formulate and implement business practices [39].

Hair et al. [10] investigated how meeting the demand of customers along with executing business is a significant issue in entrepreneurship. Electronic communities extensively meet individual demands of whether the strategy of an entrepreneur is on the right track with innovative and business developmental activities. Thus, literature on technical developments, customer preferences, and market competition accompanying tax regulations at the entrepreneur level have not been considered in digital entrepreneurship. Only a few scholars have addressed individual pre-requisites for successful digital entrepreneurship. Zaheer et al. [43] interrogated twelve digital startup entrepreneurs regarding their education, experience, vision, values, purpose, focus, and timing directly connected to entrepreneurs' success. Moreover, family background, motivation, personal commitment, knowledge, and personal expertise associated with the industrial sector and industry

are imperative factors that contribute to an entrepreneur's success. Similarly, the CEO or founder's adaptability and flexibility also lead to the success of the digital enterprise. Hence, proactive structures allow innovative environments to respond to market forces directly. If success is measured in the speed of internationalization, then the worldwide experience of an entrepreneur leads to success because entrepreneurs spending time abroad exploit global possibilities more rapidly than others.

5. Research Directions and Theoretical Integration

The trend of digitalization globally with growing businesses brings about progress and development, and it also encourages entrepreneurship scholars to contribute through a structured and adaptive agenda of research. Extending knowledge about digital entrepreneurship and its several characteristics while still integrating opinion on the distinct parameter is indispensable. Thus, this study integrates the results of the existing literature on digital entrepreneurship, its determinants, and consequences for scholars to investigate in the future through digital entrepreneurship research directions illustrated in Figure 1. These directions initially link previous studies on entrepreneurship with results based on psychology and computer sciences to explicitly indicate that the research directions are exposed for rearrangement and additions in the future. Entrepreneurship scholars will get insights on digital entrepreneurship through cross-sectional research regarding several scenarios or clusters, such as comparing the growth of rival companies strategically, and distinguishing among industries concerning their dynamics, environments, fundamental needs, and varying attitudes of different consumer groups. Similarly, for longitudinal studies, industries trajectories, new enterprise models, or technological advancement are the best selection methods.

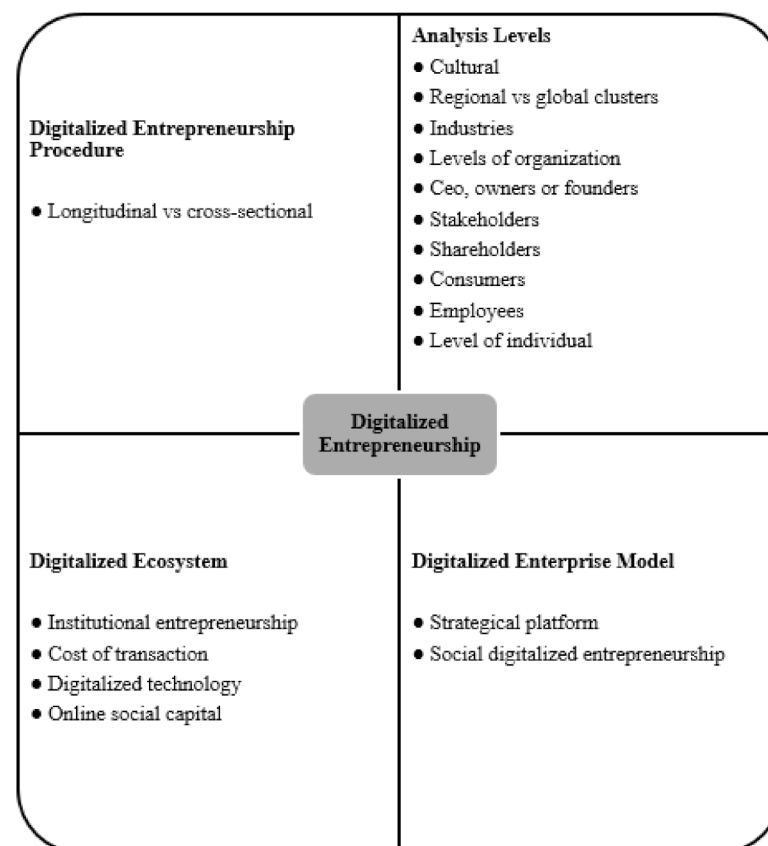


Figure 1. Digital entrepreneurship and research directions.

