

Strategic Digital Capabilities in Emerging Markets: Insights from Scale Development and SME Applications

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ABSTRACT

Digital technology developments are profoundly changing corporate operations in all sectors. Building strong digital skills has become more important for small and medium-sized businesses (SMEs) in developing countries, many of which run under limited resources and must remain competitive in the face of digital disruption. Though awareness of this requirement is increasing, especially in light of the different results of digital technology adoption initiatives, understanding the fundamental drivers that shape the effective growth of digital capabilities still lags behind. To conceptualise how digital skills develop inside SMEs, this paper uses a multi-method approach based on a quantitative survey. It presents and scientifically confirms ORGDIGCAP, a multidimensional measuring tool that reflects important facets of digital capabilities in organizational settings. Three main components form the basis of the scale: organizational learning connected to digital tools, the actual use of these technologies, and their strategic integration. Curiously, in this situation the adoption aspect lacked significant empirical backing as a fundamental element of digital capacity assessment. The study uses data from 137 Mexican SMEs to examine the relationship between digital capabilities and agility and the mediating role of digital strategy. The results demonstrate the importance of digital strategy formulation in boosting an organization's digital agility and digital capacity development for competitiveness. This article defines the digital transformation processes in developing country SMEs for theoretical and practical insights. It gives executives and lawmakers solid advice for preparing organizations for success in a volatile, technology-driven environment.

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1. INTRODUCTION

Digital technology' quickening development is changing the world business scene and pushing companies to reconsider conventional structures and adopt revolutionary ideas[1]. Digital transformation has been a major strategic focus in this changing environment, hence driving companies to use new technologies like artificial intelligence, cloud computing, and blockchain to remain competitive[2]. Broadly defined as the use of digital technologies to propel notable changes in operations, customer experience, and value generation, digital transformation requires the cultivation of firm-level digital skills[3]. Recent industry studies show that a notable percentage of businesses are giving big expenditures in digital infrastructure top priority to stay ahead in more dynamic industries. Dynamic capacities theory provides a useful perspective from which to view company reactions to technology disruption. This approach emphasizes the need of companies' capacity to notice, grab, and change in reaction to changing surroundings. Though relevant, little empirical study has looked at how digital capabilities—different from conventional IT capabilities—operate inside the larger context of strategic management. Recent studies underline the fundamental importance of management decision-making and leadership in propelling effective digital transformation by framing digital skills as basic for organizational adaptability and enhanced performance results[3].

From early information systems research concentrating on IT governance and support activities, the idea of digital capabilities has developed to a more strategic awareness including innovation, customer responsiveness, and agility[4]. Although basic studies set the basis for assessing IT capabilities, modern studies draw attention to the shortcomings of legacy systems in meeting the complicated needs of Industry 4.0. Though some efforts have been made to modify current scales for digital capacity assessment, a strong second-order construct reflecting the whole range of digital readiness still undeveloped in the literature. Small and medium-sized businesses (SMEs), which make up more than 90% of companies worldwide, struggle to develop digital capabilities because of constrained financial and human resources[5]. In developing countries, where the digital gap still impedes growth, these difficulties are far more pronounced. For example, in Latin America, SMEs make up a significant portion of the business scene yet are unprepared for digital transformation when compared to worldwide standards[6]. For these companies, developing digital agility and strategic flexibility offers a possible road for expansion. Grounded on the dynamic capabilities framework, this paper presents and evaluates ORGDIGCAP, a novel measuring tool meant to evaluate how digital capabilities support the development of forward-looking digital strategies as well as digital agility. Based on data from 137 Mexican SMEs, the study emphasizes how digital capabilities work as mediators between digital strategy and agility, hence providing practical consequences for companies running in resource-constrained settings. In the end, the study shows that in an ever more digitalized society dynamic digital capabilities are necessary facilitators of resilience, adaptation, and sustainable competitive advantage.

