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Business transformation of msmes in the digital era: a qualitative study on cross-functional artificial intelligence integration

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ABSTRACT

This study examines how artificial intelligence (AI) is integrated into managerial routines and business processes of micro, small, and medium-sized enterprises (MSMEs) in the context of digital transformation. Using a qualitative approach, data were collected through semi-structured interviews with ten MSME owners and managers and analyzed using thematic analysis. The findings reveal that AI adoption is driven primarily by pragmatic considerations, particularly tangible business benefits, ease of use, and facilitating conditions, while social influence plays a limited role. More importantly, once AI becomes part of routine practice, its impact extends across marketing, human resources, finance, and operations. The study demonstrates that AI contributes to business transformation by enabling cross-functional integration and more coherent managerial decision-making. These results highlight that the value of AI in MSMEs emerges from its routinized and integrated use rather than from adoption alone.

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1. INTRODUCTION

Micro, Small, and Medium-Sized Enterprises (MSMEs) are an essential component of both national and international economies, making substantial contributions to GDP, employment creation, and innovation in both developed and developing nations. In many nations, MSMEs provide substantial shares of jobs and economic value, making their performance central to economic resilience and inclusive growth (Nazaruddin et al., 2024; Relifra, Mardiah, et al., 2025). These businesses are under more intense pressure to compete in the modern digital era as customer expectations and business models change quickly due to technological advancements.

For MSMEs to stay viable and competitive in increasingly dynamic markets, digital transformation has become a strategic necessity (Chatterjee et al., 2022; Relifra, Ainil Mardiah, et al., 2025; Zahoor et al., 2023). Digital transformation refers to the

comprehensive integration of digital technologies into all areas of business, fundamentally changing the way organizations operate and deliver value to customers (Aagaard, 2018; Kraus et al., 2022; Schwaeke et al., 2024). For MSMEs, this means beyond simple digitization of tasks, toward reconfiguring business processes, innovating products and services, and enhancing customer relationships through digital channels (Devezas et al., 2017; Nurhayati et al., 2025). This technology enables MSMEs to automate routine operations, analyze large data sets to gain actionable insights, and support decision-making processes that increase efficiency and competitiveness (Floridi, 2021; Schwaeke et al., 2024)

Artificial Intelligence (AI), one of the many digital technologies, is becoming more widely acknowledged as a crucial facilitator of digital transformation rather than just a technical instrument. AI includes a variety of computational methods that enable systems to carry out tasks that have historically required human intelligence, such as machine learning, natural language processing, and predictive analytics (Agbaakin, 2025; Rathore, 2023).

Crucially, big businesses with lots of resources are no longer the only ones using AI. AI tools are now available to MSMEs of all sizes thanks to recent advancements in cloud computing and reasonably priced AI-driven platforms. Research has shown that small and medium-sized businesses are increasingly using AI to streamline operations, cut expenses, and become more adaptable to changes in the market (Ayinaddis, 2025; Bahador & Ibrahim, 2021; Sharma & Rai, 2023). In this context, AI acts as an *enabler of transformation* by supporting firms to reconfigure resources, innovate value propositions, and compete in digitalized environments, rather than being viewed solely as an operational technology. These trends underscore the urgency for deeper academic inquiry into how MSMEs integrate AI within their business models and day-to-day operations amidst digital transformation pressures, particularly from the perspective of business owners and managers who navigate these changes firsthand.

Within the larger agenda of digital transformation, artificial intelligence (AI) is increasingly seen as a key force behind organizational change. Digital transformation is commonly understood not as a single technology implementation, but as a set of organizational changes enabled by digital technologies that reshape business models, value creation, and managerial practices (Enholm et al., 2022; Giuggioli & Pellegrini, 2023; Sjödin et al., 2023a; Vial, 2019). From this perspective, AI should be viewed as an enabling capability that supports strategic renewal, rather than merely a technological tool used for isolated or routine tasks (Alalwan et al., 2017; Dwivedi, 2023).

