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Systematic Literature Review on Digital Entrepreneurship Adoption Among SMEs: Trends, Challenges, and Future Directions

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ABSTRACT

This study comprehensively analyzes existing literature on implementing Digital Entrepreneurship in Small and Medium-Sized Enterprises. The goal is to combine the existing patterns, identify impediments, and predict future trends in this rapidly advancing field. Using a comprehensive systematic literature review approach, we examined 20 pertinent scholarly articles from a total of 660, with a specific emphasis on the incorporation of DE into the business models of SMEs. The results of our research indicate that DE provides significant advantages for SMEs, such as improved efficiency and a competitive edge through the use of digital technologies like cloud computing, artificial intelligence, and social media marketing. However, it also brings about some difficulties and obstacles. These issues involve technological, organizational, and environmental elements. The study emphasizes the pivotal significance of the Technology-Organization-Environment framework in achieving successful digital adoption. In addition, we analyze the consequences of our discoveries for policymakers and practitioners, underscoring the importance of implementing flexible adoption strategies and promoting the spread of the Fourth Industrial Revolution components. The report provides policy recommendations to create a conducive climate for SMEs to adopt DE.

1. Introduction

Over the past few years, entrepreneurship has changed significantly due to the rise of digital technologies [1-3]. In the age of technological advancement, society has transitioned to a knowledge-dependent economy, coinciding with the concurrent expansion of information technology [4]. The rapid advancement of technology, expedited product development, and abbreviated product life cycles can enhance the pace of innovation, hence altering the nature and shape of economic growth [5]. Moreover, it possesses considerable ramifications for individuals, corporations, and governments globally [6]. Therefore, Digital Entrepreneurship (DE) refers to using digital technologies in business processes, and it has become a fundamental way for Small and

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Medium-sized Enterprises (SMEs) to stay competitive and sustainable [3,7-10]. SMEs are essential for economic growth and innovation and are at the forefront of this digital revolution. Policymakers, business owners, and researchers need to understand the factors influencing the adoption of DE among SMEs. By adopting DE practices, SMEs can expand their market, become more efficient, engage with customers better, and access global networks. However, there still needs to be a significant gap in the research on how SMEs adopt DE and its outcomes [11]. This systematic literature review aims to synthesize existing research on DE adoption comprehensively. This review also explores the trends, challenges, and future direction of adopting DE in SMEs [12,13]. Ultimately, this review aims to contribute to the knowledge that will aid policymakers, practitioners, and academics in developing effective strategies to promote and support the successful integration of DE in SMEs. This will help foster their growth and prosperity in the digital era [14].

2. Literature Review

2.1 Digital Entrepreneurship

The combination of digital technology and entrepreneurship abilities has led to a new generation of entrepreneurs who leverage the internet and technology to expedite their business transactions [15,16]. Wang *et al.,* [17] argue that DE is a novel perspective on entrepreneurship. It involves utilizing digital technologies in various stages of the entrepreneurial process, such as identifying opportunities, evaluating them, exploiting them, generating value, and acquiring distribution channels. Entrepreneurs can alter their business practices by implementing digital technologies [18]. Additionally, it is crucial to establish a business model and verify its functionality [19]. DE is the outcome of the fusion of "entrepreneurship" and "digital technology," encompassing domains like "information technology" and the "internet" [20].

2.2 Small and Medium-sized Enterprises and DE Adoption

SMEs are encouraged to adopt digital transformation and must possess the necessary entrepreneurial skills [21]. The past two decades have witnessed significant changes and trends in digital ecosystems, particularly in their impacts on SMEs [22]. Despite the importance of digitalization, more research is needed on its effects on SME business performance. Entrepreneurs must understand digital solutions' tangible benefits and return to make informed technology adoption decisions [23]. SMEs play a crucial role in the country's economy. To stay competitive amidst global change and intense competition, SMEs can leverage DE to gain an edge. By 2030, DE is expected to become the most significant contributor to the country's digital economy. SMEs must find solutions to overcome challenges, such as exploring new opportunities, innovating products, and leveraging technology to access broader markets [24]. Despite their significant contribution to the economy, SMEs must also consider the impact they have on the environment. Implementing environmentally friendly practices is necessary for long-term sustainability. Organizations can achieve sustainability by adopting circular economy principles and utilizing digital technology to promote growth, development, and opportunities [25].

