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## Configuring AI-guided sustainable competitive advantage for SMEs through business model innovation: A systematic literature review approach

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### ABSTRACT

Researchers have been exploring an effective framework for achieving competitive advantage for many years, specifically tailored to small and medium-sized enterprises (SMEs) to ensure their long-term survival. The recent surge in advanced technologies, particularly artificial intelligence (AI), has made their debates more challenging. Thus, the study proposes a conceptual framework specifically designed to leverage AI for long-term competitive advantage in SMEs, examining their business models through this lens. This study conducts a systematic literature review (SLR) to cover a broad range of relevant literature within a final sample of 69 articles. The SLR method was chosen to integrate research in a systematic, transparent, and reproducible way. For qualitative analysis and framework derivation, the study draws on a thematic ontological analysis. The study identifies multiple research streams at the intersection of advanced technology and entrepreneurship aimed at enhancing the competitiveness of SMEs. The primary outcome of this study is the development of a comprehensive business model framework, encompassing both external antecedents (namely, market and industry dynamics, technological infrastructure, government policies and support, strategic alliances, socio-cultural factors) and internal antecedents (digital leadership, dynamic capabilities/adaptability, entrepreneurial mindset, data strategy, growth/resilience), ultimately contributing to sustainable performance. Practically, the study provides a comprehensive avenue for SME owners and managers to adopt and use AI in business strategies and operations. Based on the results, SMEs can implement automation and machine learning to streamline business processes, minimize manual labor, and boost overall operational efficiency. More theoretical and practical implications, along with limitations and future directions, are also discussed, revealing multiple theoretical gateways and an agenda for subsequent empirical work.

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## 1. Introduction

Small and Medium Enterprises (SMEs), defined as businesses with fewer than 250 employees, are the foundation of many economies (Massaro, Handley, et al., 2016; Paoloni et al., 2022). They have unique qualities, both positive (e.g., agility) and negative (e.g., restricted resources and the capacity to bear major shocks) (Ba Awain et al., 2025; Sulaiman, 2025; Zamani, 2022). They provide essential contributions to social development, accounting for almost 90 % of enterprises and more than half of worldwide employment (Massaro, Handley, et al., 2016). Formal SMEs provide up to 40 % of national revenue (GDP) in emerging economies, and represent most of the total active companies (Asad, 2024b; Ta'Amnha et al., 2024), and also create a significant number of jobs in all industrialized countries, with 60–70 % in most OECD countries (OECD, 2025). Interestingly, recent studies by Jung et al. (2021) and Zamani (2022) highlight the importance of advanced technology in supporting the survival and growth of SMEs. Following the same approach, AlZayani et al. (2024) clearly emphasize that technology use may significantly increase SME productivity and profitability. The COVID-19 pandemic has stressed this point even more, serving as a clear reminder that SMEs must embrace digitalization and emerging advanced technologies to remain competitive and even survive in today's quickly changing business world (Akpan et al., 2022; Zighan et al., 2021).

The current business landscape is experiencing a substantial shift, fueled by Industry 4.0 technologies in general and Artificial Intelligence (AI) in particular (Mariyana et al., 2024; Vaska et al., 2021) in a variety of fields (Asad et al., 2025). Historically, the introduction of new technologies has always resulted in substantial revolutions, shifting corporate paradigms and dynamics. Similarly, AI's influence on firms goes beyond operational efficiency. Iaia et al. (2024) detect that AI's value generation for businesses is inextricably tied to employee engagement with AI and its contribution to employee value. This enables organizations to make data-driven decisions in all parts of their operations, from product development and pricing strategies to resource allocation and marketing campaigns (Chatterjee et al., 2023; Ferreira et al., 2024; J. Wang et al., 2022). While AI offers a compelling value proposition for SMEs, realizing its benefits necessitates an initial investment in technology and talent, which can be a substantial barrier for certain companies (Kar et al., 2023).

Nowadays, AI has become a common term, although its meaning is somewhat paradoxical (Secinaro et al., 2021), as AI tools are aimed at human-like intelligence functions, but these lack emotions and experimental aspects of humans (Cobianchi et al., 2022; Lada et al., 2023; Mariyana et al., 2024). AI has advanced significantly over the last three decades thanks to a trifecta of factors: exponential growth in computing power, the development of sophisticated algorithms, and, most importantly, the emergence of massive datasets for training AI systems (Oldemeyer et al., 2024; Tarafdar & Gordon, 2007). In this regard, machine learning (ML) and deep learning (DL) paradigms now dominate the AI world as these algorithms have the astonishing capacity to recognize patterns in data and constantly improve through self-learning, which is the key of AI tools' effectiveness (Canhoto & Clear, 2020; R. Peres et al., 2023; Wegner et al., 2024). While the potential advantages of AI are clear, there is tremendous doubt and dispute over its proper place in society. Concerns about AI extend beyond its possible social or ethical effects on the governance and development of these sophisticated systems (Cardon et al., 2021; Zhai et al., 2020).

AI has emerged as a key issue in academic discussions on entrepreneurship, particularly for SMEs (Shukla & Taneja, 2024). A critical yet underexplored dimension in the discourse around AI adoption in SMEs is the role of technological turbulence (Sulaiman et al., 2024), defined as the rate of technological change and unpredictability in an industry (Calantone et al., 2003). Technological turbulence is often conflated with technological innovation. However, while the latter refers to the intentional development and implementation of new technologies, turbulence emphasizes the external volatility and uncertainty associated with rapid technological evolution. In the SME context, technological turbulence creates both pressure and opportunity: firms are compelled to adapt to stay competitive but may lack the capacity to respond effectively. Several studies (Lemos et al., 2022; Ramdani et al., 2022) suggest that high levels of technological turbulence enhance the strategic relevance of AI, especially as SMEs seek tools for decision-making under uncertainty. However, few studies explicitly frame technological turbulence as a construct influencing AI-enabled business model innovation (BMI) (Mancuso et al., 2025). This conceptual gap limits our understanding of how SMEs can systematically respond to exogenous technological shifts through internal adaptation and strategic renewal. Thus, our review treats technological turbulence not merely as a contextual factor but as a critical enabler that frames the urgency and trajectory of AI integration into SME business models.

