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INTEGRATING ARTIFICIAL INTELLIGENCE INTO STRATEGIC DECISION-MAKING: IMPLICATIONS FOR ORGANIZATIONAL AGILITY AND INNOVATION

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<p>Hasnain Abbas Haider MS Scholar / Researcher, Department of Management Sciences, Bahria University Islamabad syedhasnain4abbas@gmail.com</p> <p>Adil Naseer² MS Scholar / Researcher, Department of Management Sciences, Bahria University Islamabad</p> <p>Muhammad Tanveer³ MPhil Scholar / Researcher, Department of Management Sciences, Riphah International University</p> <p>Muhammad Imran MPhil Scholar / Researcher, Department of Management Sciences, Riphah International University</p> <p>Faizan Siddique⁵ M.S. Scholar / Researcher/ (PMP), Department of Management Sciences, Riphah International University</p> <p>Noshaba Razaq⁶ Researcher, Research & Development Cell, Wah Medical College, Wah Cantt (NUMS University)</p>	<p>Abstract</p> <p>Objective: The study aimed to examine the role of AI integration in strategic decision-making, evaluate its impact on organizational agility, identify barriers to implementation, and provide actionable recommendations to enhance agility and innovation.</p> <p>Methodology: A mixed-methods design was employed involving 120 professionals from multiple industries. Quantitative data were collected via structured online questionnaires assessing AI integration and organizational agility, and analyzed using independent samples t-tests and descriptive statistics. Qualitative data were derived from open-ended responses, coded inductively using NVivo 12 to identify themes regarding challenges and recommendations for AI adoption.</p> <p>Results: Quantitative findings indicated that organizations with high AI integration demonstrated significantly higher organizational agility ($M = 4.02, SD = 0.45$) compared to those with low AI integration ($M = 3.45, SD = 0.55$), $t(118) = 6.21, p < .001$, with a large effect size (Cohen's $d = 1.13$). Qualitative analysis revealed key barriers to AI adoption, including lack of skilled staff (65%), high implementation costs (50%), and data governance issues (45%). Recommendations emerged around six themes: leadership and strategic alignment, skills and training, data and infrastructure, change management and culture, cost/ROI considerations, and ethics/compliance.</p> <p>Conclusion: AI integration significantly enhances organizational agility and fosters innovation, functioning as a strategic enabler of dynamic capabilities. Effective implementation requires overcoming barriers such as skills shortages, financial constraints, data quality issues, cultural resistance, and ethical or regulatory concerns. Executive leadership, strategic alignment, workforce development, robust data infrastructure, and ethical governance are critical to translating AI investments into measurable strategic outcomes.</p>
<p>Keywords:</p>	<p>Artificial intelligence, strategic decision-making, organizational agility, innovation, barriers, AI adoption, digital transformation</p>

Introduction

Artificial intelligence (AI) has rapidly transformed how organizations operate, compete, and create value in an increasingly dynamic business environment. Advances in machine learning, natural language processing, predictive analytics, and automation have elevated AI from a supportive technological tool to an essential strategic asset (Russell & Norvig, 2021). Organizations across diverse sectors now rely on AI to enhance decision accuracy, forecast market trends, streamline operations, and foster innovation (McAfee & Brynjolfsson, 2017). As AI systems become more sophisticated, their strategic importance continues to expand, enabling firms not only to process large volumes of data but also to make proactive, evidence-based decisions (Shrestha, Ben-Menahem, & Von Krogh, 2019).

Integrating artificial intelligence into strategic decision-making represents one of the most significant organizational shifts of the last decade. Managers increasingly depend on AI-driven insights to guide competitive positioning, customer engagement strategies, resource allocation, and long-term planning (Davenport & Ronanki, 2018). Empirical studies suggest that organizations leveraging AI in strategic processes experience better responsiveness, higher operational flexibility, and improved performance outcomes (Ojeda, Valera, & Diaz, 2025). However, the integration process is complex and often hindered by organizational resistance, lack of digital readiness, technical skill shortages, and concerns over data governance and ethical implications (Jöhnk, Weißert, & Wyrki, 2021). Despite these challenges, AI adoption for strategic purposes continues to accelerate globally, driven by pressure for efficiency, competitiveness, and rapid market adaptation.