This study challenges previous research and suggests that digital vision is a critical factor in determining the adoption of SMEs alongside technological, organizational, and environmental contexts [26]. An integrated theoretical model was utilized to analyze these factors and their impact [27]. The COVID-19 pandemic has accelerated technology adoption as businesses seek to remain operational [28]. In the digital economy, utilizing public platforms for digital marketing is

crucial for SMEs to gain a competitive edge. However, there needs to be more understanding of the dynamics and strategies involved in adoption. This study provides insights into these dynamics and expands upon the Technology-Organization-Environment (TOE) framework's antecedents, as shown in Figure 1. It also offers practical advice for agile adoption, emphasizing using existing technology functions to explore business opportunities quickly [35].

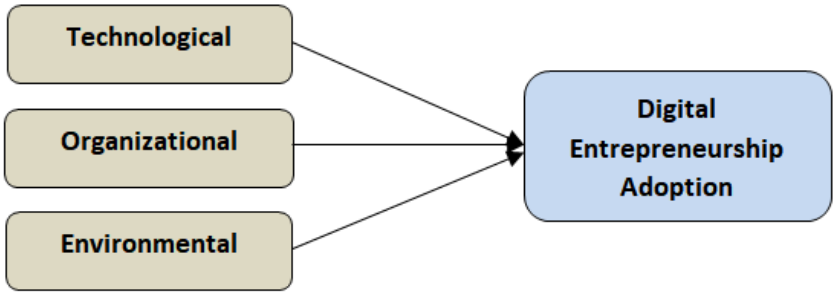

Fig. 1. Conceptual framework: TOE framework for DE adoption

3. Material and Method

This study has employed a systematic literature review methodology, according to the deductive research strategy, which is comparable to the methodology used by [30]. In addition, a qualitative literature assessment was utilized in the systematic literature review (SLR) to establish the correlation between DE and different factors. The SLR process comprises three distinct phases: identification, screening, eligibility, and reporting. In addition, a concept-oriented approach was employed to identify the prominent themes that aid in constructing a conceptual framework for distance education.

3.1 Identification

We employed the three primary stages of the systematic review procedure to identify multiple relevant publications for our study. In the preliminary phase, it is essential to discover keywords and seek pertinent terminology using resources such as a thesaurus, dictionaries, encyclopedias, and prior research. We have generated search strings for the Scopus and Mendeley databases (see Table 1) after the selection of all pertinent terms. The present research initiative successfully gathered 660 publications from both databases during the preliminary phase of the systematic review process.

Table 1
The search string

Scopus	TITLE-ABS-KEY (digital AND entrepreneur* OR technology* AND adoption AND smes) AND PUBYEAR > 2020 AND PUBYEAR < 2025 AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (LANGUAGE , "English")) Date of access: October 2024
Mendeley	(digital AND entrepreneur* OR technology* AND adoption AND smes) Date of access: October 2024

3.2 Screening

Researchers must exclude duplicate manuscripts during the preliminary screening step. Researchers established diverse inclusion and exclusion criteria, resulting in the elimination of 518 publications in the initial phase and the assessment of 0 articles in the subsequent phase. The initial criteria were founded on the principal source of practical information, namely the literature (research papers). This study excludes publications such as systematic reviews, reviews, meta-analyses, meta-syntheses, book series, books, chapters, and conference proceedings. The review limited its scope to papers published in the English language. It is essential to recall that we established the program for duration of three years (2021–2024). Consequently, we exclusively chose research about SMEs to correspond with our analytical objectives. A total of one hundred forty-two publications exist based on established criteria.

Table 2
The selection criterion is searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline / Years	2021 – 2024	< 2021
Literature type	Journal (Article)	Conference, Book, Review
Publication Stage	Final	In Press

3.3 Eligibility

A total of 128 articles have been produced for the third level, referred to as eligibility. At this juncture, we meticulously examined the titles and principal content of all publications to confirm their compliance with the inclusion criteria and their alignment with the objectives of the current study. Consequently, we removed 108 reports since their entire texts were not available. We rejected 25 irrelevant reports, 47 titles that did not substantially pertain to the study's purpose and 36 abstracts that lacked alignment with the study's empirical data. Ultimately, 20 papers are accessible for examination (see Table 3).

Table 3
Trends, challenges, and potential future directions in the field of DE adoption among SMEs

Authors	Trends, Challenges, and Potential Future Directions in the Field of DE Adoption
Al-Omar *et al.* [31]	Trends: Idea generation, experimentation, and strategic implementation. Challenges: Resource allocation, digital literacy, and managing competitive dynamics. Future Directions: Analytics and AI-driven tools
Samat *et al.* [32]	Trends: Technological and government support, competitive intelligence, and social media marketing performance. Challenges: The inconsistent impact of organizational support across different company sizes. Future Directions: The role of social media marketing in bridging performance gaps among SMEs of varying sizes
Fu *et al.* [33]	Trends: The leverage of social media marketing is due to factors such as top management support, staff competency, and customer pressure. Challenges: Implementing social media marketing due to perceived benefits, complexity, and associated costs. Future Directions: Creating cost-effective, user-friendly social media marketing tools and strategies, focusing on managerial training and customer engagement to boost SME adoption.
Shetty & Panda [37]	Trends: Perceived utility, simplicity, technical readiness, and top management support.

