The Impact of Artificial Intelligence on the Development of Digital Business Models and the Strategic Transformation of Family Businesses in the Middle East and North Africa Region: A Systematic Review of Recent Studies

Amir Hadfani[1]

[1]University Center of Barika, Barika, Algeria
amir.hadfani@cu-barika.dz

Abstract. This study analyzes the impact of artificial intelligence on digital business model development and strategic transformation in family businesses within the MENA region through a systematic literature review (2020–2025). The findings confirm that AI functions as a strategic driver of operational efficiency, innovation, and decision-making flexibility, while adoption is constrained by cultural, organizational, and technological challenges, particularly resistance to change and weak digital infrastructure. The study proposes strategies to advance digital transformation, including strengthening digital leadership, enhancing technical capabilities, and improving corporate governance, and emphasizes the need for future field-based research that accounts for the social and cultural specificities of family businesses.

Keywords: Artificial intelligence, digital business models, strategic transformation, family businesses, digital transformation, resistance to change, digital governance, Middle East, North Africa.

1 Introduction

The study examines the role of artificial intelligence in driving digital transformation and the development of digital business models in family businesses within the MENA region. As digital technologies reshape organizational management and competitiveness, family firms—despite their economic importance—face distinct structural and managerial challenges in adopting these technologies. The research focuses on assessing how artificial intelligence supports strategic transformation, while identifying key opportunities and challenges, and underscores the study's importance in enhancing organizational effectiveness and sustainable competitive advantage.

D. Agti et al. (eds.), *Proceedings of the International Conference on Artificial Intelligence Applications in Business Administration in MENA Region (ICAIABA 2026)*, Advances in Economics, Business and Management Research 393,
https://doi.org/10.2991/978-94-6239-711-8_36

2 Basic Concepts and Theoretical Framework

2.1 Definition of Artificial Intelligence and Its Applications in the Business Sector

Artificial intelligence refers to computer systems and advanced algorithms that simulate human intelligence in learning, perception, and decision-making, enabling machines to perform complex cognitive tasks and enhance organizational innovation [1], [2], [3]. In the business sector, AI functions as a strategic tool for automating processes, analyzing data, predicting customer behavior, personalizing services, optimizing supply chains, and supporting financial and investment decision-making [4], [3]. These applications position artificial intelligence as a key driver of digital transformation, competitiveness, and the development of sustainable digital business models aligned with contemporary business environments.

2.2 Digital Business Models: Evolution, Structure, and Core Characteristics

Digital business models define how organizations create value and generate revenue through the strategic integration of digital technologies, value propositions, and digital channels within the context of digital transformation [5]. These models are distinguished by their adaptability to market changes through the use of big data, cloud computing, and the Internet of Things to redesign processes and services [6]. Digital enablement, supported by artificial intelligence, plays a central role in fostering innovation and enhancing customer experience across interactive channels [7].

Core characteristics of digital business models include flexibility, continuous innovation, and customer-centricity, which collectively support strategic transformation, competitiveness, and long-term business sustainability [8].

2.3 The Concept of Strategic Transformation and Its Role in Family Businesses

Strategic transformation refers to the comprehensive and systematic reconfiguration of organizational strategies, structures, and business models to adapt to environmental, market, and technological changes and achieve long-term competitive sustainability [9], [10]. In family businesses, it is a critical mechanism for ensuring continuity across generations while preserving founding values and vision [11]. Strategic transformation enables family firms to address unique challenges such as intergenerational conflict, resource constraints, and innovation pressures, while facilitating the adoption of digital technologies and artificial intelligence
without undermining family identity [12]. By fostering adaptive and intelligent capabilities, strategic transformation enhances responsiveness, sustainability, and competitive advantage in dynamic business environments [13].

