



Human-Centered Digital Transformation for SMEs: Integrating Artificial Intelligence, Organizational Happiness, and Strategic Competitiveness

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Abstract. Small and medium-sized enterprises (SMEs) play a decisive role in employment generation, productive dynamism, and local economic development, yet they remain especially vulnerable in contexts marked by digital acceleration, uncertainty, and growing competitive pressure. In recent years, digital transformation and artificial intelligence have been widely promoted as central drivers of modernization. However, the evidence increasingly suggests that technological adoption alone does not guarantee better performance, greater adaptability, or sustainable competitive advantages in SMEs. Recent work on SMEs, digital transformation, Industry 5.0, and organizational resilience points in the same direction: digital value depends on the organizational and human conditions that allow technology to be absorbed, interpreted, and strategically mobilized. This chapter argues that the strategic value of digital transformation emerges when intelligent technologies are integrated with digital capabilities, knowledge management, people-centered management, and organizational well-being. Based on a conceptual review, the chapter proposes an integrative framework linking artificial intelligence, digital capabilities, knowledge management, organizational happiness, employee engagement, organizational intelligence, resilience, and strategic competitiveness. In doing so, it brings together research streams that often remain fragmented in the literature, including digital transformation, human-centered management, employee well-being, and Industry 5.0. The chapter makes two central contributions. First, it moves beyond a technology-centered interpretation of digital transformation in SMEs. Second, it offers a conceptual model explaining how intelligent technologies can contribute to sustainable competitiveness only when they are embedded in cultures of learning, trust, and adaptation. The chapter closes with a managerial roadmap and a future research agenda, showing that the future of SME competitiveness is not only digital but deeply human-centered.

Keywords: Artificial Intelligence; Digital Transformation; Human-Centered Management; Organizational Happiness; SMEs; Strategic Competitiveness.

1 Introduction

Small and medium-sized enterprises (SMEs) are considered the main economic drive in almost every country in the world; they are the organizational unit that

has more social impact and economic development influence. This organization has a large employment generation rate, has also an impact on local markets, are the main source of stimulation for entrepreneurship, and are the base of economical ecosystems in developed and underdeveloped economies. SMEs usually work under levels of vulnerability and disadvantage against large corporations, specifically in topics like market resilience due to the increased complexity in market competition; in technology adoption due to the fast change in available technologies; and in service orientation to customer due to the constant evolution in their expectation. Some studies have shown that SMEs have more difficulties than larger firms when they are working on digital transformation (DT) initiatives, this has relevance due to resource constraints, organizational formality, and considerable dependency on internal adaptability ([1], [2] & [3]).

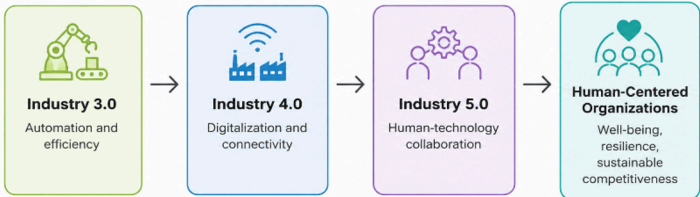
Under these complex conditions, DT is a core topic in SMEs' competitiveness acquisition over management research strategies and applied best-practice actions. We need to recognize that digital transformation is not only the action of purchasing software, adopting platforms, or automating processes and tasks. Several authors offer a broader explanation: they refer to DT as a set of procedures that help firms create value, organize knowledge, coordinate general activities and work, and formulate a strategic response to environmental changes. In SMEs, this difference is valuable because the presence of technology and digital tools does not necessarily mean a focus on innovation and firm performance ([1], [4] & [2]).

The previous consideration applies to artificial intelligence (AI). General appreciation from a managerial point of view often presents AI as a transformational driver, just for using it in any process inside the organization. From some studies, appreciation, and based on SMEs objectives, authors have suggested that AI is successful in creating value only when the organization has digital readiness preparation, knowledgeable leadership, digital skills, and coordination efforts that turn information into action and, eventually, into strategy. According to research based on a survey, AI adoption in SMEs mentioned that organizational and environmental conditions are important technical factors, while AI enablers tend to focus on centrality, governance, and human decisions, which are soft rather than technical skills [5].