This paper adds numerous significant ideas to the body of work on digital transformation in SMEs. First, it creates and empirically verifies a new scale for evaluating digital capabilities, hence filling a noted measuring void in previous studies. It then clarifies the important function digital strategy plays as a mediating tool between digital capabilities and organizational agility, therefore providing a more comprehensive knowledge of how SMEs negotiate dynamic environments—especially in developing market settings. The Digital Capabilities Barometer, which was presented thirdly, is a useful diagnostic tool meant to help SMEs assess and direct their digital transformation projects. The results taken together provide small and medium businesses looking to create agility and competitive advantage with practical direction by means of strategic digital capabilities development[3].

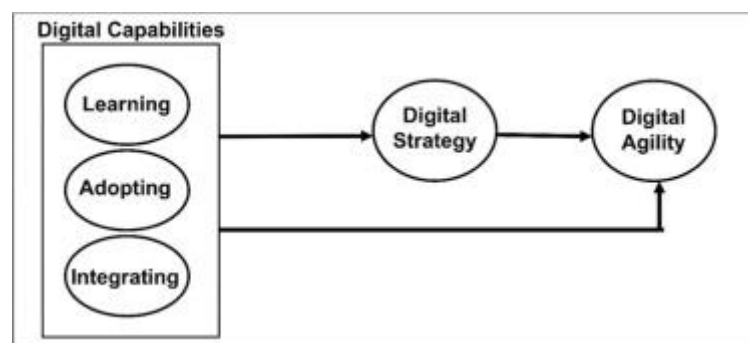


Figure 1. Research model

2. LITERATURE REVIEW

2.1. Digital capabilities

Small and medium-sized enterprises (SMEs) are increasingly reliant on digital tools to achieve and sustain a competitive advantage in the growing digital economy[7]. Analyzing the factors influencing the development of these talents is essential due to their strategic significance, particularly in underexplored regions such as Latin America. A comprehensive literature review was conducted to understand the conceptual framework and fundamental elements of digital capabilities. This commenced with a search centered on "digital capabilities" and "digital capability" utilizing the Web of Science (WoS) database, recognized for its curated and peer-reviewed academic literature provide one of the initial explicit references to digital capabilities, linking the concept to organizational performance within electronic procurement environments[8].

A broader search was subsequently performed to encompass these related terms, recognizing that previous studies may have addressed similar categories under varying nomenclature—such as IT capabilities, technical skills, or digital-oriented competencies. This expanded study, covering the years 1993 to 2023, yielded 1,493 relevant works. Among them, 525 specifically focused on digital capabilities, while the remaining 968 examined the concept in a broader context. The filtered dataset comprised 236 peer-reviewed journal articles following the exclusion of non-English papers, conference papers, reviews, and book chapters. Among them, 110 explicitly employed the term "digital capabilities," primarily in recent years; the remaining 126 works, while theoretically analogous, demonstrated earlier scholarly engagement with the topic.

The publication schedule of these papers indicates three key stages of scientific emphasis. The initial phase (1993–2010) aligns with the emergence of internet technologies and the preliminary academic attempts to understand the operational impact of IT on strategic advantage. Theories such as the resource-based approach and dynamic capabilities theory were frequently employed to characterize IT-driven competitive differentiation during this period. The second phase (2011–2019) reflects an increased academic focus on digital skills in response to the expansion of Industry 4.0 and the rapid emergence of disruptive digital technologies. Publications from the third and most recent period (2020–2023) indicate a significant increase, likely influenced by the COVID-19 pandemic, which compelled companies to rapidly adopt and expand digital technology amidst unprecedented global disruption[9].