2.4 The Specificity of Family Businesses in the Middle East and North Africa Region

Family businesses in the MENA region are distinguished by strong integration of family values with ownership and management, giving the family a central role in decision-making and strategic orientation [14]. Social norms and expectations significantly shape their behavior, requiring a delicate balance between tradition and innovation to ensure sustainability [15]. These firms face region-specific challenges related to governance, generational succession, transparency, and the separation of family and business roles, all of which are influenced by prevailing cultural norms [16]. Additionally, disparities in digital infrastructure, institutional development, and technical capabilities affect their ability to adopt advanced technologies [17]. Understanding these cultural and structural specificities is essential for designing effective digital transformation strategies that leverage innovation while preserving core family values.

3 Methodology

This study adopts the Systematic Literature Review (SLR) methodology as a scientific and structured framework for collecting and analyzing studies related to the impact of artificial intelligence on the development of digital business models and the strategic transformation of family businesses. This methodology aims to provide a comprehensive and systematic analysis of published research, while adhering to transparent procedures that ensure the accuracy and objectivity of the results.

3.1 Stages of the Systematic Review

The review comprises several main stages, beginning with the precise formulation of the research question, followed by planning the search process through the selection of appropriate data sources and relevant keywords. This is followed by the execution of the search and the identification of relevant studies. Subsequently, the quality of the selected studies is assessed, and data are extracted and analyzed systematically using qualitative and quantitative analytical tools such as content analysis and descriptive statistical analysis.

3.2 Inclusion and Exclusion Criteria

Clear inclusion criteria were established to ensure the relevance of the studies to the topic. These criteria include the selection of research addressing artificial intelligence in the context of digital business models and the strategic transformation of family businesses, while considering the recency of studies published between 2020 and 2025.
Exclusion criteria included the omission of non-peer-reviewed studies, those lacking data or impact analysis, and research that does not align with the scope of the topic or that discusses unrelated subjects.

3.3 Databases Used and Search Steps

The search was conducted within reputable scientific databases such as Scopus, Web of Science, and Google Scholar, using specific and diverse keywords such as "Artificial Intelligence," "Digital Business Models," "Strategic Transformation," and "Family Business" to ensure comprehensive coverage. Initial filtering was performed based on titles and abstracts, followed by full-text review and then information extraction and analysis.

This methodological design ensures a high level of objectivity and rigor in the literature review, which positively reflects on the quality of the results and recommendations derived from the study.

4 Results of the Systematic Review

4.1 Applications of Artificial Intelligence in Digital Business Models of Family Businesses

Recent literature (2020–2025) indicates a growing adoption of artificial intelligence in the digital business models of family businesses, where AI enhances operational efficiency, data analysis, and service customization through machine learning–based tools [12]. AI contributes to integrated digital business models across three key dimensions: process automation and cost reduction via intelligent systems [3], enhancement of customer experience through behavioral analytics and personalized recommendations [4], and support for strategic decision-making through predictive analytics that improve adaptability to market dynamics [2]. Despite challenges such as organizational resistance, skill shortages, and the need to reconcile family values with digitalization requirements [17], family firms that successfully implement AI demonstrate greater resilience, competitiveness, and sustainable growth.

4.2 The Impact of Artificial Intelligence on the Strategic Transformation of Family Businesses

Recent studies (2020–2025) identify artificial intelligence as a central driver of strategic transformation in family businesses, enabling the renewal of strategic visions, operational restructuring, and alignment with digital market dynamics [12]. AI adoption enhances organizational flexibility, data-driven decision-making, innovation, and opportunity–risk anticipation, thereby supporting sustainable growth and competitiveness [9], [10]. Additionally, AI contributes to improved governance and transparency, facilitating intergenerational alignment and reducing internal
conflicts [11] Despite challenges related to cultural resistance, technological barriers, and change management capabilities [13], effective implementation depends on training, digital governance, and integrated technological infrastructure, positioning AI as

both a strategic necessity and a determinant of long-term continuity in family businesses.

