
Review

Digital Transformation and Entrepreneurship: A PRISMA-Based Systematic Review of Strategies, Platforms, and Value Creation Mechanisms

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Abstract: This study identifies the digital transformation strategies and technological platforms that contribute to the creation of value in digital entrepreneurship. A qualitative approach was employed to gather secondary data using the framework of PRISMA, as entrepreneurs in developing economies are yet to fully utilize emerging technologies. Through an in-depth search of several international databases, which include Web of Science, Scopus, PubMed, DOAJ, and ScienceDirect, 1160 publications were identified. In alignment with the study's primary objective, a careful combination of keywords was selected for appropriate literature coverage. The technique also identified 175 additional papers for inclusion in the study. According to the findings of the study, numerous scholars define technology entrepreneurship as the intersection of entrepreneurial activities and technological innovation. Entrepreneurs may identify and capitalize on technological opportunities by starting new ventures. This study investigates the paradigm-shifting potential of digital transformation in entrepreneurship, analyzing its multifaceted implications for entrepreneurial ventures. Through a detailed examination of the digital transformation process, this research illuminates the complex developments between innovation in technology, economic progress, and entrepreneurial ecosystems, offering valuable insights to stakeholders and policymakers alike.

Keywords: Digital transformation, Entrepreneurship, PRISMA, SMEs, Systematic analysis

INTRODUCTION

Digital transformation is increasingly influencing the global economy, prompting institutions and governments to invest significantly in digital infrastructure and services (Dąbrowska et al., 2022). These developments are expected to have a profound impact on international trade, particularly benefiting countries that leverage digital transformation to gain a competitive advantage (Mani, 2019). Consumer behaviour and market dynamics are also evolving rapidly, reshaping how organisations engage with increasingly informed, connected, and empowered customers (Taheri et al., 2024; Kang & Hwang, 2022).

Recent studies highlight how technological advancements are reshaping the business environment, compelling entrepreneurs to innovate and adapt to remain competitive (Khurana et al., 2022; Akter et al., 2023a). As the digital economy expands, fostering entrepreneurial activities that drive innovation and growth has become more critical than ever (Abbas & Myeong, 2024). The convergence of digital transformation and entrepreneurship offers actionable strategies for entrepreneurs aiming to capitalise on digital opportunities (Taheri et al., 2024).

This study focuses on the influence of digital transformation on various aspects of entrepreneurship, including customer engagement, operational efficiency, and business model innovation (Bhuiyan et al., 2024; Fernandes & Burcharth, 2024). Following the initial explorations by Thamrongthanakit (2023), this paper further investigates how entrepreneurs can harness digital tools to optimise internal processes and enhance customer experiences (Jia et al., 2024). Digital transformation also enables expansion into new markets and broader outreach through digital marketing platforms (Chen et al., 2024).

Governments around the world have implemented various policies to support entrepreneurship and build robust startup ecosystems. These include financial incentives, regulatory reforms, infrastructure development, and advisory support (Addy et al., 2024). In many countries, significant investments have been made to nurture a thriving startup culture and provide platforms for business incubation (Islam & Bhuiyan, 2022). Initiatives such as mentoring programmes and knowledge-sharing networks further bolster the entrepreneurial landscape (Addy et al., 2024).

Educational investments are aimed at equipping individuals with the skills and competencies necessary to thrive in the digital economy (Kargas et al., 2023). Furthermore, partnerships and networks facilitate the exchange of ideas and resources between public and private stakeholders (Clemente-Almendros et al., 2024). These networks not only

provide access to new markets and customer segments but also connect entrepreneurs with mentors and investors (Jia et al., 2024; Bhuiyan, 2019), thereby fostering an environment conducive to innovation and sustainable growth (Abbas & Myeong, 2024).

As the digital ecosystem evolves, the intersection between digital transformation and entrepreneurship has become a critical area of focus for both individuals and organisations (Nair et al., 2024). Entrepreneurs can leverage digital technologies to improve operational efficiency, respond to emerging market trends, and drive long-term business growth (Addy et al., 2024; Clemente-Almendros et al., 2024). Digital transformation thus serves as a strategic enabler of modern entrepreneurship and a medium for business reinvention (Fernandes & Burcharth, 2024).