This chapter is based on the research question: What organizational elements allow artificial intelligence to generate sustainable competitive advantages in SMEs beyond technological adoption? From this, we propose that competitiveness does not derive from technology alone but from the organization's ability to combine intelligent tools and procedures with learning, trust, well-being, and strategic focus. Based on this argument, we find that AI is aligned with Industry 5.0, which reframes industrial and digital transformation around a human-centric context, where resilience and sustainability impact the thinking of a conflict rather than around efficiency alone ([6], [7] & [8]).

Following these arguments, the objective of this chapter is to analyze how the integration of artificial intelligence, digital transformation, and human-centered management can become a strategic and adaptive model for enhancing sustainable competitiveness in SMEs. Based on an integrative conceptual literature review, the chapter develops a comprehensive framework that connects artificial intelligence capabilities, digital capabilities, knowledge management, organizational happiness, employee engagement, organizational intelligence, resilience, and strategic competitiveness. Rather than treating these constructs as isolated dimensions, the proposed framework explains how their interaction creates organizational capabilities that support sustainable competitive advantage.

This chapter makes three principal contributions to the literature. First, it advances the discussion on digital transformation by proposing a human-centered perspective in which artificial intelligence functions as an organizational capability rather than merely a technological resource. Second, it integrates multiple research streams—including Industry 5.0, knowledge management, organizational well-being, resilience, and strategic competitiveness—into a unified conceptual model that explains their interrelationships. Third, it proposes a managerial roadmap that translates these conceptual relationships into practical strategic guidance for SME managers seeking sustainable digital transformation. The overall evolution of this perspective is illustrated in Figure 1.



Note. Own elaboration.

Figure 1. The Evolution of Business Transformation.

2 Research Method

This chapter adopts a qualitative conceptual research design based on an integrative literature review. Unlike empirical studies that test hypotheses using primary or secondary datasets, conceptual research seeks to synthesize existing knowledge, identify relationships among theoretical constructs, and develop explanatory frameworks that contribute to theory building ([9] & [10]). Integrative literature reviews are particularly appropriate when the objective is to consolidate fragmented knowledge, advance theoretical understanding, and

generate conceptual models that support future empirical research ([11] & [12]). Accordingly, this chapter integrates recent contributions on digital transformation, artificial intelligence, Industry 5.0, organizational happiness, knowledge management, resilience, and strategic competitiveness to propose a human-centered model for SMEs.

The literature review focused primarily on peer-reviewed scientific articles published between 2022 and 2025 to capture the most recent developments in digital transformation, artificial intelligence, and Industry 5.0. Searches were conducted using internationally recognized databases, including Scopus, Web of Science, and ScienceDirect. Following current recommendations for integrative literature reviews, the search process emphasized transparency, methodological rigor, and theoretical relevance, ensuring that the selected evidence supported the development of a robust conceptual framework ([10] & [13]). Furthermore, the literature search and selection strategy were designed to facilitate reproducibility and theoretical integration ([14] & [15]).

The reviewed studies were selected according to four criteria. First, publications had to address at least one of the chapter's central themes: digital transformation, artificial intelligence, Industry 5.0, organizational capabilities, organizational happiness, resilience, or strategic competitiveness. Second, preference was given to empirical or conceptual studies published in peer-reviewed journals indexed in internationally recognized databases [16]. Third, studies focusing specifically on SMEs were prioritized whenever available. Finally, only publications providing theoretical or managerial implications relevant to organizational transformation were incorporated into the conceptual synthesis. These selection criteria are consistent with contemporary recommendations for conducting rigorous integrative literature reviews and theory-building research ([11], [10] & [17]).

The selected literature was analyzed using thematic analysis. Initially, the principal concepts and organizational capabilities discussed in the literature were identified and classified into thematic categories. Subsequently, the relationships among these categories were examined to identify recurring explanatory patterns, conceptual convergence, and complementary theoretical perspectives. Thematic analysis provides a rigorous approach for synthesizing qualitative evidence by identifying meaningful patterns across multiple studies, thereby facilitating conceptual integration and theory development ([18] & [9]). This iterative analytical process enabled the integration of fragmented knowledge into a coherent conceptual structure linking digital transformation, artificial intelligence, human-centered management, and strategic competitiveness.