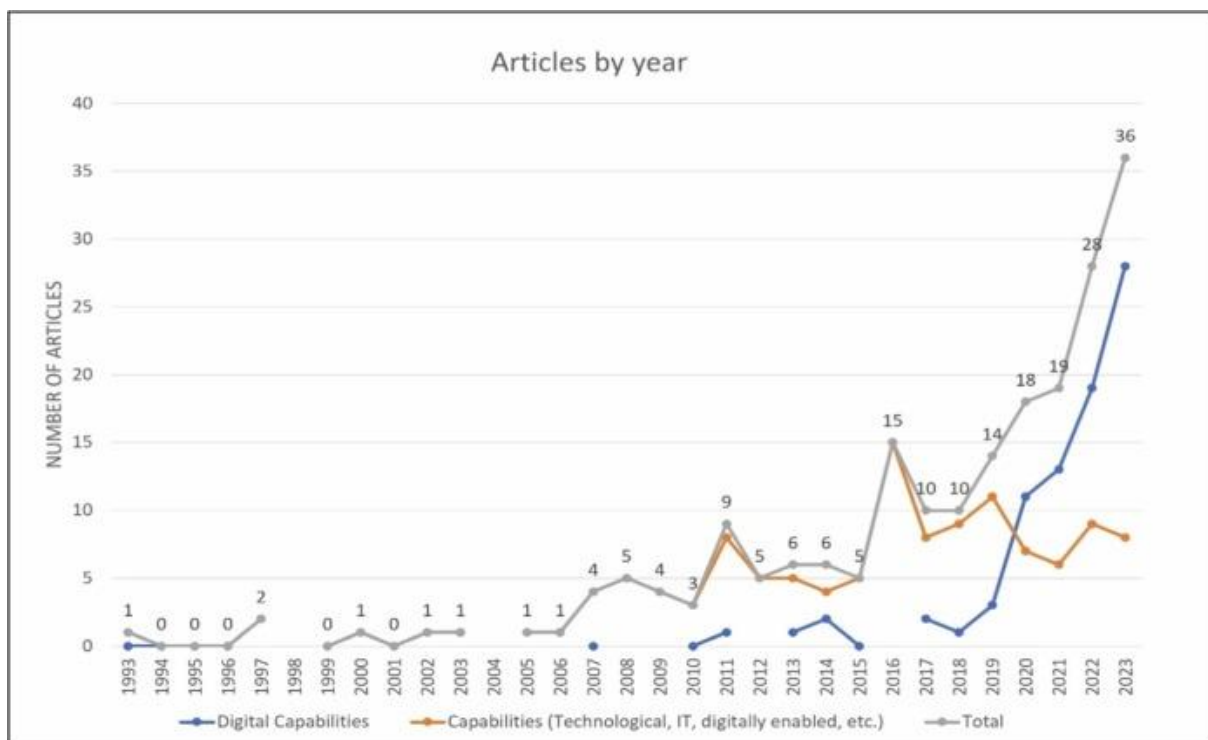


Figure 2. Published frequency on digital capabilities

Scholars in the domain of Information Systems initially primarily developed the concept of digital capabilities. The scope of this field gradually expanded into broader domains such as Business and Management, coinciding with the acceleration of digital transformation within organizations. This study indicates that, among the twenty most cited publications in this field, a limited number of papers from Business and Management are represented[7]. This illustrates a significant disparity and underscores the urgent requirement for scholars in these fields to engage more comprehensively with the strategic and operational implications of the expansion of digital capabilities within organizations. The conceptualization of digital capabilities, significantly influenced by

Information Systems literature, has increasingly been integrated into discussions regarding value creation, strategic orientation, organizational planning, and internal processes[10]. An examination of contemporary definitions, as presented in Table 2, reveals that digital capabilities are generally perceived as an organization's capacity to innovate, respond swiftly to market fluctuations, and effectively leverage digital knowledge for strategic aims. This perspective distinguishes digital capabilities from traditional IT capabilities, which focus primarily on the configuration, deployment, and strategic utilization of IT resources to enhance corporate operations[11].