4.3 Factors Influencing the Success or Challenges of Digital and Strategic Transformation in Family Businesses

The literature identifies several critical factors shaping the success or challenges of digital and strategic transformation in family businesses. Key among these are strong family leadership support and a clear strategic vision that promotes artificial intelligence adoption and fosters an innovation-oriented environment [12]. Organizational culture plays a dual role, as traditional family values may hinder change but can also support transformation when flexibly aligned with digitalization requirements [15]. Governance quality and transparency further influence implementation effectiveness and conflict reduction [16]. In parallel, technical constraints—such as skill shortages, weak digital infrastructure, system integration issues, and limited financial resources—pose significant barriers [17]. Overall, successful transformation depends on the integration of leadership commitment, technical capability development, adaptive cultural change, and flexible governance supported by comprehensive training and awareness initiatives.

4.4 Comparative Analysis Across Regions and Industries in Digital Transformation and Artificial Intelligence Adoption in Family Businesses

Recent studies reveal significant regional and sectoral disparities in artificial intelligence adoption and digital transformation among family businesses. Firms in the MENA region generally lag behind counterparts in Asia and Europe due to weaker digital infrastructure, skill shortages, and financial constraints [17]. At the industry level, technology-intensive sectors such as ICT and financial services lead in AI adoption, while traditional sectors like agriculture and manufacturing show slower progress because of resistance to change and limited technological readiness [8]. The analysis indicates that family businesses operating in high-technology industries and supportive institutional environments achieve more effective AI integration, innovation, and adaptability. Conversely, firms in traditional sectors and less supportive contexts require targeted policy interventions, skills development, and context-specific strategies to bridge performance gaps influenced by economic and political conditions.

Table 1. Summary of Evidence from the Results of the Systematic Review

Axis	AI Focus	Key Findings	References	Challenges / Opportunities
AI applications in digital business models	AI	Process automation, improvement of customer experience, support for predictive decision-making	[12], [3]	Weak technical competencies, innovation opportunities
AI impact on strategic transformation	AI	Enhancing organizational flexibility, strategic innovation, improving governance	[9], [10]	Cultural resistance, capability development
Success/challenge factors in transformation	AI	Leadership support, organizational culture, governance, lack of technological infrastructure	[12], [15]	Resistance to change, limited funding
Regional and industry comparisons	AI	Differences between the Middle East and the Maghreb, progress of technology and financial services sectors	[17], [8]	Digital divide, role of government policies

Source: Prepared by the researcher

The table (1) provides a concise summary that facilitates quick reference to the study's content and highlights the key points of each dimension, with references to supporting studies and the associated challenges or opportunities.

These results can also be organized into a flowchart illustrating the relationship between artificial intelligence applications, success factors and challenges, and their impact on strategic transformation as well as regional and industrial differences, thereby supporting an integrated understanding of the research field.

5 Discussion of Results

5.1 Interpretation of the Results and Their Linkage to Previous Studies and Relevant Theories

The findings of the 2020–2025 systematic review confirm the critical role of artificial intelligence in driving digital and strategic transformation in family businesses. These results align with Dynamic Capabilities Theory, which emphasizes AI's role in

enabling resource reconfiguration, opportunity sensing, and risk management in dynamic

environments [18]. The outcomes also support the Technology Acceptance Model (TAM), highlighting the importance of top management support and an innovation-oriented organizational culture in overcoming resistance to AI adoption [19]. In the MENA context, Social Systems Theory helps explain the interaction between family values, traditions, and digital innovation, underscoring the need for culturally sensitive transformation strategies [20]. Furthermore, the findings are consistent with Corporate Governance Theory, which stresses that transparent and flexible governance structures facilitate effective AI adoption and mitigate transformation-related conflicts [21]. Overall, the results suggest that successful AI integration in family businesses requires a holistic approach encompassing technological, cultural, organizational, and governance dimensions, reinforcing AI's role as a strategic driver of sustainability and competitiveness.