Based on the thematic synthesis, the chapter progressively develops a conceptual framework explaining how artificial intelligence contributes to sustainable competitiveness through successive organizational capabilities [15].

The proposed framework establishes an explanatory sequence beginning with artificial intelligence and digital capabilities, followed by knowledge management, organizational happiness, employee engagement, organizational intelligence, organizational resilience, and finally strategic competitiveness. This integrative approach is consistent with conceptual research aimed at theory development through the synthesis of complementary research streams, allowing fragmented knowledge to be transformed into coherent explanatory models ([10], [19] & [12]). The methodological process followed for developing the framework is summarized in Figure 2.



Note. Own elaboration.

Figure 2. Methodological Process for Developing the Human-Centered Conceptual Framework.

Figure 1 illustrates the methodological process followed to construct the proposed conceptual framework. The process began with the identification of recent scientific literature published in internationally indexed databases, followed by a systematic screening and selection of studies according to their scientific quality, relevance to SMEs, and theoretical contribution. The selected publications were subsequently classified into major thematic domains and examined through thematic analysis to identify recurring concepts, complementary theoretical perspectives, and organizational relationships. The resulting synthesis enabled the integration of fragmented knowledge into a coherent human-centered conceptual framework, which subsequently served as the basis for the development of the managerial roadmap proposed for SMEs. This sequential process ensures methodological transparency and strengthens the theoretical consistency of the framework.

3 Results

3.1 Digital Transformation in SMEs: Beyond Technology

Digital transformation is commonly defined as the integration of digital technologies into organizational processes to improve efficiency, innovation, and value creation. Although this definition captures the technological dimension of transformation, it does not fully explain why some SMEs achieve sustained improvements in organizational performance while others obtain only limited benefits. Recent research suggests that successful digital transformation depends less on technology adoption itself and more on the organization's ability to develop strategic capabilities, organizational learning, and continuous adaptation. Consequently, digital transformation should be understood as a multidimensional organizational process rather than merely as the implementation of digital tools ([2] & [3]).

From this perspective, digital transformation should be understood as a comprehensive organizational change process rather than as the isolated implementation of digital technologies. It involves redesigning how firms create value, manage and share knowledge, make strategic decisions, and interact with customers, partners, and employees. In SMEs, this transformation generally occurs through gradual and incremental changes that progressively strengthen organizational capabilities instead of relying on disruptive technological investments ([1] & [2]).

Accordingly, contemporary digital transformation is increasingly viewed as the development of organizational ecosystems in which technology, information, knowledge, and strategic capabilities interact continuously. Rather than depending on isolated digital initiatives, competitive advantage emerges from the organization's capacity to integrate these resources into coherent managerial processes that support innovation and long-term adaptation ([3] & [4]).

Digital capabilities represent the organizational ability to effectively mobilize technological resources, digital knowledge, and managerial competencies to support decision-making, innovation, customer engagement, and organizational learning. Beyond technical expertise, these capabilities enable firms to reconfigure resources and respond proactively to environmental change through dynamic adaptation. Similarly, dynamic capabilities enable organizations to detect changes in their environment and anticipate concrete actions, both in acquiring and reconfiguring resources, to capitalize on emerging opportunities within the uncertain environment in which they operate. Both capabilities are highly relevant for SMEs, as it is through them that these businesses can overcome their limitations by leveraging their adaptability and capacity for learning ([4] & [20]).

SMEs frequently face obstacles in their digital transformation process. The difficulty in overcoming these obstacles varies and must be considered in

management decisions when implementing change. Among the most common barriers are often-limited infrastructure, access to financing, the use of information systems without an integral approach, the difficulty of establishing efficient and comprehensive planning, the difficulty of getting organizational members to adapt to change, the difficulty of developing transferable skills, and the challenge of maintaining an acceptable level of management readiness. Some research studies focused on SMEs have identified these obstacles as decisive factors, especially when the organization approaches digitization processes from a technical perspective instead of integrating them into its strategic planning process ([5], [2] & [21]). These barriers and their effects are summarized in Table 1.