Bharadwaj et al. recommended conceptualizing IT and digital capabilities as second-order constructs to accurately capture their complexity due to their numerous characteristics[12]. Our systematic analysis revealed several studies attempting to quantify these concepts; the majority employed modified measurement instruments rather than developing new scales. Several studies have proposed new tools specifically designed to enhance IT competencies. Recent research from 2020 to 2023 indicates that studies focusing on digital capabilities, distinct from IT capabilities, encompass topics such as supply chain digitalization, capability development frameworks, digital leadership, digital marketing, and knowledge-intensive business services. The studies primarily relied on existing IT capacity items and did not propose distinct, validated measures for evaluating digital skills. Current studies on digital capabilities, as they relate to structural reflections, predominantly utilize items from IT capability literature, leading to insufficient measurement accuracy[7]. A dedicated, empirically validated measurement scale for digital capabilities as a second-order construct is necessary due to the conceptual distinctions; IT capabilities focus on infrastructure and resource mobilization, while digital capabilities highlight innovation and adaptive responsiveness[13].

2.2. Dimensional structure of digital capability

The resource-based view (RBV) posits that firms achieve sustained competitive advantage through unique, valuable, and inimitable internal capabilities. The capacities are variable and adapt to changing environmental circumstances[14]. Through the continuous development of distinctive competencies, organizations can enhance their adaptability and sustain long-term advantages in dynamic markets. Strategic resilience fundamentally involves capabilities that facilitate the adaptive process by utilizing existing resources to navigate change. Digital skills are crucial enablers that assist organizations in adapting to the heightened unpredictability and volatility resulting from the rapid advancement of technological innovation. These features facilitate process reconfiguration and enhance cost effectiveness[15].

Research on digital capacities has revealed various conceptual frameworks. Qualitative techniques have revealed that key aspects encompass process improvement, staff training, localization, and the customization of digital solutions. Structural models have been characterized in the absence of operational measuring techniques[15]. Research typically views digital capacities as representations constructed through the use of either adapted or novel assessment tools. Recent research emphasizes the importance of acknowledging human agency in strategic digital decisions, highlighting the critical role that individuals within the organization play in shaping transformation outcomes. Managerial expertise and the quality of internal connections contribute to competitive positioning, while organizational learning functions as a fundamental mechanism for capacity development. The performance results can be significantly enhanced through the alignment of digital adoption with strategic goals. Warner and Wäger (2018) define digital transformation as a deliberate, continuous process driven by technology, deeply embedded in corporate culture and processes. The combined perspectives underscore the complex and socially embedded nature of digital capabilities in modern enterprises[16].

2.3. Digital agility

Today's fast-paced, uncertain business climate puts pressure on companies to adapt to shifting market conditions. Organizational agility is essential for firms to realign resources to meet shifting demands and new opportunities. Businesses have struggled with corporate volatility, which adds complexity and competitive risks that need swift strategy modification. An agile organization may swiftly direct its resources and efforts toward value-creating projects with competitive returns. Digital capabilities—via technology-enabled processes and organizational knowledge—provide agility, which improves performance, business growth, competitive positioning, and global reach. Thus, digital integration agility is a critical strategic advantage in the digital economy[17].

Academic research view agility as a multifaceted concept encompassing numerous skills. Therefore, its underlying motives must be understood. Customer agility, operational agility, and partnership agility are the three key domains of agility, according to [18]. [19]also distinguish between market capitalizing agility (constant customer-centric enhancements) and operational adjustment agility (flexibility of internal processes to meet demand changes). Though digital technologies are generally considered as enablers of agility, contemporary research highlight the need to examine how digital transformation and capabilities precede this organizational attribute[20].