In the context of micro, small, and medium-sized enterprises (MSMEs), AI has been applied across various business functions. These applications include marketing activities such as personalization, customer targeting, and data analytics (Chintalapati & Pandey, 2022; Haleem et al., 2022; Kumar et al., 2024; Rivas & Zhao, 2023; Roy et al., 2025); operational activities such as demand forecasting, inventory management, and process efficiency (Helo & Hao, 2022; Sjödin et al., 2021, 2023b); as well as decision support through data-driven insights. The increasing use of AI across different functions reflects the growing availability and accessibility of AI technologies that are no longer limited to large corporations (Adarsh et al., 2023; Cekuls, 2023; Jbeniani, 2023).

However, much of the existing research on AI in MSMEs has mainly focused on technology adoption. Prior studies often emphasize factors such as adoption intention, organizational readiness, perceived barriers, and the distinction between users and non-users (Marikyan et al., 2023; Uren & Edwards, 2023). This adoption-centered focus is insufficient when AI is treated as a standalone innovation rather than as a mechanism for transforming coordination, resource allocation, and decision integration across functions. In practice, the value of AI emerges when insights and automation are shared across marketing, operations, human resources, and finance. Therefore, a shift is needed from adoption outcomes toward business transformation processes, leading to the

concept of cross-functional AI integration, in which AI supports coordination and performance improvement across core business functions (Hamdani, 2024). Cross-functional AI integration is defined as the use of artificial intelligence that has been integrated into managerial routines and supports coordination and information flow across business functions, including marketing, human resources, finance, and operations (Bharadwaj et al., 2013; Orlikowski, 2000; Verhoef et al., 2021). Although existing research has provided extensive insights into AI adoption intention, readiness, and barriers, it has largely overlooked how AI is embedded in managerial routines and reshapes coordination across business functions in MSMEs. Addressing this limitation, the present study conceptualizes AI not as a discrete adoption outcome, but as a key mechanism of business transformation that enables cross-functional integration.

Despite the growing interest in artificial intelligence (AI) within MSME research, existing studies are largely dominated by quantitative approaches that focus on testing predefined relationships and measuring adoption outcomes. While such approaches are valuable for identifying general patterns, they provide limited insight into how MSME actors interpret, experience, and integrate AI into their everyday business practices (Kraus et al., 2022; Vial, 2019).

Qualitative research offers a suitable approach to address this limitation by enabling deeper exploration of perceptions, meanings, and decision-making processes of MSME owners and managers. Through qualitative inquiry, researchers can better understand how AI-supported insights and automation are integrated across business functions and how these processes contribute to broader business transformation (Saunders et al., 2023). Accordingly, there is a clear need for qualitative studies that move beyond adoption metrics and focus on AI as part of cross-functional managerial processes in MSMEs. Such an approach provides richer insights into the mechanisms through which AI supports coordination, decision integration, and performance improvement across marketing, human resources, finance, and operational functions.

2. RESEARCH METHOD

This study employed a qualitative research approach to explore how artificial intelligence (AI) is integrated into managerial routines and business processes of micro, small, and medium-sized enterprises (MSMEs). A qualitative design was considered appropriate as it enables an in-depth understanding of perceptions, experiences, and decision-making processes that cannot be adequately captured through quantitative methods (Creswell & Creswell, 2018; Creswell & Poth, 2017; Myers, 2019). Data were collected through semi-structured interviews with MSME owners and managers who were directly involved in business decision-making. The interviews were conducted until theoretical saturation was achieved, indicating that no substantively new insights emerged from additional participants (Guest et al., 2006).

Purposive sampling was applied using the following criteria: (1) the informant was an owner or manager directly involved in business decision-making; (2) the MSME had prior experience using digital technologies or AI-related tools in at least one business function; (3) the informant had a minimum of one year of managerial experience; and (4) the business was actively operating at the time of data collection. (Saunders et al., 2023). The interview data were analyzed using thematic analysis, following systematic stages of data familiarization, coding, and theme development to identify cross-functional patterns related to AI-supported managerial decision-making and coordination (Braun & Clarke, 2006).