Given these arguments, it is reasonable to conclude that for digital transformation in SMEs to be successful, it is necessary to recognize that it does not depend solely on the infrastructure or software that is implemented. It is reasonable to infer that it depends on soft skills such as leadership style, culture, and organizational learning, as well as the ability of the organization's members to adapt to, assimilate, and efficiently utilize change. Thus, this chapter addresses digital transformation as a complex organizational process that extends to the organization's strategic vision and involves artificial intelligence as a strategic element in its implementation.

Table 1. Main Barriers for Digital Transformation in SMEs.

Type of barrier	Description	Effect on digital transformation
Technological	Insufficient infrastructure, limited connectivity, fragmented systems, and low technical capacity	They hinder the implementation and efficient use of digital tools
Financial	Limited resources, difficulties in investing, and uncertainty about the expected return	They slow modernization projects and reduce their continuity
Cultural	Resistance to change, attachment to traditional practices, and distrust toward digital solutions	They weaken internal acceptance and slow down adoption
Organizational	Absence of strategy, weak coordination, limited planning, and poor knowledge management	They generate isolated initiatives with little structural impact
Human	Skills gaps, fear of replacement, workload overload, and low employee participation	They reduce commitment and limit the effective use of transformation efforts

Note. Own elaboration.

These barriers demonstrate that successful digital transformation depends not only on technological investments but also on the organizational capabilities required to absorb, integrate, and strategically exploit digital resources. Consequently, overcoming these constraints establishes the conditions under

which artificial intelligence can evolve from an operational tool into a strategic organizational capability.

3.2 Artificial Intelligence as an Organizational Capability

Artificial intelligence (AI) has rapidly evolved from a specialized technological resource into a strategic organizational capability that supports decision-making, learning, innovation, and adaptive management. Although AI is frequently associated with automation and operational efficiency, recent evidence suggests that its greatest value lies in strengthening the organizational processes through which information is transformed into strategic knowledge. Consequently, AI should be understood not simply as a technological application but as a capability embedded within broader organizational systems [5].

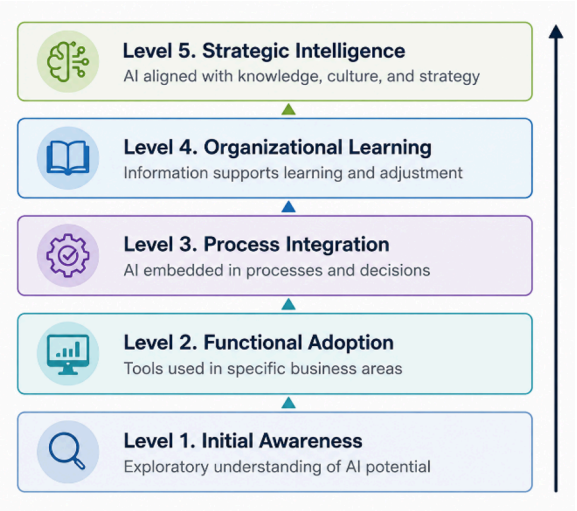
From this perspective, AI functions as part of a socio-technical system in which technological resources, organizational structures, leadership, and human capabilities interact continuously. Its strategic value depends not on the sophistication of algorithms alone but on the organization's capacity to generate, interpret, and apply knowledge that improves decision-making, organizational learning, and responsiveness to environmental change. This capability-based interpretation is consistent with recent studies emphasizing that digital transformation creates competitive value only when technology is effectively integrated into organizational strategy and managerial processes ([3] & [22]).

Within SMEs, AI supports a wide range of organizational activities, including strategic planning, marketing, human resource management, customer relationship management, innovation, and operational decision-making. Rather than automating isolated tasks, AI contributes to developing organizational knowledge, reducing uncertainty, and strengthening strategic coordination across business functions ([5] & [21]).

Similarly, when using AI in an organizational context, risks must be considered from the planning stage onward. Recent research highlights these potential risks and adopts a cautious position, reflecting a certain level of concern. The main risks relate to information bias, data privacy, transparency in decision-making, governance of its use, and resistance from employees who perceive potential threats to their job security. If these perceptions are not addressed, trust in the data and the technology itself, the perceived legitimacy of data analyses, and the willingness to embrace digital transformation would be limited ([5] & [8]). These challenges demonstrate that responsible AI adoption requires governance mechanisms capable of balancing technological innovation with ethical principles, employee trust, and organizational transparency.