Hence, this inductive approach includes longitudinal or cross-sectional procedures concerning time and analysis levels. Authors studying digital entrepreneurship focus on technology-based organizations along with various associated groups, for example, chief executive officers (CEOs), owners or founders, stakeholders, shareholders, employees, and consumers. Current literature based on digital entrepreneurship considers industrial background. Therefore, future research can conduct global aspects based on domestic or international enterprises compared to regional clusters, for instance, smart cities. In addition, strategic decisions regarding operation locally or globally, tax regulations and legacy, and communication and distributional aspects must be incorporated. Cultural dissimilarities while adopting digital entrepreneurship based on consumer's and entrepreneur's perspectives include cultural influences and increasing understanding of transferring digital strategies to other cultures without overcoming different barriers. Lastly, entrepreneurs' characteristics elucidate how digital enterprise succeeds while others flop. Components worth studying at the individual level are psychological attributes such as expertise, cognition, capability, personality, intentions, values, entrepreneurial mindset, demography, entrepreneurship training, industrial networks, connections, and knowledge.

Moreover, Margiono et al. [47] stated that research also requires evaluation of enterprise models based on digital entrepreneurship to deeply understand the importance, mechanism, and consequences of the strategical platform and social digital entrepreneurship. Similarly, interpretation regarding why, how, and when organizations pursue trivial, moderate, and extreme digital enterprise models needs attention. However, technological developments, advanced analytics, and sound infrastructure would result in new enterprise models and accelerate digitalization. Therefore, an exploitable and robust digital ecosystem holds considerable importance and is noticeable. In addition, identified elements of the digital ecosystem include institutional entrepreneurship, digital technology, cost of the transaction, and online social capital. Studies can be carried out to recognize alternate drivers that support digital entrepreneurship. Thus, detecting possible restraints and prospects restricts risk.

Hence, the study on digital entrepreneurship benefits by integrating profound standard entrepreneurship literature and literature based on technology. Expanding knowledge regarding entrepreneurship in the domain of digital entrepreneurship, this study encourages other scholars to contribute their work systematically. Thus, it is suggested that future studies must explore rapid progress in the context of digital entrepreneurship by providing clear statements regarding research queries, approaches, and their final results. Authors must also increase quantitative studies by taking huge samples to sufficiently build theory along with implementations to counsel entrepreneurs or train entrepreneurs.

6. Limitations

The literature review of the following study holds certain limitations, such as searching selected keywords limited to English academic journals that were open access. Scholars must review studies of different languages. Authors can cluster articles found in another way or denominate clusters instead. Therefore, a search of the literature in developing fields was quickly outdated. Literature searches about digital entrepreneurship on qualitative and quantitative studies from 2021 onwards must be included to have more variety in this domain.

7. Conclusions

The study provides a complete assessment and updated version of academic articles on digital entrepreneurship. It includes six groups:

- Digital enterprise models;
- Digital entrepreneurship procedure;
- Strategical platforms;
- Digital ecosystems;
- Entrepreneurship training;

- Social digital entrepreneurship.

Since this study signifies that digitalization transformed the way of executing business, enterprise models, and possible forms and categorizations shaped around digital potential, new businesses still do not exist with this modern digitalization.

Therefore, new opportunities for entrepreneurs, success factors, and barriers have been analyzed for digital entrepreneurial activities. However, it is anticipated that digital entrepreneurship is in its embryonic stage.

Thus, several qualitative studies need to contribute to unsorted articles with partially non-overlapping titles. This study illustrates research directions for digital entrepreneurship with an aim that it is neither exhaustive nor terminated, and stimulates future research that indicates motivating interaction levels of analysis and time perspectives that occur with the complex phenomenon. Similarly, barriers to digital entrepreneurship are diverse based on technological infrastructures changing technology, offering new progress in society.

In contrast, a barrier such as a lower diffusion rate of certain technologies might be overcome through new technological opportunities. Hence, entrepreneurship researchers must discuss barriers and opportunities that may emerge in the future that will create potential interest for new entrepreneurs.

Author Contributions: Conceptualization, U.B. and I.M.-K.; analysis, U.B., B.M.H. and S.D.; investigation and methodology, U.B. and S.D.; resources, B.M.H. and S.D.; supervision, U.B. and I.M.-K.; writing—original draft, U.B. and B.M.H.; writing—review and editing, I.M.-K. All authors have read and agreed to the published version of the manuscript.

Funding: This research was partial funded by General Jonas Žemaitis Military Academy of Lithuania, as a part of the Study Support Project "Research on the Small State Logistics and Defence Technology Management.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data of this study are available from the authors upon request.

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

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