Jia et al. (2024) emphasise that inspiring digital change is essential for driving startups, particularly in emerging economies. Leveraging digital technologies allows entrepreneurs to enhance operations, make data-driven decisions, and foster a culture of innovation (Chen et al., 2024). Developing a clear digital transformation roadmap is increasingly seen as a priority for entrepreneurs, especially those targeting key sectors in developing markets (Addy et al., 2024). Adoption of emerging technologies enables process automation, market expansion, and agility in exploiting new opportunities (Jia et al., 2024). When effectively integrated, digital transformation can catalyse economic development, encourage creativity, and promote entrepreneurial resilience in emerging economies (Abbas & Myeong, 2024).

Research Gaps

Despite the growing adoption of digital technologies, which introduce significant changes to entrepreneurial work practices (Scarmozzino et al., 2017) and migrate lives and work to the online arena (Abbas & Myeong, 2024), little is known about how digital technology can be strategically integrated into an enterprise without disrupting business flow (Scarmozzino et al., 2017).

Newly founded technologies like artificial intelligence, the Internet of Things (IoT) (Jia et al., 2024), and big data not only create an experience that influences the patterns in which new organisations emerge (Bhuiyan et al., 2024), but also how the enterprises operate (Bandara & Wong, 2024). Although this is more evident in the context of digital enterprises, it applies to all other business models as well (Kraus et al., 2019; Nambisan, 2017).

It therefore becomes important to analyse how digital technology influences entrepreneurship.

Objectives

- i. To examine the synergy between digital technology and entrepreneurship.
- ii. To determine the digital transformation strategies and technological platforms for creating value for entrepreneurship.

LITERATURE REVIEW

In the rapidly changing business environment, digital transformation has become a key growth catalyst for startups seeking recognition in competitive markets (Taheri et al., 2024). Digital transformation is said to occur when digital technology becomes inclusive in all facets of business, changing how organisations operate and deliver value to customers (Li, 2020; Westerman et al., 2014; Waheed et al., 2010). This includes the use of technologies such as artificial intelligence, cloud computing, data analytics, and automation to simplify processes, improve customer experiences, and increase organisational flexibility (Abbas & Myeong, 2024).

It is not an understatement to say digital transformation is core because startups are subject to growth and innovation (Mackay et al., 2023). The upsurge of automation ensures that startups that seek to be successful must embrace digital transformation (Clemente-Almendros et al., 2024; Kanval et al., 2024). Digital transformation empowers startups to enhance operational efficiency, drive growth, and create innovative offerings that cater to dynamic customer requirements (Saarikko et al., 2020; Warner & Wäger, 2019).

Digital technologies can be a key driver for startups to discover fresh revenue opportunities and new markets (Chen et al., 2024). Existing business features revolve around digital entrepreneurship, originating from the demands for information technology required for the survival of contemporary business (Mackay et al., 2023). Therefore, entrepreneurs must be versatile, possessing both technical expertise and business acumen (Fernandes & Burcharth, 2024). There are two types of entrepreneurs: the first is the research-based entrepreneur who commercialises innovative discoveries in technology (Thekkoote, 2024); the second is an imitative entrepreneur who registers in existing markets and puts the necessary organisational resources that are already available to assemble them (Panchal et al., 2024; Jam et al., 2010). Recently, digital entrepreneurs were

discovered due to their dependence on digital media tools, and information technology (IT) paved the way for discovering innovative entrepreneurial pathways (Mackay et al., 2023).

Digital Transformation

Digital transformation (DT) in SME business is a company's complex, multi-faceted activity of integrating digital technologies in all functional areas, processes, and activities, with the purpose of fundamentally changing the way businesses deliver value to customers (Akter et al., 2023b). Digital transformation is a procedure and not just about the acquisition of new digital tools and technologies (Panchal et al., 2024). DT is about changing the way one thinks, acts, and conducts business within an organisation (Fernandes & Burcharth, 2024).