This article argues that digital agility requires core digital skills. Digital skills, formerly strategic assets providing organizations a competitive edge, now help businesses—especially SMEs—respond faster and more

efficiently to environmental disruption[21]. Digital agility is the capacity to flexibly deploy digital tools, platforms, and expertise to respond to unexpected disruptions and opportunities. Companies become more flexible, adaptive, and robust under challenging situations. We conclude that digital capabilities improve organizational responsiveness and enable proactive strategic signal discovery and analysis. This responsiveness helps organizations foresee and overcome barriers and take risks in real time. Thus, digital technologies enable fast decision-making and competitiveness in changing environments[1].

2.4. Digital strategy

Recent IT studies have examined how digital technologies are affecting corporate strategy. The [22] concept of digital strategy uses digital resources to build unique value propositions, breaking from traditional corporate strategies. Digital strategies help organizations to operate across nations and functional areas by building technology. Given these developments, firms must understand and actively include digital transformation into their strategic planning to be competitive. The author [23] advocate a comprehensive digital plan to navigate the digital era. Study after study shows how important dynamic capabilities—especially the ability to adapt IT resources to changing organizational goals—are to fully use digital technology. Digitalization disrupts SMEs as well as large organizations. The author note that this new environment has profoundly changed value production and collection. To be competitive, SMEs need adaptable, context-sensitive digital strategy[7]. Digital tools and frameworks enable SMEs adopt new market trends, meet customer needs, and stay operational amid disruptions. Digital technology also allow SMEs to construct flexible resource combinations and cooperative networks that foster innovation and resilience in changing environments[24].

2.5. The mediating role of digital strategy

Studies that were conducted not too long ago have shed light on the significance of digital technology in terms of enhancing internal communication and cooperation, particularly during digital transformation initiatives. As an illustration, Fischer et al. [25] found that the utilization of such technologies significantly contributes to the development of organizational agility and the enhancement of digital skills, both of which are equally important for the incorporation of digital strategies across the entirety of the organizational structure. This integration makes it possible to carry out a comprehensive transformation process that extends beyond the adoption of technological changes and incorporates both structural and strategic shifts. In addition to this viewpoint, in [13] conducted an exhaustive literature review that demonstrated that previous research on digital strategy, notably between the years 2015 and 2018, focused mostly on identifying and comprehending the components that comprise the construct. Therefore, in order to construct an effective digital strategy, it is necessary to have a comprehensive understanding of the outcomes that are wanted from digital transformation and the manner in which digital capabilities serve as fundamental instruments for execution[26].

The alignment of functional areas under a common digital strategy requires the collaboration of experts from other fields and the use of their digital expertise. According to Fischer et al.'s research from 2020, these components are widely recognized as essential facilitators in the successful execution of digital initiatives. Given the importance place on the strategic relevance of digital capabilities, they argue that all firms, regardless of their size, should conduct an analysis to determine how the implementation of new digital technologies may alter or disrupt their existing operating models. Despite the fact that larger corporations could possess the necessary financial and technological means to make rapid changes, small and medium-sized firms (SMEs) may have difficulty adapting to new circumstances due to limited access to these kind of resources. As a result, small and medium-sized enterprises (SMEs) need to approach digital strategy with a distinct and concentrated vision for the creation of value, while also methodically balancing innovation with the constraints of their resource settings and the difficulties posed by competition[27].

3. Discussion

From the perspective of Mexico in particular, the findings of this study shed light on the intricate relationship that exists between strategic digital capabilities and organizational agility inside small and medium-sized enterprises (SMEs) in developing nations. Due to the rapid advancement of digital technology, it is important for small and medium-sized enterprises (SMEs) to cultivate strong digital capabilities. One of the new multidimensional assessment instruments that is presented in this study is called ORGDIGCAP. It provides a framework for understanding how digital capabilities develop and manifest themselves in small and medium-sized enterprises (SMEs), therefore capturing the essence of digital capabilities in organizational contexts. The findings shed light on the significance of digital strategy in enhancing both digital agility and general organizational competitiveness. As a result, they provide significant new ideas to the existing body of research on digital transformation in developing countries.