	Challenges: Less importance on compatibility and competitive pressure. Future Directions: Revisiting criteria for technology adoption.
Ta & Lin [38]	Trends: Environmental factors and customer experience as determinants for digital transformation. Challenges: Balancing technology compatibility, government and organizational support, and human resources. Future Directions: Strengthening hierarchical and digital transformation frameworks.
Jung *et al.* [39]	Trends: Smart factory adoption by the performance of existing production systems. Challenges: Limited impact of top management support on brilliant production benefits. Future Directions: Further research on factors influencing innovative factory transformation.
Auyporn *et al.* [40]	Trends: Factors for cybersecurity standard adoption include organization size, IT intensity, and cybersecurity awareness. Challenges: Addressing organizational needs and resources for cybersecurity. Future Directions: Enhancing cybersecurity standards and awareness.
Low *et al.* [41]	Trends: Digitalisation is influenced. Challenges: Differing digitalization adoption across sectors. Future Directions: Prioritising technology and organization in digitalization strategies.
Özşahin *et al.* [42]	Trends: Development of ICT adoption. Challenges: Identifying areas requiring digital transformation modifications. Future Directions: Policy and practitioner guidance for digital transformation.
Abbasi *et al.* [44]	Trends: Social media marketing adoption by perceived advantages and managerial support. Challenges: Balancing vendor and competitive pressure. Future Directions: Leveraging competitive industries to mitigate pressures on social media marketing adoption.
Chatterjee *et al.* [46]	Trends: DE is shaped by utility, simplicity, and adaptability. Challenges: Leveraging AI-CRM capability and strategic planning. Future Directions: Focusing on corporate DE and its predictors.
Santoso *et al.* [47]	Trends: Resistance to adopting online marketplaces. Challenges: Complexity, risk perception, and lack of influence of government funding. Future Directions: Addressing perceived risks and behavioral control to encourage adoption.
Bermeo-Giraldo *et al.* [48]	Trends: Influence of digital marketing during COVID-19. Challenges: Balancing complex self-efficacy and risk perception. Future Directions: Enhancing digital marketing use under pandemic constraints.
Kwabena *et al.* [50]	Trends: Impact of technological-organizational-environmental factors on mobile payment adoption. Challenges: Significant effects of various factors on mobile payment system adoption. Future Directions: Comprehensive analysis of factors influencing mobile payment adoption.
Lee *et al.* [51]	Trends: Drivers of digital adoption across industries. Challenges: Differing adoption rates and drivers in low and high-tech sectors. Future Directions: Tailored digital strategies for diverse industrial sectors.
Sánchez-Torres *et al.* [52]	Trends: E-commerce adoption. Challenges: Pressure from senior management, performance expectations, and competition. Future Directions: Strategies to leverage e-commerce for competitive advantage.
Samsudeen *et al.* [53]	Trends: Social media adoption perspective. Challenges: Varied impacts of trialability, management support, and CEO innovativeness. Future Directions: Understanding critical drivers for effective social media adoption.
Hassan *et al.* [54]	Trends: Factors influencing social media and public cloud adoption. Challenges: Perceptions of utility, security, implementation costs, and innovativeness. Future Directions: Enhancing perceptions and capabilities for technology adoption.
Emini & Merovci [55]	Trends: DIY marketing and digital marketing adoption. Challenges: Dependence on user experience and control for digital marketing. Future Directions: Focused strategies on user experience to boost digital marketing.
Dressler & Paunovic [56]	Trends: Technology adoption for digital transformation. Challenges: Implementing digital technologies in traditional industries. Future Directions: Developing strategies for digital transformation.

3.4 Data Abstraction and Analysis

The study used integrative analysis to analyze various research methodologies, including quantitative, qualitative, and mixed methods. Data was collected from 20 publications and current studies on digital entrepreneurship adoption among small and medium-sized enterprises. The author collaborated with co-authors to identify themes, and logs were kept for analysis. Differences were resolved through internal conversations and modifications were made to ensure cohesion. Experts in entrepreneurship and digital transformation evaluated the challenge's validity and the clarity, importance, and appropriateness of each subtheme.