3. RESULTS AND DISCUSSIONS

3.1 Results

a. Informant Profile and Data Saturation

This study involved ten MSME informants selected through purposive sampling to represent diversity in business sectors and managerial roles (owners and managers). All informants were directly involved in business decision-making and had experience using or understanding digital technologies and AI in their daily operations. Data collection was concluded upon reaching theoretical saturation, indicating that additional interviews no longer generated substantively new information.

Table 1. Informant Profile

Informant	Role	Business Sector	Business Experience
I1	Owner	Culinary	>5 years
I2	Owner	Retail	3–5 years
I3	Manager	Services	>5 years
I4	Owner	Fashion	1–3 years
I5	Owner	Culinary	>5 years
I6	Manager	Services	3–5 years
I7	Owner	Retail	>5 years
I8	Owner	Digital-based MSME	1–3 years
I9	Manager	Production	>5 years
I10	Owner	Services	3–5 years

Table 1 presents the profile of the informants involved in this study. The informants consist of MSME owners and managers from diverse business sectors, including culinary, retail, services, fashion, production, and digital-based enterprises. Their business experience ranges from 1 to more than 5 years, ensuring adequate managerial exposure and practical knowledge of daily business operations. This diversity of roles, sectors, and experience enhances the richness of the data and supports the credibility of the qualitative findings.

b. Overview of Key Themes

The analysis revealed two main thematic groups, consisting of drivers of AI adoption and cross-functional impacts of AI use, which together capture how artificial intelligence is perceived, adopted, and utilized within MSMEs.

Four themes, performance expectancy, effort expectancy, facilitating conditions, and social influence, were found to be the main factors influencing the intention to adopt AI. These themes show the factors that informants took into account both before and after deciding to use AI. Four impact-related themes also surfaced, showing how the application of AI impacts important business operations, marketing, human resources, and finance.

A better understanding of AI use as a process rather than a singular event is made possible by the themes' logical progression from adoption-related factors to outcome-related impacts. Crucially, rather than being imposed by predetermined theoretical frameworks, all themes and subthemes were inductively developed from interview data through thematic analysis, reflecting recurrent patterns in informants' narratives.

Table 2. Overview of Key Themes and Subthemes

Thematic Group	Main Theme	Subthemes
Drivers of AI Adoption	Performance Expectancy	Business efficiency, sales improvement
	Effort Expectancy	Ease of use, practicality
	Facilitating Conditions	Infrastructure, training, technical support
	Social Influence	Limited external pressure
Cross-Functional Impacts of AI	Marketing Impact	Customer targeting, promotional effectiveness

	Human Resource Impact	Scheduling, task coordination
	Financial Impact	Financial records, cash flow control
	Operational Impact	Inventory management, service efficiency

Source: Primary Data Processed (2025)

c. Drivers of AI Adoption Intention

Based on the interview findings, four main factors were identified as drivers of informants' intention to adopt artificial intelligence (AI), namely performance expectancy, effort expectancy, facilitating conditions, and social influence. These factors represent the practical considerations that informants took into account before and during their decision to use AI in business activities. Overall, informants perceived AI as relevant when it provided tangible business benefits, was easy to use, supported by adequate infrastructure, and aligned with internal business needs.

The interview results show that tangible business benefits are the main reason for respondents' interest in and use of AI. Respondents consider AI valuable when it supports improved business performance, such as faster work processes, higher operational efficiency, and better marketing and sales results. AI is considered meaningful only when its impact can be felt directly in day-to-day business activities. Several sources also emphasized that the use of artificial intelligence (AI) would be discontinued if the expected benefits were not apparent or not commensurate with the effort required. This shows that the decision to adopt AI is pragmatic and results-oriented, with clear performance improvements as the main reason for continuing its use.

The second key factor influencing adoption intent is ease of use. Respondents reported that while AI may offer potential benefits, its use will not continue if the technology is considered complicated or time-consuming to learn. Given the time, resource, and technical limitations of MSMEs, technology that is simple and easy to understand is more likely to be used consistently. The second key factor influencing adoption intent is ease of use. Respondents reported that although AI can offer potential benefits, its use will not continue if the technology is considered complicated or time-consuming to learn. Given the time, resource, and technical limitations of MSMEs, simple and easy-to-understand technologies are more likely to be used consistently. Informants tend to prefer AI applications or features that are practical and compatible with existing work routines. Ease of use is not only related to a simple interface, but also how well AI can be integrated into daily operational practices without adding to the managerial burden.