This issue is important to study because businesses now operate in environments characterized by uncertainty, volatility, and constant technological disruption. Strategic decisions must be faster, more accurate, and highly adaptable conditions under which AI can provide significant advantages (Cockburn, Henderson, & Stern, 2022). Although substantial work has examined AI adoption in general organizational processes, there remains limited empirical evidence on its direct influence on organizational agility and innovation, especially in developing country contexts where digital maturity varies widely (Alsheibani, Cheung, & Messom, 2018). Existing research tends to focus primarily on technological implementation rather than how AI transforms decision-making behaviors, strategic thinking, and organizational responsiveness (Rao & Verweij, 2017). Moreover, while many studies highlight the potential benefits of AI, fewer examine the practical barriers and contextual challenges that hinder its effective integration into strategy formulation and execution (Brock & Von Wangenheim, 2019). The current status of the literature therefore reveals a fragmented understanding of the relational mechanisms through which AI contributes to agility and innovation.

Organizational agility and innovation have become critical determinants of long-term competitiveness. Agility refers to a firm's ability to sense environmental changes, respond quickly, and continuously reconfigure processes and strategies (Tallon, Tallon, Queiroz, Coltman, & Sharma, 2019). Innovation represents the capacity to generate and implement new ideas, products, or processes that create value (Tidd, 2005). Prior studies suggest that AI can significantly enhance both agility and innovation by enabling faster information processing, improving real-time decision-making, and supporting data-driven experimentation (Lee, Suh, Roy, & Baucus, 2019). Nevertheless, research gaps remain, particularly regarding how AI adoption shapes strategic-level agility, the specific challenges organizations encounter, and the contextual factors that moderate these relationships. The rationale for conducting this study arises from the need to better understand how AI influences strategic decision-making outcomes and to provide empirical insight into the barriers limiting its effective utilization. As industries face increasing digital disruption, organizations must develop robust knowledge on how AI can be leveraged to enhance agility and innovation in practice. This research contributes by offering a comprehensive examination of AI's strategic role and by identifying actionable recommendations for organizations seeking to strengthen their competitive positioning through AI-enabled decision systems.

The significance of this study lies in its potential to inform organizational leaders, policymakers, and researchers about the strategic benefits and challenges of AI integration. By articulating the relationship between AI, agility, and innovation, this research provides evidence that may guide digital transformation initiatives, capability development, and strategic planning. Additionally, the insights generated can support organizations in overcoming implementation barriers and in designing structures that foster successful AI adoption.

The aim of the study is to investigate the role of artificial intelligence in strategic decision-making and to evaluate its implications for organizational agility and innovation. In line with this aim, the study focuses on assessing the impact of AI integration, identifying key challenges that hinder implementation, and offering data-driven recommendations to enhance organizational outcomes.

Accordingly, the objectives of the study are:

1. To evaluate the impact of AI integration on organizational agility.
2. To identify the challenges and barriers organizations face in implementing AI for strategic decision-making.
3. To provide recommendations for leveraging AI to improve strategic outcomes, agility, and innovation in organizational settings.

METHODOLOGY

The aim of this study was to examine how artificial intelligence (AI) integration influences strategic decision-making, with particular emphasis on its impact on organizational agility and innovation. In addition, the study sought to identify the primary barriers organizations face when implementing AI and to generate practical recommendations using both quantitative and qualitative data. To achieve these objectives, a mixed-methods research design was adopted, combining numerical analysis with thematic insights derived from open-ended responses.

A total of 120 professionals from various industries participated in the study. Participants ranged in age from 22 to 55 years and included both males and females' participants. They represented diverse job positions, including entry-level, mid-level, senior-level, and executive roles, and came from sectors such as IT/technology, manufacturing, services, finance, and others. A purposive sampling approach was used to participate, individuals had to be at least 18 years old, currently employed, and familiar with digital transformation or decision-making activities in their workplace. Those who did not meet this requirement or whose responses were incomplete were excluded from the final dataset. A demographic information sheet was used to gather details related to gender, age, education, job role, industry sector, and years of experience.

Data were collected through a structured online questionnaire. Participants first completed the demographic section and then proceeded to standardized and researcher-developed measures assessing AI integration, organizational agility, and perceived challenges or barriers associated with AI implementation. The AI integration scale measured the extent to which AI tools and systems were used in strategic decision-making. The organizational agility scale assessed responsiveness, adaptability, and sensing capabilities within the organization. The challenges and barriers checklist allowed respondents to select multiple issues affecting AI implementation, including technical, cultural, financial, and regulatory obstacles. At the end of the survey, participants responded to open-ended questions regarding their experiences with AI, the difficulties faced by their organizations, and their recommendations for improving AI-enabled strategic decision-making.