One of the most important features of digital transformation in SMEs includes using cloud-based platforms with software that enables performance optimisation (Kargas et al., 2023). Some of the platforms that are used to support such activities include customer relationship management systems, project management tools, and enterprise resource planning software (Bhuiyan, 2023). Such small businesses and medium-sized enterprises can use the same to optimise their processes, unlock insights from data, or enable decision-making based on advanced analytics (Bhuiyan, 2017; Mackay et al., 2023).

Angela also believes that with the concept of digital transformation, there is an opportunity to re-imagine customer visions and engagements over digital channels. This includes having a solid online presence, incorporating e-commerce capabilities (Milon, 2024), the ability to sell directly on the website, and using social media and digital marketing methods to find and speak with customers one would not have been able to before (Chen et al., 2024).

SMEs must also realise that digital transformation is as much about people and process as it is about technology (Kargas et al., 2023). A successful digital journey requires embracing innovation, upskilling employees in digital literacy, and reimagining traditional business models (Mackay et al., 2023). Traditional business models are essential to the survival of indigenous entrepreneurship (Olowu et al., 2024).

In this highly dynamic digital-first environment, SMEs that look to embrace and grow their business via digital transformation can easily accommodate the changes in market dynamics while enhancing operational flexibility for paced sustainable growth (Kargas et al., 2023). Alongside the incorporation of cloud-based platforms and revolutionising consumer experiences, digital transformation within SMEs (Bhuiyan, 2023)

also includes using data analytics and artificial intelligence to be more informed in client conduct, market trends, and internal operations (Ullrich et al., 2023). Leveraging data and AI allows SMEs to be more data-driven, offering personalised solutions that cater to the various needs of customers (Cubric & Li, 2024).

This is in addition to how collaboration and partnerships with technology vendors, industry experts, and other SMEs prove invaluable when it comes to guiding you through the complexities inherent in digital transformation (Fernandes & Burcharth, 2024). By utilising our specialised expertise and resources, outsourcing can help guide you through the transformation journey (Denga & Rakshit, 2022). In essence, digital transformation is a game-changer for SMEs, enabling them to increase their competitive ability (Bhuiyan et al., 2023) and abilities for innovation in the era of digitisation (Kargas et al., 2023). The combination of technology, people, and process offered by taking a holistic view allows SMEs to weather the storm and stay ahead of the curve over the long term rather than just dealing with one crisis after another (Mackay et al., 2023).

Digital Entrepreneurship

Digital entrepreneurship (DE) can be described as entrepreneurial opportunities formed (Hossain et al., 2024) and exploited using technological platforms such as computer software, networking equipment, including modems, and other information-conveying facilities (Malik et al., 2022). Hence, digital entrepreneurship can apply to diverse business models and industries (Fernandes & Burcharth, 2024). DE is a multifarious idea that combines institutional entrepreneurship, knowledge, and business in a symbiotic relationship. Business entrepreneurship is the most commonly discussed aspect (Malik et al., 2022; Hossain et al., 2024). Knowledge entrepreneurship entails the discovery and exploitation of opportunities centred on knowledge and information, encompassing both the growth of existing products or services and the creation of new ones, as well as new market entry with new goods or services based on knowledge (Khanom et al., 2022). Institutional entrepreneurship refers to the actions that entrepreneurs engage in, working with resources and envisioning new organisations or the transformation of existing structures (Joel et al., 2024). Thus, digital entrepreneurship is essentially a mix of the three entrepreneurial practices above.

Digital Transformation and Digital Entrepreneurship: A Nexus

Digital transformation and digital entrepreneurship have an interdependent relationship. Digital transformation and digital entrepreneurship are interconnected. Digital

transformation embeds digital technology into every aspect of a business by changing its operation and value delivery (Malik et al., 2022). In contrast, digital entrepreneurship refers to creating and growing new ventures that make use of digital technologies (Bhuiyan & Akter, 2024). A robust digital transformation ecosystem is crucial for fostering digital entrepreneurship (Denga & Rakshit, 2022). The course is evident in the ability of digital technologies to assist new businesses in generating and increasing their customer base and inventing new services/products (Salam et al., 2021).