The third factor relates to supporting conditions, which include the availability of infrastructure and technical support. The interviewee emphasized that the use of AI depends not only on interest and ease of use, but also on supporting conditions such as stable internet access, adequate devices, and training or guidance in using AI tools. Based on the informants' experiences, limited infrastructure or inadequate technical support can hinder the effective use of AI. As a result, enabling conditions are considered essential requirements to ensure that AI can be meaningfully applied to support business activities, rather than just being used on a trial basis.

Unlike the previous factors, social influence was found to play a relatively limited role in AI adoption decisions. Informants stated that their decision to use AI was not primarily driven by recommendations from others, trends, or external pressures, but rather by internal business needs. Although informants did not ignore external information or advice, the final decision still depended on whether AI was suitable for their specific business conditions and capable of providing tangible benefits in daily practice. This shows that AI adoption among informants was driven more by necessity than by social influence.

Table 3. Verbatim Quotations

Theme	Verbatim	Code	Key Meaning
Performance Expectancy (Perceived Business Benefits)	"For us, AI is useful if it really helps sales or makes work faster. If we don't see the benefit, we usually stop using it."	I3	AI is evaluated pragmatically based on tangible business outcomes.
	"We are interested in AI because it gives real results for the business, not just because everyone is talking about it."	I7	
	"AI only makes sense if it helps daily operations and brings clear value to the business."	I1	
Effort Expectancy (Ease of Use & Practicality)	"If the system is too complicated, we don't have time to learn it. Simple tools are the ones we actually use."	I2	Ease of use determines continued and sustainable use of AI.
	"Even if the technology is good, we will leave it if it's difficult to operate."	I6	
	"We prefer applications that are easy to use and fit with how we usually work."	I4	
Facilitating Conditions (Infrastructure & Support)	"Good internet and proper devices are basic. Without that, AI doesn't really work."	I1	Adoption intention requires adequate infrastructure and support to be realized.
	"Training is very important. We need someone to guide us, not just give us the application."	I9	
	"Technical support really helps us feel confident in using AI tools."	I5	
Social Influence (Limited External Pressure)	"We didn't use AI because others told us to, but because our business needed it."	I4	AI adoption decisions are rational and driven by internal business needs.
	"We don't follow trends. If it doesn't fit our operations, we won't use it."	I8	
	"Recommendations are not enough. We decide based on our own business needs."	I6	

Source: Primary Data Processed (2025)

Table 3 presents interview excerpts that represent the views frequently expressed by informants regarding the four factors driving AI adoption intentions that have been identified. These excerpts reflect the informants' assessment of AI based on concrete business benefits, ease of use, and availability of supporting infrastructure, while indicating that social influence plays a relatively limited role. These excerpts provide empirical evidence of the practical considerations underlying informants' decisions to adopt and use AI in their business activities.

d. Cross-Functional Impacts of AI Use

The results of the interviews demonstrate that once AI is incorporated into daily operations, its impacts are felt across various business functions and go beyond discrete tasks. Because of AI-enabled automation, data processing, and quicker information access, informants reported improvements in marketing execution, workforce coordination, financial monitoring, and operational efficiency. When AI is incorporated into current practices, these enhancements support daily managerial tasks across departments. To show these effects, the results are arranged by business function. Informants consistently reported faster processes, better information availability, and more efficient coordination—outcomes thought to be highly relevant for day-to-day operations in resource-constrained micro, small, and medium-sized enterprises (MSMEs).

In the marketing function, informants reported that AI strengthened the ability to understand customers and execute more targeted promotional activities. AI was

perceived as helpful in reducing guesswork in marketing decisions and improving focus in customer targeting and promotion design.