5.2 Similarities and Differences Between MENA Contexts and the Global Context in Artificial Intelligence Adoption

The literature reveals notable similarities between family businesses in the MENA region and globally in recognizing artificial intelligence as a key enabler of digital and strategic transformation, particularly in process automation, customer relationship management, and data-driven decision-making [22]. Both contexts share common challenges, including resistance to change, skill shortages, and the need to align cultural values with technological innovation [12]. However, significant differences arise in the MENA context due to stronger cultural and social influences on decision-making, weaker digital infrastructure, and lower levels of technological investment, which slow AI adoption compared to more technologically advanced regions [15], [17]. Additionally, variations in governance quality, regulatory frameworks, and institutional support further distinguish the two contexts, underscoring the necessity of context-specific digital transformation strategies that account for cultural, organizational, and political particularities [16].

5.3 Challenges and Barriers Facing Family Businesses in Adopting Artificial Intelligence

Recent literature (2020–2025) identifies multiple cultural, organizational, and technological barriers hindering artificial intelligence adoption in family businesses, particularly in the MENA region. Cultural and organizational resistance rooted in traditional family values, fear of losing control, and reluctance to change represent major obstacles to digital transformation [15]. Skill shortages and limited technical expertise further restrict effective AI implementation, highlighting the need for targeted training initiatives [17]. Weak digital infrastructure and insufficient investment in technological resources constrain AI integration [12], while governance deficiencies, limited transparency, and financing difficulties impede support for

AI projects [16]. Additionally, the overlap between family and business relationships complicates strategic and technological decision-making, reinforcing the need for context-specific strategies that enhance leadership commitment, technical capacity, infrastructure, and governance to achieve sustainable digital transformation [20].

5.4 Future Opportunities and Proposed Strategies to Enhance Digital Transformation in Family Businesses

The literature identifies artificial intelligence as a major strategic opportunity for family businesses to enhance competitiveness, sustainability, and innovation through data-driven business models, improved customer experience, operational automation, and strengthened governance and transparency [18], [21]. To capitalize on these opportunities, studies recommend multi-dimensional strategies, including developing digital leadership through targeted training [19], fostering an innovation-supportive organizational culture [20], investing in robust and integrated digital infrastructure [17], and enhancing digital governance frameworks with an emphasis on accountability and cybersecurity [21]. Additional strategies include collaboration with academic and technological institutions and adopting phased implementation approaches to mitigate risk and resistance. Overall, successful digital transformation in family businesses requires a holistic, flexible strategy that integrates technological, human, and organizational dimensions to ensure sustainable innovation and growth.

6 Conclusion

The study concludes that artificial intelligence is a strategic driver of digital transformation in family businesses, especially in the MENA region, enhancing innovation, decision-making, adaptability, competitiveness, and sustainability beyond mere operational automation. While adoption faces challenges such as cultural resistance, skill gaps, weak infrastructure, and governance issues, significant opportunities exist through leadership development, innovation-oriented culture, and collaboration with technological and academic partners. Successful digital transformation depends on integrated, context-specific strategies aligned with the unique cultural and organizational characteristics of family businesses. Despite limitations related to literature scope and data sources, the study underscores the need for continued investment in AI, human capital, and governance, and calls for future field-based research to better assess real-world impacts and socio-cultural factors.