Researchers debate the growing need for SMEs to develop their business strategies and models in the face of rapidly changing markets caused by digitalization (Kraus, Durst, et al., 2022), disruptive technological innovations (Antonio and Kanbach, 2023; Barth et al., 2023; Kanaan et al., 2024; Ramdani et al., 2022), and unforeseen external events (Akpan et al., 2022). However, the literature has underlined the presence of a critical gap in the current research, with the need to dig deeper into the possible implementation pathways for SMEs to integrate AI into their business strategies (Acheampong and Hinson, 2019; Bouwman et al., 2019; Kopka and Fornahl, 2024; Shukla and Taneja, 2024). This creates a fragmented research landscape, with studies on AI, SMEs, external and internal influencing variables, and competitive advantage being conducted in isolation. Moreover, there is a lack of study into the precise ways in which SMEs might use AI to gain a competitive edge for sustainable growth. Addressing this gap is critical to ensuring that SMEs can fully realize the benefits of AI and survive in today's changing business climate. As a result, the emergent research issue that this study wants to address can be summarized as follows: *"How can existing literature on AI and small businesses be synthesized into a comprehensive competitive advantage framework for SMEs?"*

While several systematic and conceptual reviews have examined either AI adoption (Cubic, 2020; Oldemeyer et al., 2024; Solaimani and Swaak, 2023) or SME competitiveness (Berman et al., 2024; Massaro et al., 2016), most of them treat these domains separately (Jobstreibizer et al., 2025) and do not offer an integrated framework that bridges AI with sustainable competitive advantage

via BMI in SMEs. Notably, past reviews tend to emphasize adoption enablers and barriers, or general digital transformation, without unpacking how internal (e.g., dynamic capabilities, data strategy) and external (e.g., technological turbulence, policy, alliances) factors interact to configure business model trajectories toward sustainable advantage. Our contribution fills this void by offering a novel integrative framework that maps these interplays and identifies configuration patterns that SMEs can adopt in response to AI disruption. Furthermore, while some studies implicitly acknowledge technological turbulence, they rarely theorize it as a core antecedent shaping the evolution of AI-driven business models. Thus, this paper contributes a more nuanced conceptualization of how SMEs reconfigure their models in the face of turbulence and uncertainty.

## 2. Background of the study

John McCarthy created the phrase "Artificial Intelligence" in 1956 at the Dartmouth Conference, which is widely regarded as the beginning of AI research (McCarthy et al., 2006). However, significant development and study would not begin until the 1970s (Kobbacy et al., 2007). Early constraints were from limited data availability and immature technologies. However, the emergence of Industry 4.0, with its huge network of data-generating devices, greatly accelerated AI progress (Peres et al., 2020). This vast amount of data generated advanced AI applications. Networking developments permitted efficient large-scale data sharing, and technical progress enabled computers to efficiently use these massive amounts (Canhoto and Clear, 2020). Since around 2010, there has been a significant increase in AI articles, which include a wide range of techniques such as ML, deep learning, and computer vision. While our research focuses on AI as a whole, embracing different approaches is critical.

Today, AI is everywhere, from chatbot interactions and web searches to voice assistants (Brill et al., 2019). AI applications continue to spread throughout everyday life, industry, education, health, and many other fields (Nikitas et al., 2020; Secinaro et al., 2021). Interestingly, data indicates that roughly 60 % of AI articles are related to education, with just 5 % focusing on businesses (Zhang et al., 2022). Despite substantial studies, a widely accepted definition of AI remains difficult. It is better defined as a collective term for apps that can perform tasks that previously required human interaction (Zhang and Lu, 2021). Hashimoto et al. (2018) provide a typical definition of AI as "the study of algorithms that give machines the ability to reason and perform cognitive functions such as problem-solving, object and word recognition, and decision-making."

Public comprehension and acceptance are critical to the effective integration of AI into society. While the media plays an essential role in shaping public opinion, its portrayal is often one-sided. Studies, such as Fast and Horvitz's (2017) examination of AI news coverage, show a move towards optimism. However, recent worries about job displacement, ethical problems, and safety dangers are gaining support. According to Owsley and Greenwood (2024), negative news has a greater impact, perhaps impeding public awareness and instilling fear about AI's possible risks. This is precisely important for organisations looking to use AI for a competitive edge. Public concerns about AI might lead to opposition to AI-powered products and services (Wang and Wang, 2022). Businesses must be aware of the media narrative and aim for openness in AI development and application. Emphasizing ethical AI development and deployment, as suggested by Jobin et al. (2019), can assist in improving public confidence and alleviating worries. Businesses can encourage a more balanced public impression of AI, paving the road for its wider adoption and, eventually, increasing their market competitiveness.

In this study, sustainable competitive advantage (SCA) is conceptualized as the capacity of SMEs to achieve enduring performance superiority by leveraging AI-driven capabilities (Ghosh, 2025) embedded within reconfigured or innovated business models. We align with the Resource-Based View (RBV) and Dynamic Capabilities View (DCV) traditions, which emphasize that SCA stems from the development of valuable, rare, inimitable, and non-substitutable (VRIN) resources (Barney, 1991) as well as the firm's ability to adapt, integrate, and reconfigure internal and external competencies in rapidly changing environments (Teece, 2007). In the context of AI, these sources of advantage include data-driven decision-making, algorithmic personalization, predictive analytics, and the orchestration of digital resources, all of which can be structured into the firm's evolving business model architecture to achieve long-term value creation and capture (Bagnoli et al., 2019).

Yet, as we argue, traditional views of SCA must be refined for the SME context, where resource scarcity and technological turbulence demand agility and experimentation. Therefore, we adopt a configurational lens, suggesting that SCA in AI-enabled SMEs is contingent upon strategic alignment between internal readiness and external responsiveness, enacted through continuous BMI.

In the context of SMEs and digital technologies, we define SCA as the ability to generate and sustain superior business performance over time through unique and hard-to-imitate capabilities that stem from the strategic use of digital technologies, such as AI. For resource-constrained SMEs, this advantage is often derived from agility, data-informed decision-making, process automation, and the rapid reconfiguration of business models to adapt to turbulent environments. Rather than relying solely on economies of scale or scope, SMEs achieve SCA by transforming AI into organizational knowledge, decision logic, and customer-centric value propositions, all of which are embedded in flexible business models. This interpretation is informed by the RBV (Barney, 1991; Mondal et al., 2023; Satar et al., 2024), DCV (Teece, 2007), and Knowledge-Based View (Grant, 1996).

### 2.1. Business model (BM) and SMEs

Despite the importance of business model (BM) research in recent decades (Bagnoli et al., 2018), a comprehensive understanding of its influence on competitive advantage for small and medium-sized firms (SMEs) remains elusive (Filser et al., 2021; Miller et al., 2021). The existing literature on BM concepts, BM transformation, and competitive advantage is fragmented, which makes it challenging to build a clear path for SMEs. While entrepreneurial SMEs have a unique capacity for managing changing environments through business model changes (Leipziger et al., 2024), these transformations need a focus on management competencies, cognitive attitudes, and entrepreneurial talents.

However, the difficulty is to strike a balance between the requirement for innovation and the need to sustain current revenue streams from core goods (Weiss and Kanbach, 2023; Weiss et al., 2023). New entrants and specialized firms are more agile, quickly adopting new models or launching whole new businesses (Wainstein and Bumpus, 2016). In contrast, internal complications inside established SMEs frequently result in inefficiencies and missed opportunities owing to competing agendas (Dal Mas et al., 2024; Visnjic et al., 2016). This is especially important for SMEs that face intense competition and limited financial and human resources. Interestingly, many SMEs see digital transformation as a superficial embrace of advanced technology that ignores the potential for deeper value creation (Le-Dain et al., 2023; Taylor and Murphy, 2004). This illustrates the critical need for SMEs to go beyond surface-level modifications and re-engineer their business models to effectively integrate advanced technology, resulting in a sustained competitive advantage.