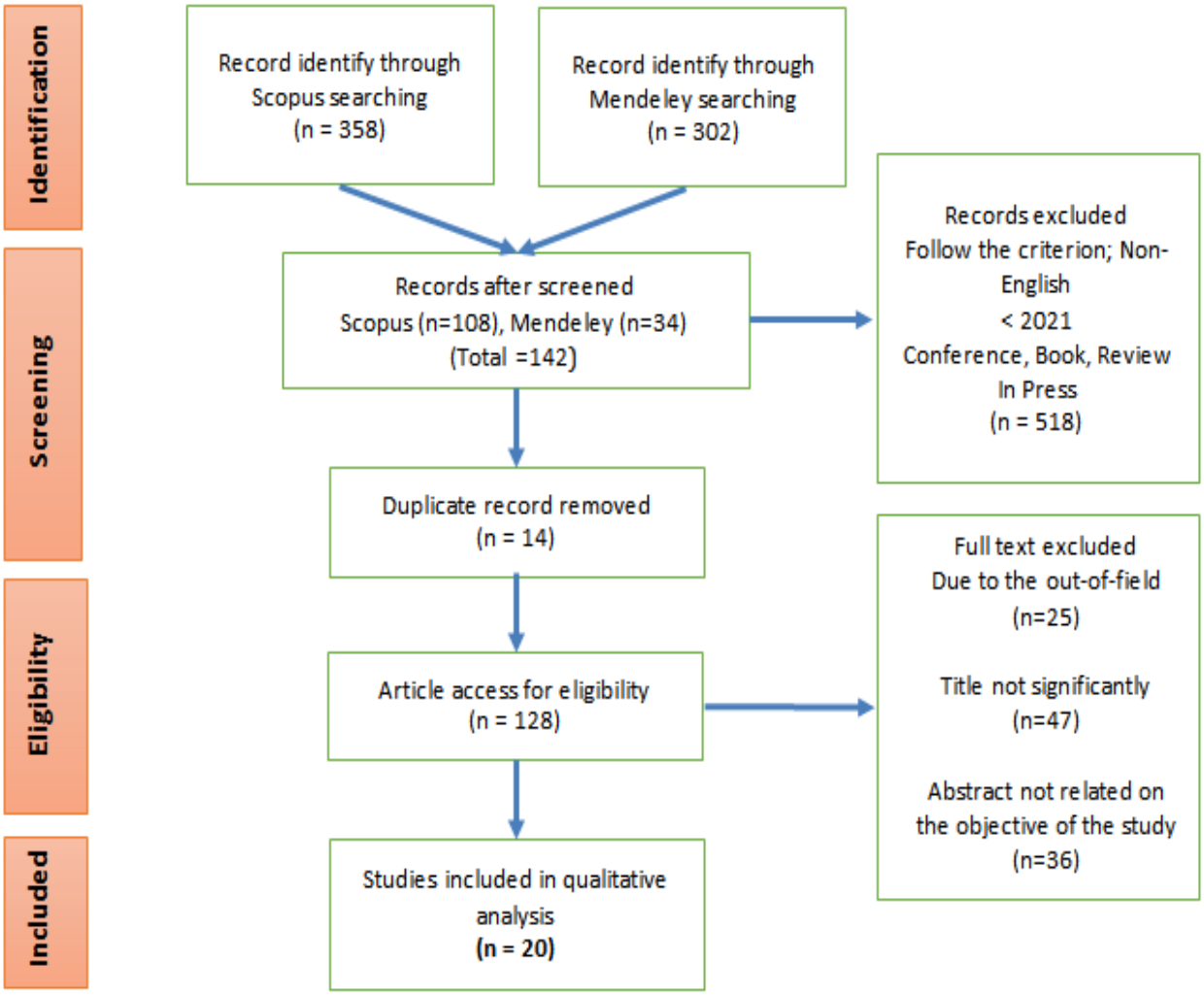

Fig. 2. Flow diagram of the proposed search study

4. Results and Finding

The DE is gaining momentum due to the need for efficiency, customer engagement, and competitive advantage. However, challenges include technological infrastructure compatibility, organizational issues, financial constraints, and employee training. The future of DE requires targeted research, strategies, and policies tailored to different regions and industries. Emphasizing corporate DE and enhancing digital literacy is crucial. Post-pandemic adaptation and leveraging emerging technologies are also essential for sustaining and growing digital entrepreneurship.

5. Conclusions

The study presents a thorough literature analysis on the adoption of DE among SMEs, highlighting its trends, difficulties, and future possibilities. The TOE framework underscores the transformative advantages of digital transformation, including improved efficiency and competitive edge via technologies such as artificial intelligence and cloud computing, while also confronting challenges such as infrastructure compatibility, financial limitations, and workforce competencies. The research highlights the significance of agile adoption techniques and governmental assistance, particularly in the post-pandemic context, for promoting the growth and sustainability of SMEs following 4IR developments**.**

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