Digital transformation also furnishes digital entrepreneurs with cutting-edge tools and platforms to boost operational efficiency, collect data, and present valuable insights to enable them to make intelligent decisions for business (Oyewole et al., 2024). As a result, digital entrepreneurship can drive significant innovation and disruption across sectors where there are emerging competitive markets (Hossain et al., 2024).

Defining the relationship between digital transformation and digital entrepreneurship is critical for businesses striving to gain a competitive edge (Malik et al., 2022). This will ensure a digital focus on fostering and supporting digital entrepreneurship more effectively (Hossain et al., 2024). Additionally, businesses can develop an ecosystem that encourages sustainable growth in number (Joel et al., 2024). In furtherance of this, Table 1 presents the various strategies available to an entrepreneur and the product of application.

Table 1: A list of Digital Transformation Strategies for Digital Entrepreneurship

Strategies	Procedure of Application	Sources
Customer-Centric Approach	Involve digital tools to access a profound disposition of customer needs, in accordance to personal preferences, and elevate the total experience of the customer across all points of interaction.	(Denga & Rakshit, 2022)
Data Analytics	Utilize sophisticated analytics methodologies to extract valuable insights from extensive datasets, facilitating well-informed decision-making and predictive analytics to drive business expansion.	(Joel et al., 2024)
Cloud Computing	Cloud services present organizations the possibility to enhance their operations by leveraging scalable, flexible, and cost-effective solutions for managing infrastructure, data storage, and software applications.	(Fernandes & Burcharth, 2024)
Internet of Things (IoT)	The integration of Internet of Things (IoT) devices and sensors allows for the collection of real-time data, which can be utilised to optimise operational processes and generate additional revenue streams by developing innovative products and services.	(Malik et al., 2022)
Artificial	The deployment of artificial intelligence (AI) algorithms has proven to be highly advantageous in automating tasks,	(Mohammad et al., 2024)

Intelligence (AI)	tailoring experiences to individual users, and facilitating intelligent decision-making covering a broad spectrum of business activities, including marketing, sales, and customer service.	
Machine Learning (ML)	In terms of usage, A wide variety of corporate activities, such as marketing, sales, and customer service, have benefited greatly from the integration of machine learning algorithms, which have shown significant benefits in job automation, personalizing experiences for individual users, and facilitating intelligent decision-making.	(Clemente Almendros et al., 2024)
Blockchain Technology	It is important to investigate the applications of blockchain technology in order to improve the safety, transparency, management of the supply chain, efficiency of transactions and digital identity verification among other areas.	(Mohammad et al., 2024)
Digital Marketing Strategies	Engage digital marketing strategies such as search engine optimization (SEO), search engine marketing (SEM), content marketing, and social media marketing in order to efficiently reach target audiences, as well as to promote consumer engagement and conversion.	(Joel et al., 2024)
E-commerce and Mobile Commerce	The establishment of an online presence through the use of e-commerce platforms and mobile applications will allow for the completion of transactions without interruptions, will improve accessibility, and will broaden market reach.	(Fedyunina et al., 2024)
Cybersecurity Measures	In order to secure digital assets, customer data, and intellectual property against cyber threats and breaches, it is important to implement effective cybersecurity procedures.	(Fernandes & Burcharth, 2024)
Continuous Digital Innovation	Maintaining a competitive position in the digital market makes it crucial to cultivate a culture that encourages innovation and experimentation in order to continuously investigate new digital technologies, operations, and revenue streams.	(Atadoga et al., 2024)
Sustainability Initiatives	It is important to include sustainability principles in digital operations and offers in order to reduce the negative impact on the environment, fulfil regulatory requirements, and improve the reputation of the business.	(Chen et al., 2024)
Digital Talent Development	Investing in talent development programmes and digital skills training will establish talented employees capable of driving innovation and effectively harnessing emerging technology. Training significantly influences the continuity of small businesses.	(Addy et al., 2024; Olowu & Bello, 2024)
Collaborative Remote Work	Enhanced flexibility and efficiency in a digital work environment can be attained by employing collaboration tools and technology. These tools and technologies can be utilize to enhance remote work, facilitate virtual meetings, and promote team communication.	(Fernandes & Burcharth, 2024)