### 3. Methodology

Our study adopts a systematic literature review (SLR) technique that follows accepted principles for management and entrepreneurship research stated by Tranfield et al. (2003) and Leipziger et al. (2024). For qualitative analysis and framework creation, we use a thematic ontological approach. This combines Braun and Clarke's (2006) theme analysis technique with Noy and McGuinness' (2001) ontology-development method, which Kraus et al. (2022) have applied. This integrated method enables us to find themes in current literature and comprehend the underlying linkages and structure of knowledge relevant to our research subject.

Our study takes a rigorous and open methodology to ensure a thorough and current overview of the research environment. We use an inductive reasoning technique for an SLR based on the criteria provided by Baltazar et al. (2023), Islam et al. (2022), and Kraus et al. (2022). This organized method enables us to not only synthesize existing information (Massaro, Dumay, et al., 2016), but also identify the most recent advances in the area (Snyder, 2019). Furthermore, we want to contribute to the academic discussion of competitive advantage by presenting an integrated conceptual framework for AI, drawing on the work of Islam et al. (2022) and Leipziger et al. (2024).

To achieve a targeted and complete literature search, we used a multifaceted method. Our major search phrases were "AI in business" and related acronyms, indicating the study's concentration on theoretical competitive advantage notions. Recognising the diversity among small firms, we incorporated alternative search phrases such as "small enterprises," "small businesses," and "SMEs" with acronyms.

Finally, to encapsulate the idea of gradual competitiveness adjustments, we used an iterative approach. This included a preliminary non-systematic literature review and analysis of author-provided keywords from pertinent papers. This technique enabled us to construct and refine search criteria for incremental competitiveness adjustments, such as "intangible resources/reconfiguration." The search procedure proceeded until saturation was reached, as evidenced by the absence of fresh relevant articles found after adding the 15th search phrase (Sauer and Seuring, 2023). This multifaceted search technique ensured that we discovered the most relevant literature on AI, competitive advantage, and its significance in small enterprises. The purpose of this strategy was to explore a wide variety of literature and research domains, discover BMT-related research discussions in other fields, and investigate the relevant variables and circumstances (Kraus et al., 2021). To acquire high-quality findings and a better understanding, Fig. 1 depicts the SLR's complete research procedure and the number of publications identified.

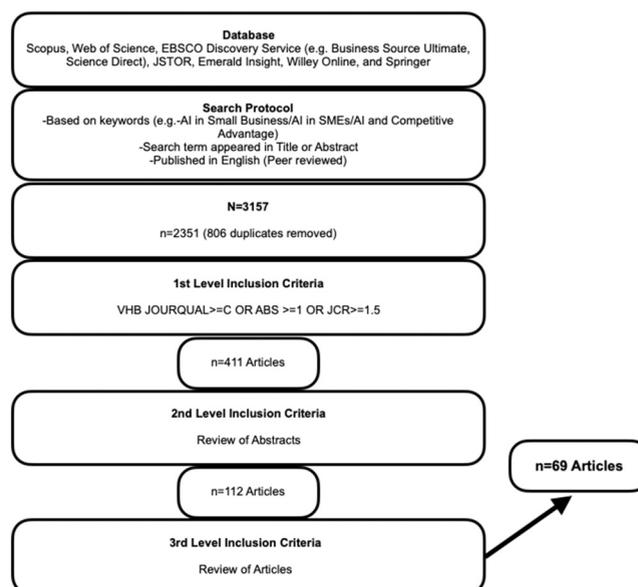


Fig. 1. Methodological steps. Source: Authors' own work.

Multiple literature databases were employed to improve funnel quality (Islam et al., 2022; Kraus, Breier, et al., 2022). Scopus, Web of Science, EBSCO Discovery Service (e.g., Business Source Ultimate, Science Direct), JSTOR, Emerald Insight, Willey Online, and Springer were searched, and specific terms were used to search titles, abstracts, and author-provided keywords, as previously suggested by scholars (Sauer and Seuring, 2023). The search phrases were translated into search criteria, which were then customized for each database. The funnel was confined to peer-reviewed English-language papers published up to 2024. The dataset was built using a thorough examination of publications published in high-quality management and entrepreneurial journals. Kraus et al. (2022) created first-level inclusion criteria based on several journal rankings, following previous academics' technique. The ranks were converted using a table from previous research (Leipziger et al., 2024). We then used a two-tiered inclusion criteria to narrow down the search results. First, we looked at the abstracts of the remaining 411 papers. Articles that did not directly discuss AI or its use in the small business/SME arena were omitted. This process enabled us to exclude works where experts may have mentioned AI or small enterprises in passing, but whose primary research topic was unrelated to our inquiry. This initial screening resulted in a collection of 112 research papers for additional investigation. After reviewing the complete text of these 112 papers, we selected 69 studies for our final sample, which are reported in Table 1. The key grounds for removal at this stage were a lack of a clear focus on business models (BM) in a small business environment, as well as the inability to provide full text for several publications. This thorough selection procedure guaranteed that our final sample included the most relevant and high-quality research on the nexus of AI, competitive advantage, and small firms.

Our research uses a theme ontological analysis, a rigorous technique suggested by management and entrepreneurial research recommendations (Leipziger et al., 2024). This method combines two effective techniques: theme analysis (Braun and Clarke, 2006) and ontological analysis (Noy and McGuinness, 2001). Thematic analysis enables us to detect and investigate repeating themes in the final sample of 69 articles. In contrast, ontological analysis assists us in defining and categorizing ideas (classes) that arise from theme analysis. This integrated method provides not just topic identification, but also a more in-depth comprehension of the underlying structure and interactions between these themes within the context of the main research issue. This methodological decision improves the validity and replicability of our findings based on the textual data examined (Anggadwita and Indarti, 2023).

Thematic coding was carried out inductively using a manual coding approach (Braun and Clarke, 2006). Here, we considered peer debriefing sessions and Braun and Clarke's (2006) six-phase framework for analysis to align interpretations and maintain analytical coherence, thereby ensuring coding consistency (Nowell et al., 2017). Andreini et al. (2019) used an iterative technique to discover consistent patterns and themes in the generated literature. Jones et al. (2011) assigned major emphasis and thematic titles to each article to discover common themes in the final sample. The papers, abstracts, key words, and main emphasis were then reviewed, with thematic names adjusted. We then used an ontology-development technique (Noy and McGuinness, 2001) to organize the identified topics. Thematic titles for each article were prioritized, with the most prominent themes assigned to higher-order categories (Jones et al., 2011). This approach resulted in the formation of key first-order themes connected to AI and competitive advantage concepts in small enterprises, such as "sustainable business model," "advanced technology and innovation," and "data analytics in decision-making." Furthermore, using the approach developed by Krakowski et al. (2023), we categorized first-order themes as internal antecedents, external antecedents, or outcomes. Finally, these first and second-order themes were included in an ongoing analytical framework, resulting in a complete structure for understanding the relationship between AI, competitive advantage, and SMEs.