This chapter argues that AI contributes to the development of organizational intelligence by transforming dispersed data into actionable information and

strategic knowledge. However, this transformation is not produced by technology alone. It emerges from the organization's collective capacity to interpret information, share knowledge, foster collaboration, and make informed decisions. Because SMEs typically exhibit shorter communication channels and closer interpersonal relationships, they are particularly well positioned to leverage AI as a catalyst for organizational learning, adaptability, and sustainable competitiveness. The maturity progression proposed in Figure 3 illustrates this evolutionary process.



Note. Own elaboration.

Figure 3. Artificial Intelligence Maturity Model.

3.3 Human-Centered Organizations

As digital transformation becomes increasingly embedded in organizational strategy, it is evident that technological progress alone cannot guarantee sustainable organizational performance. Contemporary organizations must integrate digital capabilities with human capabilities, organizational culture, and adaptive leadership. This perspective reflects the principles of Industry 5.0, which emphasizes that technological advancement should reinforce human well-being, resilience, and sustainability rather than focusing exclusively on automation and efficiency ([6], [7] & [8]).

Human-centered organizations place people at the core of strategic decision-making and organizational development. Rather than viewing employees as resources supporting technology, this perspective recognizes human knowledge, collaboration, creativity, and learning as the primary drivers of sustainable value creation. Consequently, digital technologies become

enablers of organizational development instead of objectives in themselves [21].

Within this perspective, organizational happiness should not be interpreted as a temporary emotional state or simple job satisfaction. Instead, it represents a multidimensional organizational condition that emerges from positive work experiences, meaningful participation, recognition, fairness, psychological safety, and opportunities for personal and professional growth. Employee well-being constitutes one of its principal dimensions, whereas trust and organizational identification function as mechanisms through which happiness influences organizational behavior. ([23] & [24]).

From a strategic perspective, employee well-being enhances organizational readiness for change by increasing openness to innovation, strengthening collaboration, and facilitating knowledge sharing across organizational levels. Employees who perceive fairness, trust, and alignment with organizational purpose are considerably more likely to support digital transformation initiatives and actively participate in organizational learning processes [25].

These organizational conditions collectively contribute to the development of organizational resilience. Rather than representing a reactive capability, resilience emerges as the organization's capacity to anticipate, absorb, adapt to, and learn from continuous environmental change. Consequently, resilience becomes the natural outcome of organizations capable of combining digital technologies with human development, organizational learning, and collaborative cultures ([20] & [22]).

Accordingly, this chapter conceptualizes human-centered organizations as the organizational foundation upon which digital transformation generates sustainable competitive value. Technology, knowledge, organizational happiness, employee engagement, and resilience should therefore be understood as complementary capabilities operating within a single strategic system rather than as independent organizational initiatives. This integrated perspective is summarized in Figure 4.



Note. Own elaboration.

Figure 4. Human-Centered Organization Framework.

The discussion developed throughout this section establishes the conceptual bridge between digital transformation and strategic competitiveness by explaining how technological capabilities evolve into organizational capabilities through knowledge, people-centered management, and resilience.

4 Discussion

4.1. Strategic Competitiveness through Human-Centered Digital Transformation

It is common to see competitiveness compared to efficiency, productivity, or the ability to outperform competitors within a relatively short timeframe. Although these aspects are important, they cannot be considered the only factors that explain the success of modern organizations operating in highly dynamic, technology-driven environments where the use and implementation of technology vary widely. Studies on competitiveness emphasize that SMEs must be analyzed from a broader perspective that includes the ability to adapt to change, generate value for a constantly evolving customer base, and sustain this relevant value proposition over time ([26] & [3]).

This approach to competition is particularly relevant for SMEs. They do not compete on the same terms as large companies; therefore, they should emphasize their ability to respond quickly to emerging demands, their proximity to the end consumer, the flexibility of their internal processes, and the way knowledge is shared among all their internal staff. Studies on the digital capabilities and performance of SMEs indicate that their competitiveness increasingly depends on integrating technology into business performance, innovation, and adaptability to change ([4] & [22]).