"AI helps us understand customers better and target promotions more accurately." (I5)

"With AI, our marketing feels more focused and not just guessing." (I2)

For human resource management, the interviewees emphasized that artificial intelligence (AI) contributes to better work coordination through simpler scheduling and task assignment. This improvement is particularly relevant for small teams, where coordination is often handled directly by the owner or manager as part of routine supervision.

"Scheduling and task assignment become easier with AI support." (I10)

"AI helps us organize employee work more clearly." (I7)

In the finance function, informant highlighted improvements in recording and monitoring. Artificial intelligence (AI)-based tools were found to make financial documentation more structured and easier to review, supporting daily control over cash flow and basic reporting needs.

"Financial records have become more organized and easier to monitor after using AI-based tools." (I3)

"We can control cash flow better because reports are more structured." (I9)

Operationally, informants reported that AI supported efficiency in inventory-related tasks and service delivery. AI was associated with smoother processes and faster responses, particularly when it could assist planning and reduce delays in operational routines.

"Inventory management becomes more efficient and customer service is faster." (I6)

"Operations feel smoother because we can predict and plan better." (I8)

Business Function	Reported AI Use Areas	Observed Changes Reported by Informants
Marketing	Customer insights, targeting, promotion support	More focused and data-supported marketing decisions
Human Resources	Scheduling, task assignment, coordination	Improved work organization and coordination
Finance	Record-keeping, reporting, cash monitoring	More structured records and easier monitoring
Operations	Inventory tasks, planning, service processes	Faster routines and smoother operational flow

Source: Primary Data Processed (2025)

3.2 Discussion

a. AI Adoption in MSMEs as a Value-Oriented and Pragmatic Decision

The findings show that AI adoption in MSMEs is fundamentally driven by practical and value-oriented considerations, with performance expectations emerging as the most influential factor. Informants repeatedly described AI as "worth using" only when it provides observable and immediate business value, such as increased efficiency, faster work processes, and better marketing execution. This pattern is consistent with the broader view of digital transformation, namely that transformation is not merely the acquisition of technology, but a strategic response in which digital technologies are retained when they generate tangible value in day-to-day management and operational practices (Rathore, 2023; Verhoef et al., 2021; Vial, 2019).

This value-first orientation also reflects the reality that MSMEs often operate under resource constraints, which makes experimentation with complex technologies less feasible unless benefits are clear and quickly realized. Research on digital transformation in SMEs highlights that adoption decisions are frequently shaped by operational constraints and heterogeneity in capabilities, pushing firms toward technologies that can produce measurable improvements with limited disruption (Clemente-Almendros et al.,

2024; Parra-Sánchez & Talero-Sarmiento, 2023). In this sense, performance expectancy functions as a "screening mechanism": AI is not adopted for novelty, but for its ability to strengthen day-to-day competitiveness through better execution and faster decision cycles (Verhoef et al., 2021; Vial, 2019).

Unlike large firms that may pursue AI for innovation leadership or strategic positioning, MSMEs in this study appear to evaluate AI through a cost–benefit lens grounded in managerial realism—balancing expected gains against time, skills, and workflow disruption. This aligns with evidence that AI adoption in SMEs is often closely linked to performance outcomes and operational needs, particularly where implementation must demonstrate business relevance rather than remain a purely technological initiative (Badghish & Soomro, 2024; ul Haq et al., 2025). Recent work emphasizing AI implementation realities in SMEs similarly underscores that what matters is not only whether AI is adopted, but whether it becomes normalized as part of everyday business practice—something that typically happens when managers perceive clear payoffs (Schwaeke et al., 2024).

b. Usability and Enabling Conditions as Determinants of Sustained AI Use

Beyond perceived benefits, the findings highlight ease of use and enabling conditions as determining factors in whether AI adoption intentions translate into sustained and routine use (Chouki et al., 2019; Razzouki et al., 2025). Informants consistently emphasized that AI systems perceived as complex, time-consuming, or poorly supported tend to be abandoned, even when their potential value is recognized (Mao et al., 2021; Uren & Edwards, 2023). This reflects the structural realities of MSMEs, where limited managerial time, technical expertise, and financial resources limit their ability to engage with advanced technologies over time (Dwivedi et al., 2019; Kraus et al., 2022).