METHODOLOGY

This research was based on a qualitative approach, where secondary data collection was employed because the application of emerging technologies in entrepreneurship is evolving in a developing economy. The novelty of the topic under research is digital

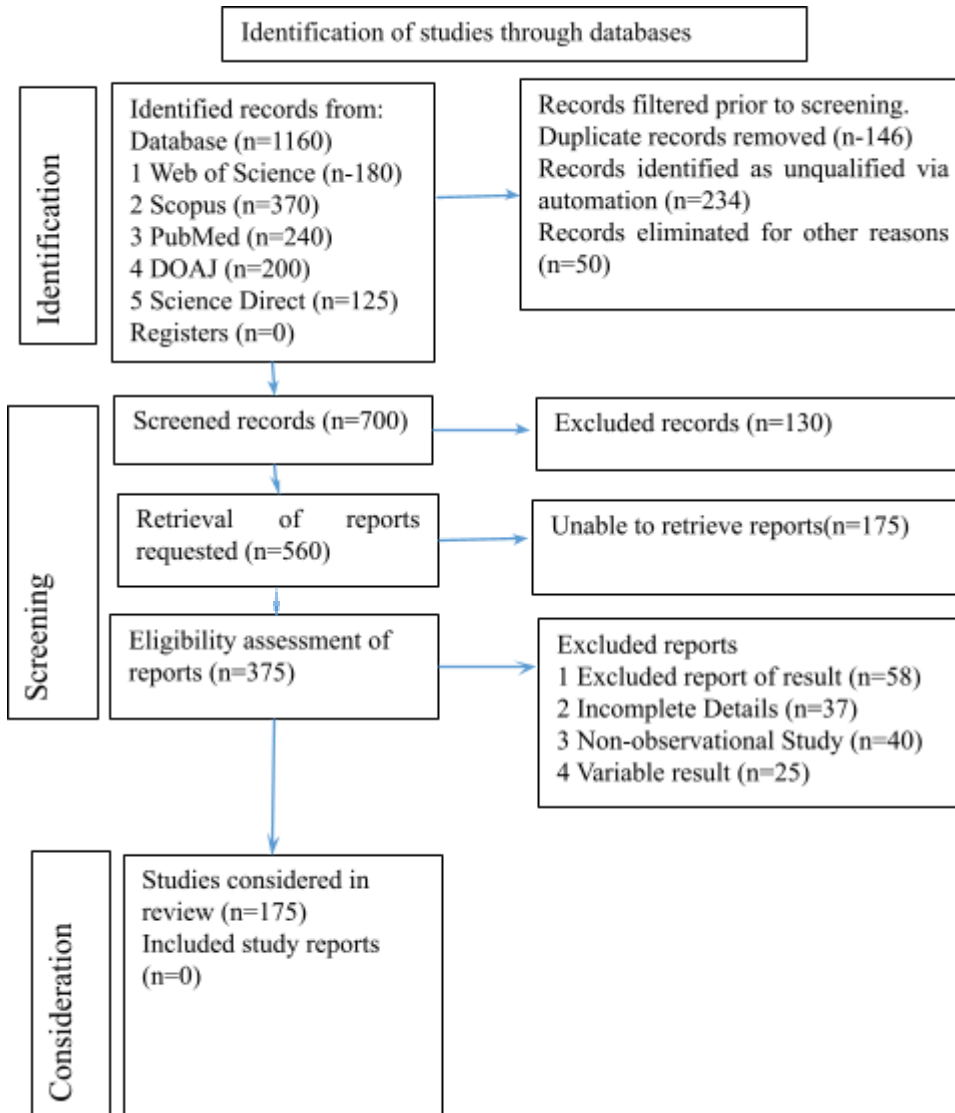
transformation within the context of entrepreneurs in Nigeria. This study employed a qualitative approach. The source of data is secondary, with a view into journals, articles, TV news (Mohammad et al., 2024), and online portals. The objective of this research is to uncover the criteria necessary for developing a robust and effective digital transformation for entrepreneurs in Bangladesh (Islam et al., 2024). Moreover, since the idea of evolving technologies is not yet considered in all sectors of the economy in the country (Panchal et al., 2024), it becomes important to adapt and imbibe strategies from nations that are more technologically advanced in addressing the concerns of all sectors (Denga & Rakshit, 2022).