References

[1] Russell, S., & Norvig, P, Artificial intelligence: A modern approach (4th ed.). Pearson. (2021).
[2] Nguyen, Q. N., Sidorova, A., & Torres, R, Artificial Intelligence in Business: A Literature Review and Research Agenda. Communications of the Association for Information Systems, 50, (2022).
[3] AL-Obaidly, G.A, Challenges and Opportunities in AI-Driven Supply Chain Sustainability: A Review Article. In: Al-Naemi, S., Benlamri, R., Leal Filho, W., McDonnell, J., Sadiq, R., Musa Moda, H. (eds) Water and Food Security in the Face of Climate Change: Challenges and Opportunities for Resilience. WFCC 2025. World Sustainability Series. Springer, Cham. (2025).
[4] None, S. G., None, L. S. & None, R. M, Balancing Personalization and Privacy in AI-Enabled Marketing Consumer Trust, Regulatory Impact, and Strategic Implications – A Qualitative Study using NVivo. Advances in Consumer Research, 2(5), 46-57. (2025).
[5] Foss, N. J., & Saebi, T, Business models and business model innovation: Between wicked and paradigmatic problems. Long Range Planning, 51(1), 9–21. (2018).
[6] Marie Heuermann, et al , International Journal of Innovation Management, 28(9), (2024).
[7] Rojas-Cabezas G, Viquez Paniagua AG, Núñez E, Muñoz-Cisterna V , "Digitalization in manufacturing SMEs: the role of digital resources, barriers and innovation performance in Ibero-America". Management Research: The Journal of the Iberoamerican Academy of Management, Vol. ahead-of-print No. ahead-of-print. (2025).
[8] Ancillai, Chiara & Sabatini, Andrea & Gatti, Marco & Perna, Andrea, Digital technology and business model innovation: A systematic literature review and future research agenda, Technological Forecasting and Social Change, Elsevier, vol. 188(C). (2023).
[9] Hanelt, A., Bohnsack, R., Marz, D. and Antunes Marante, C, A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change. J. Manage. Stud., 58: 1159-1197. (2021).
[10] Ginting, H., Utami, H. N., Riyadi, R., & Hutahayan, B, Exploring the Impact of Servitization and Digitalization on Firm Competitiveness and Performance: The Moderating Role of Government Support. Sustainability, 17(19), 8756. (2025).
[11] Ramadani, V., Memili, E., Palalić, R., Chang, E.P.C, Strategic Management in the Family Businesses. In: Entrepreneurial Family Businesses. Springer Texts in Business and Economics. Springer, Cham. (2020).
[12] Bouncken, R.B., Covin, J.G. & Schmitt, F, Family firms' digital transformation: pathways and tensions. Small Bus Econ. (2025)
[13] Manzoor Akram, et al, A systematic review of innovation in family firms and future research agenda, International Journal of Emerging Markets 17 (7): 1759–1792. (2022).
[14] Bashaer Khudhair, Abbas Alkhafaji. et al, Digital transformation using artificial intelligence technology and its role in enhancing the audit process (opportunities and threats): A Review. Journal of Sustainable Studies 5(4).653-677. (2023).
[15] Georges Samara, Family businesses in the Arab Middle East: What do we know and where should we go? 12(13). 100359, (2021).
[16] Husam Aldamen, et al, Corporate governance and family firm performance during the Global Financial Crisis, Accounting & Finance, Volume60, Issue2. P 1673-1701. (2020)
[17] Porfírio, J. A. F., Santos, P., & Rodrigues, R. M, Digital Transformation in Family Businesses: An Analysis of Drivers with fsQCA. Sustainability, 16(23), 10326. (2024)
[18] Dmitry Plekhanov, et al, Digital transformation : A review and research agenda, European Management Journal, 41(6), Pages 821-844. (2023).

[19] Venkatesh, V., Thong, J. Y. L., & Xu, X, Unified theory of acceptance and use of technology: A synthesis and the road ahead. Journal of the Association for Information Systems, 17(5), 328–376. (2020).
[20] Chiara Ancillai, Andrea Sabatini, Marco Gatti, Andrea Perna, Digital technology and business model innovation: A systematic literature review and future research agenda. Technological Forecasting and Social Change, Volume 188. (2023)
[21] Rongji Wang, et al, Digital transformation and corporate diversification: Evidence from China's A-share listed companies, Economic Modelling, Volume 150, (2025)
[22] Wamba-Taguimdje, S. L., Fosso Wamba, S., Kala Kamdjoug, J. R., & Tchatchouang Wanko, C. E, Influence of artificial intelligence (AI) on firm performance: The business value of AI-based transformation projects. Business Process Management Journal, 26(7), 1539–1567. (2020).