The importance of usability highlights that AI adoption in MSMEs is not solely a question of technological capability, but of operational fit. Technologies that disrupt established workflows or require substantial learning efforts are less likely to become embedded in daily practice. Prior research on digital technology implementation in SMEs similarly indicates that ease of integration into existing routines is a stronger predictor of continued use than perceived technological sophistication (Verhoef et al., 2021; Vial, 2019). In this context, usability serves as a gatekeeping mechanism: even high-performance AI tools may fail to deliver value if they overburden managers and employees with cognitive or operational capabilities.

The findings further emphasize the critical role of facilitating conditions, including infrastructure readiness, access to appropriate devices, and training or technical assistance (Alotaibi et al., 2025; Sánchez et al., 2025). Stable internet connectivity and basic digital infrastructure emerged as prerequisites for meaningful AI use, while training and support increased users' confidence and reduced resistance to continued use. This aligns with studies showing that MSMEs often struggle to move from experimentation to institutionalized use of advanced technologies due to gaps in infrastructure and skills (Dwivedi et al., 2019; Lee et al., 2025). Without adequate facilitating conditions, AI adoption remains fragmented, situational, or limited to trial phases. The findings suggest that MSMEs with more stable internet access, adequate digital devices, and prior experience with digital technologies tend to integrate AI more extensively across multiple business functions. By contrast, MSMEs facing infrastructural limitations often rely on AI in more isolated or trial-based applications. These patterns indicate that digital maturity plays an important role in shaping the depth of cross-functional AI integration.

Importantly, these findings extend the existing literature by reinforcing the view that AI use in MSMEs should be understood as an implementation and embedding process, rather than a single adoption decision. Organizational readiness and environmental support shape whether AI becomes routinized as part of managerial

decision-making or remains an occasional tool. This process-oriented perspective echoes recent calls to move beyond adoption-centric models and examine how digital technologies are operationalized and sustained within organizations over time (Kraus et al., 2022; Schwaeke et al., 2024; Vial, 2019).

c. Limited Role of Social Influence in MSME AI Adoption

This study's empirical evidence of the cross-functional effects of AI use in MSMEs is its most important contribution. The results show that once AI is integrated into daily operations, its impact spreads simultaneously throughout marketing, human resources, finance, and operations rather than being limited to a single function (Ayinaddis, 2025; Bajunaied et al., 2023). This pattern suggests that AI facilitates the integration of data and operations across organizational functions, improving coordination and decreasing managerial work fragmentation.

This study expands the literature on AI adoption by emphasizing these cross-functional effects, moving away from the predominant focus on adoption decisions and toward a more comprehensive understanding of organizational coordination and process integration (Song et al., 2025). Rather than functioning merely as a task-specific tool, AI emerges as an enabling infrastructure that aligns decisions, resources, and workflows across functions, thereby supporting more coherent managerial decision-making and operational alignment. This perspective responds directly to recent calls in the literature to move beyond adoption-centric models and examine AI's role in driving organizational transformation and governance mechanisms within firms, particularly in resource-constrained contexts such as MSMEs (Dwivedi et al., 2019; Solaimani & Swaak, 2022; Vial, 2019).

d. From Adoption to Routine Use: AI as Part of Managerial Practice

The results show that AI's value in MSMEs develops through its routineization within managerial practice rather than at the time of initial adoption. When AI is consistently applied to support routine managerial tasks like planning, performance monitoring, task coordination, and resource allocation, it has a significant impact. This reinforces the process perspective of digital transformation, which views transformation as the gradual embedding of digital technologies into organizational practices rather than a one-time implementation decision (Gladysz et al., 2023; Nambisan et al., 2017).