This is why it is proposed that strategic competitiveness in SMEs be achieved through improvements in organizational processes. One of these initial improvements is based on artificial intelligence, understood as the ability to use intelligent, knowledge-generating tools to complement strategic alignment. Furthermore, these tools are part of the digital capabilities that enhance information generation, task coordination, and decision-making. Once these intelligent capabilities have been acquired, knowledge management comes into play, enabling additional value to be created through these processes. Through these actions, the model aims to establish a less traditional relationship without losing its importance and relevance. To this end, it is necessary to consider that organizational well-being can be enhanced by efficient knowledge processes that reduce uncertainty, optimize coordination among the organization's components, make participation more accessible, and create work experiences that are perceived as more meaningful overall. Furthermore, employee engagement is fostered when people invest energy and attention in environments where they feel valued, trusted, and connected to a common goal ([23], [24] & [25]).

Commitment fosters the development of organizational intelligence, defined here as the collective ability to understand information, generate useful knowledge, and act coherently in complex, emerging contexts. Organizational resilience, in turn, is based on that intelligence, as resilient companies can learn, adapt, and reorganize under pressure. Recent research on digital transformation and resilience has shown that digitization correlates with performance and indirectly influences it through adaptation, innovation, and mechanisms associated with resilience ([20] & [22]).

Strategic competitiveness is the result of this explanatory sequence. The proposal on the origin of competitiveness distinguishes this model from more traditional perspectives. We consider that competitiveness does not arise directly from digitization, the widespread use of software, or the isolated capabilities of artificial intelligence. It arises from an organization's ability to integrate smart technologies with people-centered management, digital transformation, and the evolution toward knowledge, engagement, and organizational resilience. This is the fundamental conceptual contribution of this chapter. Figure 5 shows the suggested conceptual framework.



Note. Own elaboration.

Figure 5. Proposed Conceptual Framework.

Figure 5 represents the principal outcome of the integrative literature review by synthesizing the relationships identified across the different theoretical perspectives examined throughout this chapter. Rather than portraying digital transformation as a technology-driven process, the framework conceptualizes it as a progressive organizational capability-building pathway in which technological, organizational, and human dimensions interact to generate sustainable strategic competitiveness in SMEs.

The model proposes that artificial intelligence constitutes the technological foundation of organizational transformation. However, AI alone does not generate competitive advantage. Its value depends on the organization's ability to develop digital capabilities that facilitate the acquisition, integration, and effective use of digital technologies within business processes. These capabilities subsequently enable the systematic creation, sharing, and application of organizational knowledge, positioning knowledge management

as the mechanism through which technological resources are transformed into organizational learning and informed decision-making.

As knowledge processes become embedded within the organization, the model suggests that organizational outcomes progressively shift from technological to human dimensions. Knowledge management contributes to creating organizational conditions that promote employee well-being, organizational happiness, trust, and engagement. These human-centered conditions strengthen collaboration, knowledge sharing, innovation, and commitment, thereby fostering the emergence of organizational intelligence as a collective capability for interpreting information, solving complex problems, and supporting strategic decision-making.

The framework further proposes that organizational intelligence enhances resilience by enabling SMEs to anticipate environmental changes, respond effectively to uncertainty, and continuously adapt their organizational capabilities. Consequently, resilience is conceptualized not as an isolated organizational characteristic but as the cumulative outcome of the interaction among digital technologies, knowledge processes, and human-centered organizational practices. Ultimately, these complementary capabilities converge to generate sustainable strategic competitiveness, allowing SMEs to improve innovation, operational performance, adaptability, and long-term organizational sustainability.

4.2 Managerial Roadmap for SMEs

The proposed model must be implemented in strategic management actions to be useful beyond theory. This is particularly important for SMEs, as transformation typically takes place under constraints of time, budget, and operational capacity. The use of roadmaps helps prevent errors during implementation. Some of these potential errors relate to implementing technology without a prior assessment and to the assumption that strategic results will follow simply from its implementation. Recent studies on SMEs increasingly support strategies that begin with organizational readiness and cultural change, rather than being limited exclusively to technology purchases ([2] & [5]).