The 2020 PRISMA statement replaces the 2009 statement and integrates revised guidelines for reporting. These guidelines incorporate the latest advancements in methodologies used to identify, select, evaluate, and combine studies. Changes have been made to the structure and format of the items to improve ease of implementation (Joel et al., 2024).

Standards of PRISMA were employed specifically for conducting meta-analyses and systematic reviews of observational data. Researchers conducted an extensive search for original publications published between May 2021 and May 2024, with inclusiveness of global databases such as PubMed, Scopus, DOAJ, Direct Science, and Web of Science (Zheng et al., 2024). A systematic process was followed for retrieving the database through a codified procedure. The search process was language-agnostic. Relevant keywords such as Digital Transformation, Digital Entrepreneurs, PRISMA, SMEs, Entrepreneurial Work, and Impact of Digital Transformation were used to guide the search (Atadoga et al., 2024).

The identification, screening, and inclusion process involves categorising options based on predefined criteria, as shown in Figure 2. Records not matching the specified keywords or research topic are excluded, considering factors such as insufficient data, language barriers, inconsistent outcomes, and irrelevant effects (Oyewole et al., 2024). The selection process has resulted in the identification of 185 additional papers for inclusion in the study.

Figure 1: PRISMA-Based Systematic Review



Source: Adapted (Haddaway et al., 2022)

RESULTS AND DISCUSSION

The researcher discussed the role and activities of entrepreneurs, where the impact of digital technologies on entrepreneurship was interpreted. The use of technology was seen as a rational choice, focusing on selecting the appropriate communication medium for a given task, with the emerging technologies and tools for entrepreneurs focusing on efficiency in operations.

Role and activities of entrepreneurs

The function of entrepreneurs is germane to the survival and achievement of success of entrepreneurial firms, which are defined as companies that introduce new products and services to the market by identifying and seizing opportunities. Business owners or founders of small or medium-sized companies who are entrepreneurs have a significant influence on the strategy and organisation of their businesses (Oyewole et al., 2024). Within these organisations, owners take on various roles and engage in different activities such as planning, directing, coordinating, and monitoring (Mueller et al., 2012; Mia et al., 2024). Business owners are responsible for charting the firm’s strategic direction (Burton et al., 2019). The success of entrepreneurial firms is strongly correlated with the entrepreneur's intellectual capital, capabilities, and personal networks (Ruiz et al., 2024). Furthermore, the past experience of the entrepreneur has been found to impact various aspects of a firm's performance, including innovation (Mohammad et al., 2024).

The Impact of Digital Technologies on Entrepreneurial Work

The integration of digital technologies into management and organisational studies is a well-established area of research (Poli et al., 2024). Initially, the use of technology was seen as a rational choice, focusing on selecting the appropriate communication medium for a given task (Panchal et al., 2024). However, this perspective has been challenged by subsequent theories that emphasise the user experience, such as channel expansion theory (Oyewole et al., 2024). More recent approaches view the relationship between technology and work as an evolutionary process (Table 2) (Amin et al., 2024), where individuals, despite some initial resistance, gradually adopt and adapt to new technologies as they become more accessible (Joel et al., 2024).

Table 2: Tools and Technology Application for Entrepreneurs

Tools	Application	Source
Social Networking	Social networking platforms such as LinkedIn, Facebook, Twitter, and Instagram play a crucial role in the strategic efforts of entrepreneurs to establish and enhance their brand presence, foster connections with prospective customers, and engage in professional networking with peers within their respective industries.	(Addy et al., 2024)