## 4. Results

### 4.1. AI-guided competitive advantage framework

The SLR and thematic ontological analysis enabled us to create a novel framework that sheds light on the role of AI in achieving SCA within SMEs, as reported in Fig. 2. This framework attempts to provide a comprehensive structure for examining various theoretical models and their contributions to understanding how SMEs can utilize AI to achieve long-term success. Interestingly, while AI-guided innovation initiatives are a well-established and researched area, limited research focuses specifically on their application within small businesses. A key theme emerging from the external antecedents is the concept of competitive advantage arising from environmental transitions. Internally, dynamic capabilities theory takes center stage, representing the main theoretical model for understanding how SMEs can leverage their internal resources and processes to adapt to changing environments with the help of AI. Notably, further research has explored the intersections of these relevant theories, and the included empirical studies within the framework demonstrate the impact of these concepts on achieving sustainable competitive advantage.

Our framework links AI adoption and BMI to SCA by conceptualizing BMI as the key organizational process that enables SMEs to capture the strategic value of AI. Specifically, AI contributes by providing new strategic resources (e.g., data, algorithms, intelligent systems) that allow firms to innovate in how they create, deliver, and capture value (Balachandran et al., 2024). BMI then acts as the translational layer, reconfiguring these technological inputs into market-facing capabilities such as hyper-personalization, predictive service delivery, and platform-based ecosystems. When these reconfigurations align with both internal capabilities and external market demands, they form the basis of SCA. In this way, AI is the enabler, BMI is the mechanism, and SCA is the outcome.

In all, the proposed framework supports a dual-path innovation logic, in which AI facilitates both radical shifts in business architecture (e.g., launching new digital platforms, reimagining value creation) and ongoing adaptive improvements (e.g., automating tasks, refining marketing via analytics). This two-way view of innovation allows SMEs to pursue long-term competitive advantage through a balance of structural renewal and operational refinement.

Additionally, while BMI is a key pathway, our analysis shows that the internal and external antecedents identified also exert direct

**Table 1**  
Selected articles for analysis.

Summary of Selected Articles			
Selected Research Articles	SME Needs	Competitive Advantage for SMEs Addressing Needs	Theme
AlZayani et al. (2024); Akpan et al. (2022); Zighan et al. (2021); Mariyana et al. (2024); Kumar et al. (2024); Ferreira et al. (2024); Islam et al. (2022) = 7 articles	Operational Efficiency, Marketing and Sales, Decision-Making, Predictive Analysis, Performance Management	-AI-powered tools can automate tasks like data entry, scheduling, and basic customer service inquiries. -AI algorithms can analyze customer data to personalize marketing campaigns, product recommendations, and chatbots. -AI can analyze vast amounts of data to forecast market trends, customer behavior, and potential risks.	<b>AI-guided Competitive Advantage of SMEs</b>
<b>Internal antecedents</b> Kurup and Gupta (2022); Quaquebeke and Gerpott's (2023); Borah et al. (2022); Taherizadeh and Beaudry (2023) = 4 articles	Need of Continuous Learning, Digital Vision, Need of Agile Practices	-A digital vision can create a more agile and innovative workforce, allowing SMEs to adapt quickly to changing market trends. -Leaders who prioritize cybersecurity can protect sensitive data and build trust with customers.	<b>Digital Leadership</b>
Assefa et al. (2022); Chaudhuri et al. (2022); Drydakakis (2024); Valdez-Juárez et al. (2024); Cannas (2023); Canhoto and Clear, 2020 AL-Khatib et al. (2024); Peretz-Andersson et al. (2024); Shi et al. (2022); Wei and Pardo (2022) = 9 articles	Flexibility, Customers Insights, Resource Allocation, Knowledge Management Systems	-By actively monitoring trends and gathering customer insights, SMEs can identify new opportunities and develop innovative products and services before competitors. -AI help SMEs to allocate resources efficiently and leverage resources strategically. This optimizes resource utilization, reduces costs, and improves overall operational efficiency. -The ability to adapt quickly to changing market conditions is crucial for survival in a dynamic business environment.	<b>Dynamic Capabilities/ Adaptability</b>
Galli et al. (2024); Upadhyay et al. (2022); Khalid (2020); Chaudhuri et al. (2022); Dabbous and Boustani (2023); Indrawati (2020); Khan et al. (2022); Shi et al. (2022); Polas et al. (2021) = 9 articles	Risk Tolerance, Open to New Ideas, Identification of Value Creation, Long-Term Vision	-Entrepreneurs go beyond basic applications and explore how AI can address specific challenges or unlock hidden opportunities within their niche market. -They can develop a long-term strategic vision for AI integration, aligning it with the overall business goals. This ensures a focused approach and sustained investment in AI initiatives.	<b>Entrepreneurial Mindset</b>
Mantri and Mishra (2023); Mangla et al. (2021); Kar and Kushwaha (2023); Wang and Wang (2020); Maroufkhani et al. (2020); Justy et al. (2023); Cadden et al. (2023); Panigrahi et al. (2023); Essien (2023); Wu et al. (2023) = 10 articles	Data Security, Marketing and Sales Strategies, Data-Driven Decisions, Product Development, Risk Management	-AI-powered data analytics enable SMEs to extract insights from customer behaviour, marketing campaigns, operational performance, and market trends. This allows them to make data-driven decisions. -AI can analyze data on inventory levels, production processes, and equipment performance.	<b>Data Strategy</b>
Assefa et al. (2022); Islam et al. (2022); Camacho-Miñano et al. (2015); Mishrif and Khan (2023); Hansen and Bøgh (2021) = 5 articles	Sustainable Growth	-AI can analyze data on supplier performance. -AI can analyze operational data and predict resource needs based on fluctuations in demand. -AI can analyze data from past disruptions and identify patterns to predict recovery times. It can also recommend recovery strategies and optimize resource allocation during the recovery process.	<b>Growth/Resilience</b>
<b>External antecedents</b> Sullivan and Wamba (2024); Yu et al. (2023); Kumar et al. (2022); Lemos et al. (2022); Cubric (2020); Wei and Pardo (2022); Chaudhuri et al. (2022); Wang et al. (2022) = 8 articles	Market Trends, Industry Innovation Standards, ROI	-AI-powered tools can analyze vast amounts of data from social media, news sources, and industry reports to identify emerging industry trends and customer preferences. -SMEs can forecast market fluctuations and competitor actions.	<b>Market and Industry Dynamics</b>
Ferreira and Franco (2020); Ghobakhloo and Ching (2019); O'Dwyer et al. (2011); Han and Trimi (2022); Mushtaq et al. (2023); Holl and Rama (2024) = 6 articles	Scalability, Cost Efficiency, Automation	-This enables SMEs to experiment with AI and integrate it into their operations quickly. -Managing and maintaining complex AI infrastructure requires specialized IT expertise. External providers handle these	<b>Technological Infrastructure</b>

(continued on next page)

Table 1 (continued)