Organizational diagnosis is the first phase. SMEs must understand their current situation before implementing any major digital transformation project. They must clearly identify the processes that create bottlenecks, the capabilities already in place, where resistance to change is likely to occur, and what the employees' work experience is like at this time. This step is important because digital transformation tends to be more successful when it is linked to real organizational priorities, rather than to general modernization efforts ([2] & [21]).

Assessing an SME's digital maturity is the second phase. This involves determining whether the organization has the process integration evaluation,

internal alignment, data management practices, and strategic clarity required to expand its digital initiatives and whether it has a roadmap for acquiring the necessary technological tools. Research on SMEs' competitiveness and digital capability indicates that integration and readiness have a greater impact on outcomes than adoption alone ([4] & [3]).

The third phase focuses on management that is oriented toward organizational talent and people. Training and its planning are essential, but preparing for change also requires implementing actions that strengthen trust, communication, commitment, and psychological safety. Studies on employee identification and well-being indicate that employees are more likely to support change if they feel trust, fairness, and a sense of belonging within the organization ([23] & [25]).

Stage four consists of implementing people-centered artificial intelligence. At this stage, the focus is not on which technology is most widely used, but on which one can solve important problems and be integrated responsibly. The application of AI must be gradual, supervised, and clearly linked to strategic and human outcomes. The literature on the adoption of artificial intelligence in SMEs indicates that governance, leadership, and organizational adaptability remain fundamental to successful adoption [5].

The conceptual framework proposed in Figure 5 provides the theoretical basis for translating the findings of this study into practical managerial actions. Rather than recommending isolated technological initiatives, the framework suggests a progressive capability-building process through which SMEs can strengthen their digital maturity while simultaneously enhancing human development, organizational learning, resilience, and strategic competitiveness. Based on this interpretation, Table 2 presents a managerial roadmap that summarizes the principal organizational priorities associated with each stage of the proposed framework.

The fifth phase involves measuring and continuously improving the designated indicators. To measure a people-centered digital transformation, both operational and human indicators should be used. Some useful key performance indicators (KPIs) include the speed of the decision-making process, the level of perceived well-being, the frequency and structure of knowledge-sharing activities, perceived trust, engagement, process digitization rates, and resilience indicators. The fundamental premise is that transformation should be viewed as a continuous learning process, not a one-time implementation project ([2] & [22]). These stages are summarized in Table 2.

Table 2. Roadmap for Human-Centered Digital Transformation in SMEs.

Stage	Main objective	Key questions	Expected outcome
1. Organizational diagnosis	Understand the current situation of the firm	What are the main organizational needs, weaknesses, and opportunities?	Clear baseline for decision-making
2. Digital maturity assessment	Identify the firm's level of digital readiness	How prepared is the organization to integrate digital tools strategically?	Realistic view of strengths, gaps, and priorities
3. Talent and people-centered management	Prepare people and strengthen human conditions for change	Do employees have the skills, trust, and motivation required for transformation?	Greater engagement, readiness, and organizational alignment
4. Human-centered AI implementation	Introduce digital and AI tools in a purposeful and responsible way	Which technologies solve real problems and how should they be integrated?	More effective adoption with human and strategic alignment
5. Measurement and continuous improvement	Monitor progress and support organizational learning	What is improving, what is not, and what needs adjustment?	Sustainable transformation based on evidence and learning

Note. Own elaboration.

The roadmap illustrates that successful digital transformation should be implemented progressively rather than simultaneously. Each stage represents a cumulative organizational capability that creates the conditions necessary for the subsequent stage. Consequently, organizations should not attempt to achieve strategic competitiveness exclusively through technological investments. Instead, managers should prioritize the gradual development of digital capabilities, knowledge management practices, employee engagement, organizational intelligence, and resilience. This sequential perspective provides organizations with a practical mechanism for aligning digital transformation initiatives with long-term strategic objectives while minimizing implementation risks.

4.3 Future Research Agenda

The analysis of digital transformation in SMEs goes beyond explanations focused on adoption, as reviewed in this chapter. However, significant gaps remain. One of the most obvious issues is the need to assess how smart technologies influence learning and knowledge management, as well as organizational resilience and well-being, rather than merely evaluating them by efficiency or adoption alone. The most recent conceptual and bibliometric

studies on Industry 5.0 indicate that resilience and human-centeredness are key pillars of digital transformation. ([8] & [7]).