The transition from adoption to routine use reflects a process of practice alignment, in which managers experiment with AI, evaluate its relevance, and integrate it into existing workflows (Bouwman et al., 2018; Orlikowski, 2000). AI tools that complement managerial routines and reduce cognitive or operational burden are more likely to become normalized, while those detached from core decision-making processes tend to be used sporadically or abandoned (campagnolo et al., 2023; Lada et al., 2023; Verhoef et al., 2021). Importantly, AI functions as an augmentative support rather than a substitute for managerial judgment, enhancing information processing and coordination while leaving final decisions to managers (Kraus et al., 2022). This underscores the role of routinized AI use as a critical stage in business transformation, where AI evolves from a technological artifact into an integral component of managerial practice and organizational governance.

e. Cross-Functional AI Integration and Business Transformation

This study's most important contribution is its empirical proof that regular AI use in MSMEs has cross-functional effects that concurrently affect operations, marketing, finance, and human resources. Once integrated into daily operations, AI functions as an integrative mechanism that improves information flow and coordination across organizational domains, supporting more cohesive managerial work, rather than as a function-specific tool.

At the functional level, AI strengthens marketing performance by improving customer insights, targeting, and promotional focus, enabling MSMEs to allocate limited resources more effectively and reduce reliance on intuition-based decisions (Abrokwah-Larbi, 2023; Hermann, 2023; Peyravi et al., 2020). In human resource management, AI supports clearer task allocation, scheduling, and coordination, reinforcing managerial control and operational discipline in small teams where formal systems are often limited (Jacob Fernandes França et al., 2023; Malik et al., 2023; Tambe et al., 2019). In the financial function, AI contributes to more structured record-keeping, reporting, and cash-flow monitoring, increasing transparency and enabling earlier identification of financial issues (Adarsh et al., 2023; Cao et al., 2024; Weber et al., 2024). At the operational level, AI enhances process efficiency through better planning, inventory-related routines, and service responsiveness, supporting smoother daily operations and greater performance stability (Dalal et al., 2024; Rodríguez-Espíndola et al., 2022; Salhab, 2023)

Importantly, when AI permits cross-functional integration, connecting marketing choices with operational capability, labor availability, and financial control, these function-level enhancements become revolutionary. In this way, AI serves as an enabling infrastructure for organizational governance and coordination, changing the analytical focus from whether or not AI is adopted to how AI alters managerial alignment and business transformation in MSMEs (Mishrif & Khan, 2023; Zahoor et al., 2023).

f. Implications

For AI platform providers and supporting institutions, the findings suggest that encouraging cross-functional AI integration requires designing tools that are easy to use, modular, and applicable across multiple business functions. Training and support programs should emphasize integrated use cases that link marketing, operations, finance, and HR, rather than promoting isolated AI features.

Public policies and mentoring programs should focus on improving basic digital infrastructure, providing hands-on and function-oriented training, and offering incentives for MSMEs that demonstrate integrated AI use across business functions. Such policies are more likely to support sustainable AI use than programs that emphasize adoption targets alone.

4. CONCLUSION

This study concludes that artificial intelligence plays an important role in supporting business transformation in MSMEs when it is integrated into routine managerial practices rather than treated as a standalone technology. The findings demonstrate that AI adoption among MSMEs is largely driven by pragmatic considerations, where technologies are retained only when they provide tangible business value, are easy to use, and are supported by adequate infrastructure and training. Beyond adoption, the study highlights that the true impact of AI emerges through its routinization and cross-functional integration. Once embedded in daily operations, AI simultaneously influences marketing, human resources, finance, and operational functions, enabling better coordination, information flow, and managerial alignment. In this way, AI functions as an enabling infrastructure that supports integrated decision-making and organizational governance across business functions.

These findings contribute to the literature by shifting the focus from adoption-centered perspectives toward understanding AI as a process of business transformation and cross-functional integration in MSMEs. Practically, the study suggests that MSME owners and policymakers should focus not only on encouraging AI adoption, but also on improving usability, infrastructure, and managerial capability to support sustained and integrated AI use. Future research may extend this study by employing longitudinal

designs or comparative approaches to further examine how cross-functional AI integration evolves over time and across different institutional contexts.

Future research may extend this study through longitudinal designs that examine the evolution of cross-functional AI integration over time, comparative studies across countries or institutional contexts, and mixed-method approaches combining qualitative insights with quantitative performance measures to assess the long-term impact of AI-driven business transformation.

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