Summary of Selected Articles			
Selected Research Articles	SME Needs	Competitive Advantage for SMEs Addressing Needs	Theme
Wang et al. (2022); Badghish and Soomro (2024); Lada et al. (2023) = 3 articles	Access to Capital, Findings and Grants, Standardization	tasks, freeing up SME resources to focus on core business activities. -Government involvement in setting standards can streamline AI adoption and ensure interoperability. -Government programs that guarantee loans or connect SMEs with venture capitalists can ease access to capital for AI projects.	<b>Government Policies and Support</b>
Ferreira and Franco (2020); Chaudhuri et al. (2022); Shaik et al. (2024) = 3 articles	Technical Expertise, Risk Minimizations, Improved Market Reach	-Collaborations with AI experts or research institutions equip SMEs with valuable knowledge and best practices in AI applications. -SMEs can leverage existing market channels and reach a wider customer base.	<b>Strategic Alliance</b>
Crockett et al. (2023); Rujirawanich et al. (2011); Aksoy (2017); Wang et al. (2022); Ietto et al. (2022) = 5 articles	Brand Reputation, Social Acceptance and Trust, Work-Life Balance	-SMEs automate repetitive tasks such as data entry, scheduling, and report generation, freeing up employee time for more strategic and creative work. -AI models can be developed on datasets that reflect the cultural nuances of their target market. -Publicly disclose the purpose of AI use and highlight efforts to ensure fairness in AI-driven decision-making.	<b>Socio-Cultural Factors</b>

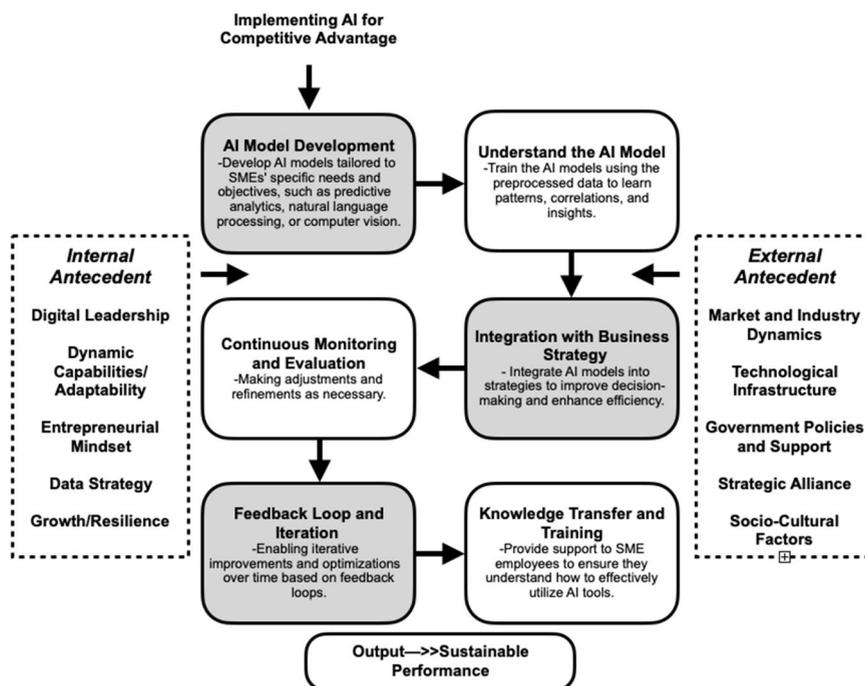


Fig. 2. Sustainable Competitive Advantage Framework of SMEs. Source: Authors' own work.

effects on sustainable competitive advantage by shaping how SMEs generate, protect, and appropriate strategic value from AI. For example, digital leadership enables faster decision cycles and strategic clarity, which is crucial for SMEs in volatile markets, thereby enhancing agility as a competitive differentiator. Dynamic capabilities (e.g., sensing, seizing, reconfiguring) allow SMEs to continuously adjust offerings, enabling a sustained fit with external change — a classic source of advantage under the DCV lens (Teece, 2007). A strong data strategy transforms raw data into proprietary insights, which are both valuable and hard to imitate, aligning with the VRIO logic (Barney, 1991). Externally, technological infrastructure enhances scalability and cost efficiency, while strategic alliances

offer access to expertise and new markets, improving SMEs' ability to mobilize and deploy scarce resources competitively. Together, these elements do more than enable AI or BMI, as they shape the capability base upon which long-term competitive advantage rests.

#### 4.2. External antecedents

External variables, namely, market and industry dynamics, technological infrastructure, government policies and support, strategic alliance, and socio-cultural factors, significantly impact how SMEs may achieve long-term competitive advantage through AI adoption and deployment. Scholars have investigated the notion of environmental transitions, in which companies use AI to adapt to changing market situations (Sullivan and Fosso Wamba, 2024). This is supported by the socio-technical transitions concept, which emphasizes how AI adoption implies changes to business models as a result of long-term environmental evolution (Yu et al., 2023). Environmental adjustments, which include technology breakthroughs, cultural changes, and economic volatility, may have a significant influence on the competitive landscape for small enterprises. Among these environmental forces, technological turbulence stands out as a driver that not only destabilizes existing competitive logics but also incentivizes the adoption of AI technologies. In line with Calantone et al. (2003), we conceptualize technological turbulence as a dynamic condition in which the speed and unpredictability of technological advancements challenge a firm's adaptability. SMEs facing high technological turbulence are more likely to pursue AI as a coping mechanism to improve forecasting, streamline operations, and innovate their business models. However, most existing research (Cubric, 2020; Ghobakhloo and Ching, 2019) fails to explicitly link technological turbulence to AI adoption pathways, instead treating technological infrastructure or innovation capabilities as static enablers. Our framework argues for a more dynamic view, whereby turbulence acts as a catalyst that amplifies the need for both external responsiveness and internal reconfiguration in SMEs. By proactively adopting and integrating AI in response to these external influences, SMEs can gain a major competitive advantage over rivals that are slower to respond.

It is critical to recognize that many of these external tendencies in AI acceptance and deployment are evolutionary in origin. As a result, making modest improvements might give small enterprises with a significant competitive advantage. Building on prior research by Polisetty et al. (2024), the paper explains the critical significance of AI enablers, AI preparedness, and AI ethical considerations within the context of industry dynamics in defining the competitive advantage of B2B SMEs. Notably, AI ethics appears to be an important issue in the negotiation of perceived benefits, job clarity, perceived trust, and competitive advantage. Furthermore, Kumar et al. (2024) and Lemos et al. (2022) emphasize the influence of market and industry dynamics on AI adoption among SMEs, providing useful insights into the creation of decision-support systems to aid AI adaption in these organizations. Moreover, Cubric (2020) emphasizes the impact of market variables, such as perceived cost and relative advantage, on SMEs' desire to use AI-based chatbots, which contributes to improved sector performance and competitiveness.

It should be acknowledged that governments play an essential role in fostering AI among SMEs. Baabdullah et al. (2021) and Wang et al. (2022) show how government policies, such as subsidies and assistance, influence the use of AI inside SMEs. These regulations promote openness, flexibility, and innovation, easing the implementation of Industry 4.0 technology in emerging economies. According to recent research findings, strategic alliances enable SMEs to pool resources, knowledge, and expertise with external partners such as R&D consultancy firms, research institutions, and larger enterprises (Ferreira and Franco, 2020; Ghobakhloo and Ching, 2019; O'Dwyer et al., 2011). The direction promotes information transfer and learning opportunities. Furthermore, socio-cultural aspects might influence AI adoption in SMEs by impacting ethical awareness levels, resources, and ability, as emphasized in the study on reliable AI solutions for small firms (Crockett et al., 2023). Cultures with hierarchical and conventional leadership styles may struggle to integrate AI technologies, which demand flexibility and collaboration.