One line of research focuses on generative artificial intelligence and its impact on organizational processes. In SMEs, generative artificial intelligence raises new questions about how it supports creativity, communication, decision-making, and knowledge-based work. Future research should explore the circumstances under which these tools enhance innovation and learning without undermining human judgment or ownership of organizational knowledge. A second line of inquiry concerns collaboration between humans and artificial intelligence. The most productive question is not whether AI will replace people, but how organizations can create complementary relationships between machine-based analysis and human interpretation. In SMEs, this involves analyzing the restructuring of work, the evolution of roles, confidence in job security, and the management of collaborative decision-making in collaborative contexts. Studies on Industry 5.0-oriented SMEs directly highlight the need to better understand the connection among technology, people, and the organization ([21] & [6]).

A third line of research focuses on analyzing happiness and assessing organizational well-being. Research on well-being has become more comprehensive by incorporating organizational and personality aspects of SME employees. However, there is still room to analyze how individual satisfaction, commitment to the mission and vision, a sense of belonging, trust in leadership, and psychological safety relate to the outcomes of digital transformation in SMEs. This line of research is promising if it does not reduce well-being to a surveillance-oriented metric but rather treats it as a meaningful organizational condition ([23], [24] & [25]).

A fourth area is the ethical and responsible use of artificial intelligence in SME environments. Although governance and ethics in artificial intelligence have become central issues, SMEs often lack formal structures to oversee their use. Therefore, research should focus on practical governance models appropriate for smaller companies, including oversight, data responsibility, transparency, and accountability, within resource constraints [5]. The fifth area concerns digital leadership. Future research should investigate which leadership practices and styles support a human-centered digital transition in SMEs. This involves technological understanding and the ability to foster meaning, trust, well-being, engagement, and adaptability. Finally, organizational intelligence itself warrants further exploration as an integrative research framework that encompasses artificial intelligence, knowledge management, well-being, and resilience.

5. Conclusions

This chapter has argued that digitalization in SMEs should not be viewed solely as a technological process. Although artificial intelligence and digital tools are becoming increasingly important, simply acquiring them to automate

processes does not, in and of itself, guarantee lasting competitive advantages. What truly matters is the organization's ability to combine these technologies with digital skills, knowledge-based processes, employee well-being, and adaptability and resilience. That is the key message that emerges from recent research on resilience, the adoption of artificial intelligence, SMEs, and Industry 5.0.

Consequently, the chapter's contribution is conceptual in nature. Rather than addressing topics such as organizational happiness, artificial intelligence, or digital transformation separately, it integrates them into a single explanatory model: Artificial Intelligence Capabilities → Digital Capabilities → Knowledge Management → Organizational Happiness → Employee Engagement → Organizational Intelligence → Organizational Resilience → Strategic Competitiveness. This model offers a comprehensive interpretation of how SMEs can digitally transform their businesses to generate sustainable value.

A turning point in the existing literature is the central approach proposed to address competitiveness and strategy issues, and the tools promoted to facilitate the transformation of SMEs. In many of these accounts, technology continues to play the leading role. The organization and its people are the main characters in this chapter, with a focus on learning, building trust in the workplace, mobilizing the entire organization, and transforming information into intelligence and resilience. This transformation is important, particularly for SMEs, because they often lack the advantages enjoyed by larger companies and must compete through agility, proximity, and strategic coherence.

For this reason, SMEs require a human-centered approach focused on an essential condition for sustaining their competitiveness in a sustainable manner, rather than merely as a rhetorical add-on. An organization may become more efficient through digital transformation, even if it does not strengthen learning, trust, or engagement; however, this does not guarantee it will become more competitive. On the other hand, a company that combines smart technologies with human development and organizational purpose has greater opportunities to achieve long-term relevance and to develop strategic capacity and resilience. The chapter concludes with a clear statement that authentic digital transformation does not occur solely when a company incorporates artificial intelligence but rather when it combines it with human potential to deliver sustainable value.

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