The confirmation of ORGDIGCAP as a reliable indicator of digital capabilities is the first significant contribution that our effort has made. Through the utilization of three essential components—organizational learning associated to digital tools, the actual utilization of these technologies, and their strategic integration—this

research offers a comprehensive view on the development of digital capacity. In spite of the fact that most recent research tends to emphasize the use of digital technologies as the primary indicator of digital capability, our findings call this notion into question by demonstrating that the adoption component, when considered in isolation, does not possess strong empirical proof as a fundamental component of digital capable capacity evaluation. It is clear from this that merely utilizing digital technology is not sufficient; rather, it is the intentional incorporation of these tools and the continual education that is associated with them that drives substantial improvements in digital technology.

The data that we analyzed from 137 Mexican small and medium-sized enterprises (SMEs) sheds even more light on the connection between digital capabilities and agility, therefore highlighting the role that digital strategy plays as a mediator. According to the findings, businesses that place a high importance on the development of a consistent digital strategy are better equipped to increase their agility in the face of rapid technological change. The findings of this study are in line with those of previous research that suggests that strategic alignment is necessary in order to make the most of digital technology in order to get a competitive advantage. Our study, on the other hand, expands this understanding by using actual data from the context of small and medium-sized enterprises (SMEs) in developing nations. These SMEs face unique challenges and have fewer resources than their counterparts in developed countries.

Several repercussions are a consequence of these results. The findings of this study highlight the need of cultivating an environment that is conducive to digital learning and the strategic integration of digital technologies for practitioners, particularly executives and legislators. This may involve the formation of cross-functional teams in order to effectively incorporate digital technology into the operations of the company, as well as the funding of training courses that improve the digital literacy of the workers. Furthermore, it underlines the necessity of connecting digital initiatives with bigger organizational objectives and strategies in order to guarantee that digital capabilities promote general business agility and resilience across the board.

Furthermore, this research urges a reevaluation of the support systems that are available to small and medium-sized enterprises (SMEs) in countries that are considered to be undeveloped. Not only should politicians take into consideration programs that provide access to digital technology, but they should also take into consideration programs that offer direction on strategic digital planning and execution. They will be able to lead small and medium-sized enterprises (SMEs) through the complexities of digital transformation and provide them the ability to compete in a market that is becoming increasingly digital.

Despite the fact that it is helpful, this work has issues. Because the focus was on small and medium-sized enterprises (SMEs) in Mexico, it is possible that the findings cannot be generalized to other emerging markets that have different cultural, economic, and technical environments. In subsequent research, research might be conducted to determine whether or not the ORGDIGCAP paradigm is applicable in various contexts and industries in order to validate its efficacy. In addition, longitudinal studies may provide a more in-depth understanding of how digital capabilities evolve over time as well as the long-term consequences of digital strategy development on the performance of businesses.

This study, in its conclusion, highlights the critical role that strategic digital skills play in assisting small and medium-sized enterprises (SMEs) in developing nations to thrive in the face of digital disruption. Through the expansion of our understanding of the ways in which digital skills develop and are incorporated into enterprises, this study contributes to both the theoretical discussion and the practical applications that are associated with the topic of digital transformation. In order for small and medium-sized enterprises (SMEs) to achieve continued competitiveness and agility in an environment that is always changing, they will need to establish a strategic approach to digital capacity development. This is because SMEs are struggling with the benefits and obstacles that digital technologies present.

CONCLUSION

Focusing particularly on the setting of Mexican SMEs, this research has investigated the vital part strategic digital capabilities play in small and medium-sized firms (SMEs) functioning under developing marketplaces. The results highlight the need for these companies to have strong digital skills to negotiate the difficulties brought about by digital disruptions and fast technology changes. We consider the consequences of our results, the additions to the current body of knowledge, and the useful suggestions for SMEs and governments as we finish our study. Culminating in the creation of the Organizational Digital Capabilities (ORDIGCAP) scale, our study used a multi-method approach to provide a multidimensional measuring instrument for evaluating digital capabilities in organizational contexts. The scale has three basic parts: organizational learning about digital tools, the actual usage of these technologies, and their strategic integration into company operations. Especially, we found that the adoption side of digital technologies, although highlighted in earlier studies, had little empirical evidence as a key factor in determining digital capability. This result calls for a reconsideration of the dominant

stories about digital adoption and underlines the need to emphasize the strategic and operational aspects of digital capabilities.