#### 4.3. Internal antecedents

Another study stream investigates internal antecedents (namely, digital leadership, dynamic capabilities, entrepreneurial mindset, data strategies, and growth and resilience), with certain entrepreneurial traits of small enterprises identified as facilitators of AI adoption and use. One specific focus is on small enterprises' ability to adjust their business models to more advanced technologies, particularly in the aftermath of external shocks such as the recent COVID-19 pandemic (Akpan et al., 2022; da Paixão de Oliveira et al., 2023; Islam et al., 2022). According to Assefa et al. (2022), resilience toward growth refers to small enterprises' capacity to identify challenges and capitalize on opportunities. Scholars say that the first phase in crisis response is individual resilience, followed by the development of a strategic plan (Zighan et al., 2021). Furthermore, SMEs require robust dynamic capabilities that enable them to adapt and evolve. This is critical for growth, particularly when strategizing AI in various operations. By using existing strengths and resources, SMEs with dynamic skills may successfully employ AI to enhance performance, optimize business processes, and raise productivity. Further research investigates a theoretical model through the lenses of Expectation Disconfirmation Theory (EDT), Technology-Trust-Fit (TTF) Theory, Contingency Theory, and knowledge contained in the existing literature to examine artificial intelligence dynamism and its impact on firms' sustainable competitiveness (Chatterjee et al., 2022).

Another key topic that emerges in the discussion is the entrepreneurial mindset or attitude. This psychological factor is considered essential in enabling small enterprises to perceive crises as opportunities rather than threats. Abrupt attitude changes enhance the likelihood of company failure. However, gradual business model modifications based on modern technologies reduce this risk. According to Upadhyay et al. (2022), performance expectation, openness, social influence, hedonic motives, and generativity all have a beneficial impact on entrepreneurs' accepting attitudes towards AI-based competitiveness projects. Furthermore, Kurup and Gupta (2022)'s research highlights the role of digital leadership in AI adoption. They emphasize how a leader's capacity to manage change and obtain resources has a direct influence on successful AI implementation. This precisely matches Quaquebeke and Gerpott's (2023)

focus on strategic decision-making, innovation, and the integration of AI into sectors such as marketing. In essence, digital leaders with a natural love for technology and a strong belief in its potential are driving effective AI adoption in SMEs.

Concerning the other technologies that connect with AI, big data analytics can revolutionize enterprises and give them business information to adapt to opportunities and problems in the post-pandemic environment (Mantri and Mishra, 2023). It also improves data-driven decision-making, allowing SMEs to be more inventive. Mangla et al. (2021) demonstrate that big data analytics acts as a mediator in project performance inside SMEs, reinforcing aspects such as knowledge management and green buying, eventually leading to higher company performance. Further study (Kar and Kushwaha, 2023) focuses on big data's influence on SMEs' AI adoption. Big data analytics can analyze social media sentiment to find characteristics that promote or impede AI adoption. This enables SMEs to make more informed decisions, hence increasing efficiency, innovation, and agility in a competitive environment.

#### 4.4. Digital BMs

Researchers focus on frameworks, internal and external digitalization constraints, particularly for SMEs, while developing sophisticated tech-guided business models. Scholars identified the internet and e-commerce as facilitators of new business models, as well as pressures that compel small enterprises to adapt current business models (Hauge et al., 2004). Current study shows that technology has a significant influence on business model creation for small enterprises since technological improvements can cause abrupt changes, and technology adoption involves re-engineering at least some of the business model building blocks (Akpan et al., 2022; Bagnoli et al., 2018, 2019; Ferreira et al., 2024). In this setting, the rapid pace of technological innovation makes adoption challenging for small enterprises, and detecting and seizing capabilities are critical to becoming a digitally mature small business (Isensee et al., 2020; Leso et al., 2023). The evolutionary viewpoint and the re-engineering technique provide various perspectives on the proposed incremental business model modifications in small enterprises.

Another important research area investigated in the current study is the creation of digital business model frameworks to incorporate AI successfully (von Garrel and Jahn, 2023). These authors illustrate flexible options for aiding the transition of small firms from traditional organizations to e-businesses using AI technology. Emphasizing the reality of employing basic tools over theoretical models shows promise, especially given the limited resources accessible to small enterprises. The adoption of digital platforms allows small businesses to successfully rearrange their capacities (Xie et al., 2022), especially in reaction to changes caused by AI adoption. Furthermore, open technology platforms are essential in encouraging collaboration and open cooperatives among small enterprises (Wegner et al., 2024), allowing them to better adapt to the changing business landscape influenced by AI breakthroughs. Another noteworthy study stream investigated in this area is e-commerce (Ramsey et al., 2003) and its use by small firms, notably in the retail sector (Bollweg et al., 2020). Scholars have also highlighted certain drivers and enablers of digitalization (Bagnoli, Albarelli, et al., 2022; Bagnoli, Massaro, et al., 2022; Berman et al., 2024), such as radical orientation and organizational rigidity (Etienne Fabian et al., 2024). Furthermore, the use of external ideas to improve internal knowledge while avoiding lock-in effects has been identified as a critical aspect in advancing digitalization initiatives (Apostolov and Coco, 2020; Mohamed and Weber, 2020). These findings highlight the delicate link between e-commerce adoption and the broader digitalization environment, including the incorporation of AI technologies, which play a critical role in defining small firms' digital transformation journeys.

Furthermore, the confluence of technology-driven business models and innovation creates intriguing opportunities for small enterprises, particularly in terms of AI. Agile business models that combine effectuation, causation, and lean startup processes in tandem have developed as effective tactics (Bouncken et al., 2021; Xu and Koivumäki, 2019). Scholars have highlighted the strong links between digital entrepreneurship and innovation systems, where digitization acts as both an internal enabler (e.g., cloud computing) and an external channel (e.g., e-commerce), presenting small businesses with both challenges and opportunities in the AI landscape (Upadhyay et al., 2022). Small firms may successfully capitalize on AI-driven advancements by adopting gradual yet constant changes to their business models and promoting strategic cooperation. However, drastic technology transformations may offer substantial hurdles and dangers to small enterprises' long-term success, emphasizing the significance of proactive adaptation and competitiveness in an increasingly AI-driven world.