Video Call	Video conferencing tools such as Microsoft Teams, Google Meet, and Zoom have emerged as indispensable tools for facilitating remote collaboration.	(Fedyunina et al., 2023) al., 2024)
Voice Call	VoIP: Skype, WhatsApp, and Viber offer affordable and flexible voice communication. AI voice assistants such as Alexa for Business and Google Assistant handle tasks, create reminders, and operate hands-free.	(Clemente Almendros et al., 2024)
Instant Messaging	Of importance are platforms for instant messaging, such as Microsoft Teams, WhatsApp, and Slack, in facilitating real-time communication. They provide features such as bots and automation, secure messaging, file sharing, interaction with project management applications, and threaded chats.	(Akanfe et al., 2024)
Business Intelligence	BI tools play a crucial role in facilitating data-driven decision-making, and there have been significant advancements in this field. Advanced analytics platforms such as Looker, Power BI, and Tableau provide users with the capability to perform predictive analytics and visualise data.	(Denga & Rakshit, 2022)
Email	A mainstay of corporate communication, email is still quite successful thanks to developing technology: AI-Powered Email Management. Smart sorting and scheduling capabilities of programmes like Boomerang and SaneBox help control inbox overflow.	(Andrade Rojas et al. 2024)

Attitudes for promoting digital entrepreneurship

Researchers' role in promoting digital entrepreneurship by trends identification, strategy identification, innovation, and driving growth is very important (Mohammad et al., 2024). Through in-depth studies on the latest technologies, market dynamics, and consumer

behaviour (Masum et al., 2024), researchers provide valuable insights that empower aspiring entrepreneurs to make informed decisions and navigate the complexities of the digital economy (Musyaffi, 2024). Research-driven approaches such as market segmentation analysis, competitive benchmarking, and trend forecasting help aspiring digital entrepreneurs identify gaps in the market (Ruiz et al., 2024), take advantage of opportunities in the digital sphere, and develop unique value propositions (Atadoga et al., 2024). By leveraging research-backed strategies and staying updated on industry developments, researchers support the growth and success of digital entrepreneurs in a constantly evolving business environment (Mohammad et al., 2024), as depicted in Table 2.

There can be an implementation of strategic approaches to improving digital entrepreneurship. Firstly, continuous investment in research and development is crucial to keep pace with the evolving digital landscape (Musyaffi, 2024). By staying informed about the latest technology trends and consumer behaviours, researchers can identify new entrepreneurial opportunities and design innovative solutions (Rogers, 2016). Secondly, fostering collaboration and partnerships within the digital ecosystem facilitates knowledge exchange and resource sharing, enabling researchers to take advantage of diverse capabilities and expertise (Panchal et al., 2024). Additionally, providing access to mentoring and incubation programmes empowers aspiring digital entrepreneurs with the necessary guidance and support to navigate challenges effectively in Figure 3 (Mia et al., 2024). Embracing these approaches helps cultivate an environment that fosters digital entrepreneurship and encourages sustainable growth in a digital economy (Fedyunina et al., 2024).

CONCLUSION

In conclusion, the study's insights are valuable not only for entrepreneurs but also for other stakeholders, including academics, policymakers, and ICT developers, who can apply this knowledge to their respective domains (Fedyunina et al., 2024). Precisely, understanding entrepreneurs' operational activities will certainly lead to better-suited ways of supporting the job that firm owners are out there doing, be it through more effective technological tools for them, improved training programmes and materials, or public policies in this sector (Musyaffi, 2024). As a result, more capable entrepreneurs will take their firms to a level where success and economic benefits are guaranteed (Rogers, 2016). The study sheds light on various stages of digital transformation and its impact on entrepreneurship. Moreover, this paper provides greater insights into the determinants of

technology entrepreneurship, as well as the influence that technology has on consumers, policymakers, and producers, to speed up a notable impact on a country's economic progress.

Limitations and Future Directions of the Study

This study may be perceived to have some elements of bias due to publications considered as papers extracted from prestigious publications or those that present positive results. The choice of databases (such as Scopus, Web of Science, and others) could restrict the inclusiveness, as certain pertinent studies may be archived in alternative databases. Variations in research quality may influence the review's findings. Future evaluations could enhance their comprehensiveness by incorporating additional sources, such as conference papers, dissertations, and reports (Saha et al., 2024).

Future studies could potentially explore the evolution of digital transformation and entrepreneurship over time by conducting longitudinal studies. By acknowledging and overcoming these constraints and investigating the proposed future avenues, future studies can offer more thorough, sophisticated, and practical understandings of the changing realm of digital transformation and digital entrepreneurship.

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