A striking link between digital capabilities and organisational agility was found by means of a quantitative study using data from 137 Mexican SMEs. Specifically, we discovered that the establishment of a consistent digital strategy acts as a mediator in improving digital agility as well as general digital capacity development. This link emphasizes the need of not just using digital technologies but also incorporating them deliberately within the organizational structure to obtain competitive advantage. Particularly in the light of developing countries, the knowledge obtained from this research helps to greatly enrich the theoretical debate on digital transformation in SMEs. Our results question the traditional knowledge that gives technology adoption top priority as the main sign of digital competence. Rather, we contend that a more complex knowledge including the interaction between learning, use, and strategic integration of digital technologies would be preferable. This point of view fits the dynamic capabilities model, which holds that for SMEs the capacity to adapt, integrate, and reconfigure internal and external skills in reaction to fast changing surroundings is most important.

Moreover, the ORGDIGCAP scale's growth significantly contributes to the assessment of digital capabilities by offering a consistent instrument for evaluating the digital maturity of companies to academics and practitioners. Future studies can expand on this scale to investigate its relevance in various industries and geographical settings, hence enhancing the body of work on digital transformation and organizational skills. Our results have several practical consequences that provide actionable ideas for politicians and SME leaders. First and foremost, SMEs have to understand the need of creating a strong digital strategy in line with their organizational objectives and market realities. This approach should stress the requirement of constant organizational learning and the strategic integration of digital technology into daily operations in addition to its focus on their use.

We advise SMEs to spend money on training and development initiatives meant to improve staff members' digital literacy in order to help this process. Organizations may better prepare their staff to use digital tools efficiently and adjust to evolving market conditions by promoting a culture of learning and innovation. SMEs can also think about forming alliances with industry groups, educational institutions, and technology companies to get best practices in digital transformation, knowledge, and resources. Supporting SMEs in their digital path is very much influenced by lawmakers. We support policies that encourage digital skills development, offer financial incentives for technology use, and ease access to digital infrastructure. Governments may assist SMEs improve their competitiveness and resilience in an increasingly digital market by fostering an enabling environment for digital transformation.

Although this research provides insightful analysis, it has several shortcomings. The study is founded on a particular sample of Mexican SMEs, which can restrict the generalizability of the results to other settings. Future studies should seek to confirm the ORGDIGCAP scale and investigate the more general relevance of our results by replicating this work in other developing markets and industries. Furthermore, the cross-sectional character of our data limits our capacity to make causal conclusions about the interactions between digital capabilities, agility, and strategy. Examining how these interactions develop over time and in reaction to outside technology and market changes would be helped by longitudinal research.

Qualitative research techniques might further enhance our quantitative results by offering greater understanding of the lived experiences of SME leaders negotiating the complexity of digital transformation. Knowing the obstacles, drives, and tactics used by these leaders can help us to better grasp the processes involved in building digital capabilities. Ultimately, the digital transformation of SMEs in developing countries is not only about technology adoption; it also calls for a strategic strategy including organizational learning, efficient use, and digital tool integration. Our research emphasizes the importance of digital strategy in improving organizational agility and capacity by offering theoretical insights as well as practical advice for SMEs and governments. Organizations must be proactive in growing their digital skills as the digital scene changes if they are to succeed in an ever more competitive and disruptive market. Adopting a whole strategy to digital transformation would help SMEs to succeed in the digital era.

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