Sustainable business models (SBM) have gained popularity in studies, with a focus on stakeholder interests as well as environmental and societal factors (Asad et al., 2024; Asad et al., 2024; Cosenz and Bivona, 2021; Lozano, 2012; Ta'Amnha et al., 2024; Toniolo et al., 2019). This issue connects with the present study's objective and research funnel, specifically in terms of investigating how AI-guided business models might include sustainability principles to improve competitiveness (Asad, 2024a). Environmental transitions drive the components of SBMs, such as value proposition, creation and delivery, and capture, with an emphasis on environmental sustainability (Asad, 2024a; Sulaiman, 2025; Trapp & Kanbach, 2021). The literature also goes into SBM archetypes (Calvo and Villarreal, 2018) and frameworks such as the re-design canvas (Salvador et al., 2021), as well as case studies demonstrating SBM integration in diverse industries (Pizzi et al., 2021). Managerial strategies for adopting circular economy business models (CBMs) have also been investigated (Hofmann and Jaeger-Erben, 2020; Ünal et al., 2019), identifying both challenges and enablers to the shift (Mura et al., 2020). CBM deployment has environmental, economic, and social benefits, promoting long-term growth for small firms (Ferreira et al., 2024). As we learn more about AI-guided business models and their competitive ramifications, it becomes critical to investigate the synergies between SBMs, CBMs, and AI-driven strategies in order to fully realize their promise for promoting sustainable and competitive small firms.

## 5. Discussion

### 5.1. Originality

This study breaks new ground by attempting to create a comprehensive framework for AI-powered business models built to provide SMEs with a competitive advantage. Previous research on AI and SMEs has been scattered, concentrating on different topics. This paradigm tries to close the gap by combining findings from numerous studies to provide practical direction to both academics and practitioners. Results emphasize major internal and external aspects that SMEs should address, and recommend a two-pronged approach to business model transformation: large reconfiguration of fundamental parts and continual incremental modifications, all enabled by advanced technology such as AI.

Additionally, a key contribution of this paper is the articulation of a two-pronged approach to BMI, which SMEs can leverage through AI to balance exploration and exploitation. We define this as a dual-path BMI strategy:

- Transformational innovation, where AI enables large-scale structural changes to value propositions, delivery mechanisms, or customer engagement models (e.g., moving from product to platform-based offerings); and
- Incremental innovation, where AI supports ongoing micro-adjustments (e.g., predictive maintenance, process automation, data-driven personalization) that improve efficiency and responsiveness.

Our findings show that SMEs do not need to choose between radical change and operational continuity — AI can serve both innovation logics, allowing firms to evolve incrementally while remaining open to strategic reinvention. This perspective enriches existing theories of business model change (e.g., [Cosenz and Bivona, 2021](#); [Leipzig et al., 2024](#)) and contributes a more nuanced understanding of how AI supports ambidexterity in resource-constrained firms.

### 5.2. Research gaps and future research agenda

A growing body of research cautions against technological determinism, despite AI’s increasing role as a driver of business

**Table 2**  
Future research recommendations.

AI-guided Competitive Advantage Framework	Potential Future Research Questions
<b>Business Model Innovation/Re-Configuration</b>	[a] How does the resulting competitive advantage outline mitigate the risk associated with business model innovation for SMEs, particularly when using AI? [b] How does the derived competitive advantage outline address SMEs’ business performance in various geographical settings, particularly when incorporating AI? [c] How may resource constraints in SMEs be integrated into a competitive advantage description, particularly when including AI?
<b>Internal antecedents</b>	[a] What are the main qualities and abilities of effective digital leaders/managers who drive AI adoption and deployment in SMEs?
Digital Leadership	[a] How does organizational flexibility help SMEs find, assess, and capitalise on emerging AI prospects in their industries? [b] To what degree does organizational agility enable the quick implementation and scaling of AI projects in SMEs?
Dynamic Capabilities/Adaptability	[a] How do SMEs with an entrepreneurial attitude/perception successfully handle the ethical and societal consequences of AI technology in their operations?
Entrepreneurial Mindset	[a] What are the important components of an effective data strategy for SMEs looking to leverage AI technology for a competitive advantage?
Data Strategy	[a] What are the features of AI-driven business models that contribute to the growth and resilience of SMEs?
<b>External antecedents</b>	[a] How do SMEs navigate technological turbulence as a key external driver of AI adoption, and what strategies enable them to future-proof their business models under such conditions?
Growth/Resilience	[a] How do technological dependencies and interoperability issues influence the efficacy of AI-enabled applications in SMEs’ current technology ecosystems?
Market and Industry Dynamics	[a] How does the presence of supporting government policies, such as tax breaks or regulatory frameworks that encourage AI development, connect to SMEs’ AI adoption rates and competitive performance metrics?
Technological Infrastructure	[a] What particular mechanisms do strategic alliances use to enhance knowledge transfer, resource sharing, and access to AI expertise for SMEs, and how can these mechanisms help SMEs gain a competitive advantage in AI-driven markets?
Government Policies and Support	[a] How do societal perceptions of AI, such as trust, acceptability, and ethical concerns, influence the adoption and use of AI technology inside SMEs, and how do these perceptions affect competitive positioning and market acceptance?
Strategic Alliance	[a] How can SMEs strategically balance transformational and incremental AI-driven business model changes over time? [b] Under what environmental conditions does one path dominate, and what capabilities enable ambidexterity? [c] How does AI enable this balance differently than traditional technologies?
<b>Dual-path Business model innovation</b>	

Source: Authors’ own work

competitiveness. According to critics, AI lacks the strategic intentionality necessary to significantly improve performance in the absence of effective leadership (Bencsik, 2020). Although this debate is becoming increasingly relevant, there is still a lack of research examining the relative effects of leadership style and AI capabilities on SME performance. Furthermore, inadequate data governance frameworks and a lack of system integration skills within SMEs frequently limit the value that AI can produce (Sanchez-Hughet et al., 2022; Wang & Wang, 2020). The widespread assumption that AI can boost performance on its own sometimes overlooks the importance of aligning digital preparedness with broader strategic objectives. Adding to this complex scenario, Mai et al. (2024) clearly emphasize that, in the absence of targeted policy interventions, such as AI-oriented grants, regulatory clarity, data-sharing infrastructure, and structured digital training schemes, SMEs are unlikely to fully capitalize on AI-driven opportunities. Therefore, it runs the risk of hiding the institutional embeddedness and structural inequalities that influence the paths of digital transformation if AI is viewed as an isolated source of competitive advantage. Examining how institutional support systems interact with AI readiness and adoption to shape SME competitiveness, especially in resource-constrained or fragmented policy contexts, is an essential research challenge that is highlighted by this.

SMEs are experiencing significant failure rates, underscoring the importance of investigating how AI adoption and utilization might improve their company's success. Our study tries to tackle this gap by presenting a framework for SMEs to gain a sustained competitive advantage. The current paper provides a comprehensive evaluation of multiple research streams researching AI-guided business model changes, with a special focus on small firms. Understanding the internal and external elements critical for SMEs when implementing AI into their everyday operations is essential. This work exposes these aspects, providing important insights into their relevance and ramifications. The resulting framework not only synthesizes numerous research streams but also suggests opportunities for furthering understanding of the discipline. The following Table 2 summarizes some research streams which are worth addressing.

The resultant prospective areas for future study give an overview of existing research gaps in the analyzed literature (Sauer and Seuring, 2023). Future research avenues are based on the AI-guided competitive advantage framework for SMEs, starting from the internal and external antecedents found. The aforementioned collection of research topics emphasizes the need for more study with a clear focus on SMEs, given their significant economic effect and unique features. The framework includes findings from many research and takes into account both internal and external variables that influence SMEs' transition to advanced technology. It suggests a two-step strategy: substantial reconfiguration of essential business model parts and continual incremental modifications, all aided by sophisticated technology such as AI. Future study should include quantitative and in-depth case studies to evaluate the framework's usefulness. Furthermore, academics should investigate how the framework may be tailored to diverse sectors, firm sizes, and kinds to ensure broad application for SMEs. Academic moral entrepreneurship and how it could foster the adoption of AI for implementing new BMs or SBMs in SMEs should also be addressed (Dal Mas et al., 2024; Massaro et al., 2022).

### 5.3. Theoretical contributions

The study created a conceptual framework to help SMEs manage AI and achieve competitiveness through BMI or reconfiguration, taking into account both external and internal elements. The findings fill a gap indicated by Shukla and Taneja (2024), who debate the need for studies into the long-term viability of AI adoption for SMEs. Internal aspects such as digital leadership, dynamic capabilities, entrepreneurial attitude, data strategy, growth orientation, and resilience are critical for SMEs' AI-guided competitiveness. Externally, SMEs must evaluate market and industry dynamics, technology infrastructure, government policies and assistance, strategic partnerships, and socio-cultural influences. The findings pave the way for further study on small enterprises' competitive advantages in the age of AI. In summary, the findings emphasize the significance of BMI or reconfiguration in order to properly leverage AI. This is consistent with RBV's focus on how businesses use their resources (including AI) to develop a stronger value offer. This is also consistent with DCV's focus on enterprises combining internal strengths with external opportunities and threats. Furthermore, the study adds light on macro-level theories by investigating how institutions and networks impact SME AI adoption and business model choices, providing fresh insights into the competitive landscape for small enterprises in the age of sophisticated technology.

Interestingly, while DCV clarifies how firms renew resources, it under-specifies what stock of data, algorithms and tacit know-how constitutes an "AI-ready" resource. Therefore, new theoretical approaches can be used. For example, the Knowledge base view of the company profoundly changes due to the new AI paradigm, leading to new theoretical questions such as: which AI artefacts become inimitable, and how do SMEs protect them? Future research can track how data pipelines and fine-tuned models evolve into idiosyncratic knowledge assets.

Similarly, a new interaction among Technology-Organization-Environment (TOE) is required, leading to the need to revise the existing theory. Indeed, TOE adds meso-level explanatory power by disentangling technological fit, organisational readiness, and environmental turbulence. Our results suggest that a promising agenda might involve modeling new configurations (e.g., high tech-fit  $\times$  low organizational readiness  $\times$  high turbulence) and testing which ones precipitate AI adoption tipping points in SMEs. In all, AI uptake is also shaped by coercive (regulation), mimetic (competitor imitation) and normative (professional codes) pressures. Research could examine how different AI legislations (e.g. EU AI approach versus US and China AI approach) alters adoption logics across different SME clusters leading to new refinements of existing institutional theories.

In all, we believe this study addresses a blind spot in existing literature reviews and conceptual frameworks by integrating the fragmented streams of AI adoption, SME resource constraints, and BMI into a single cohesive architecture. Unlike earlier SLRs that often take a techno-centric (e.g., AI capabilities) or organization-centric (e.g., managerial perception) lens, our framework combines both internal readiness and external turbulence to explain why and how SMEs evolve their business models using AI for sustainable advantage. In doing so, it moves beyond general "digitalization" narratives to propose an actionable, multi-dimensional configuration. It also distinguishes itself by operationalizing technological turbulence as a structuring force—a dimension overlooked in prior

conceptual models—thereby contributing to a more dynamic theorization of SME strategic behavior in rapidly changing AI environments.

Finally, our theorization of SCA extends existing RBV/DCV frameworks by contextualizing them within the realities of SMEs undergoing AI-led digital transformation. Specifically, we argue that SCA in this setting arises from the alignment between AI capabilities (e.g., data analytics, automation, predictive systems) and dynamic business model configurations that reflect environmental volatility. Our framework contributes to theory by distinguishing between AI-as-resource (aligning with RBV) and AI-as-capability-enabler (aligning with DCV), and then showing how these roles translate into sustainable value capture mechanisms in SMEs. The notion of sustainability is indeed not only economic but increasingly strategic and reputational. AI's potential to support responsible innovation, operational resilience, and even environmental responsiveness introduces new forms of competitive advantage that go beyond traditional cost or differentiation strategies. We propose that SCA in AI-SME contexts is best understood as an emergent property of capability orchestration under constraints, rather than as a static possession — a reconceptualization that can inform both theory and practice.

#### 5.4. Practical implications

We make various contributions to the practice of AI-guided entrepreneurship. The resulting framework offers practical advice to SME owners and managers on how to differentiate their businesses and remain competitive in unpredictable market conditions. Based on the findings, SMEs may use automation and machine learning to improve business processes, save manual labor, and increase overall operational efficiency. This strategic strategy helps SMEs to increase productivity by doing more with fewer resources. At this stage, AI may be employed to monitor environmental factors and verify regulatory compliance (Mondal et al., 2023). This might help SMEs avoid pollution or reduce their negative environmental impact. Non-governmental organizations (NGOs) can also help SMEs apply the framework by offering low-cost consultancy services or mentoring programs (Schiff et al., 2021). Facilitating networking opportunities and cooperation platforms empowers SMEs even more. Connecting them with AI professionals, research institutes, or larger firms with existing AI processes can help speed knowledge transfer and navigate the hurdles of AI strategies.

Furthermore, AI-guided technology will help SMEs reach a larger audience and grow their business beyond traditional borders. E-commerce platforms, digital marketing tools, and online marketplaces enable SMEs to offer their products or services internationally, resulting in increased company development. On the other side, authorities may put these insights into action by investing in digital infrastructure development, promoting an innovation and entrepreneurial culture, and assisting SMEs in adopting AI technology. For this aim, governments and public organisations can pick entrepreneurs who are willing to utilize AI and use their testimonials to raise awareness of the widespread use of AI among entrepreneurs.

## 6. Limitations

Although an SLR was undertaken, there is no certainty that all relevant scientific papers were included in the study (Kraus et al., 2022). The first-level inclusion criteria based on journal rankings have resulted in the publication of publications in high-quality academic journals and the exclusion of conference proceedings and articles in journals with lower or no rating. Furthermore, this study did not include insights from various books and book chapters published in the field. However, to motivate in writing future SLRs, we suggest a continued commitment to thorough approaches with thoughtful and integrated consideration of including insights from reliable sources.

### CRedit authorship contribution statement

**Ariful Islam:** Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Islam MD Asadul:** Writing – original draft, Validation, Project administration, Methodology, Investigation, Data curation. **Francesca Dal Mas:** Writing – review & editing, Supervision. **Justyna Fijalkowska:** Writing – review & editing. **Maurizio Massaro:** Formal analysis, Supervision, Writing – review & editing. **Mahfuzur Rahman:** Supervision, Writing – review & editing.

### Data availability

Data will be made available on request.

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