The data collection procedure involved emailing the survey link to professionals across multiple organizations. Each participant was informed about the purpose of the research, confidentiality of responses, and voluntary nature of participation. Consent was obtained electronically before the survey began, and the average completion time was approximately 12–15 minutes. Responses were automatically recorded and screened for completeness before analysis.

Quantitative data were analyzed using SPSS (Version 26). Descriptive statistics were generated to summarize demographic characteristics. For the first objective, which aimed to evaluate the impact of AI integration on organizational agility, an independent samples t-test was conducted comparing agility scores of organizations classified as having high versus low levels of AI integration. Normality was assessed using the Shapiro–Wilk test and homogeneity of variances was examined through Levene’s test. Results included mean differences, p-values, and effect sizes such as Cohen’s d. For the second objective, which focused on identifying challenges and barriers to AI adoption, multiple-response frequency analysis was performed to capture how many respondents selected each barrier and the percentage of participants reporting each challenge. This analysis allowed ranking the most common organizational constraints, such as lack of skilled staff, high implementation costs, or resistance to change.

The qualitative portion of the study addressed the third objective by analyzing open-ended responses using NVivo 12. All textual data were imported and coded inductively. The coding process began with repeated reading of responses, followed by assigning initial codes to meaningful statements. These codes were subsequently grouped into broader themes such as leadership and strategic alignment, staff training and skill development, data quality and infrastructure, cultural resistance, cost concerns, and ethical or compliance issues.

Throughout the research, ethical guidelines were followed, ensuring that participation was voluntary, informed consent was obtained, and all data remained confidential and anonymized.

RESULTS

Table -1

Demographic Characteristics of Respondents (n = 120)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	68	56.7
	Female	52	43.3
Age Group	< 25 years	22	18.3
	25–34 years	48	40.0
	35–44 years	30	25.0
	≥ 45 years	20	16.7
Education Level	Bachelor’s	40	33.3
	Master’s	55	45.8
	MPhil/MS	18	15.0
	PhD	7	5.8
Job Position	Entry-level	28	23.3
	Mid-level	52	43.3
	Senior-level	30	25.0
	Executive/Director	10	8.3
Industry Sector	IT/Technology	36	30.0
	Manufacturing	28	23.3
	Services	26	21.7
	Finance/Banking	18	15.0
	Other	12	10.0
Years of Experience	< 2 years	20	16.7
	2–5 years	42	35.0
	6–10 years	38	31.7
	> 10 years	20	16.7

The Table-1 results show that the respondents represented a diverse and balanced demographic profile across gender, age, education, job roles, industry sectors, and years of experience. The sample consisted of 56.7% males and 43.3% females, indicating a fairly even gender distribution. Most participants were between 25 and 34 years old (40%), followed by those aged 35–44 years (25%), reflecting a predominantly young to mid-career workforce. In terms of educational background, the majority held a Master’s degree (45.8%), while a smaller proportion reported Bachelor’s (33.3%), MPhil/MS (15%), or PhD qualifications (5.8%), suggesting a highly educated sample. Participants occupied positions across multiple organizational tiers, with the largest group at the mid-level (43.3%), followed by senior-level (25%) and entry-level employees (23.3%). Representation from diverse industry sectors including IT, manufacturing, services, finance, and others—demonstrated that insights were drawn from a wide organizational spectrum. Most respondents had between two to ten years of experience, indicating substantial familiarity with workplace processes.

Table -2
Comparing Organizational Agility Between High and Low AI Integration Groups(N-120).

Variable	High AI Integration (M ± SD)	Low AI Integration (M ± SD)	t(118) p	Cohen's d
Organizational Agility	4.02 ± 0.45	3.45 ± 0.55	6.21 < .001	1.13

The Table-2 results show that organizations with high AI integration reported significantly greater levels of organizational agility compared to those with low AI integration. The high-AI group demonstrated a mean agility score of 4.02 (SD = 0.45), while the low-AI group scored 3.45 (SD = 0.55), reflecting a substantial difference in perceived agility. The independent samples t-test yielded a statistically significant result, $t(118) = 6.21, p < .001$, confirming that the difference between the two groups was not due to chance. The effect size (Cohen's $d = 1.13$) indicates a large practical impact, meaning that AI integration plays a strong and meaningful role in enhancing an organization's ability to sense, respond, and adapt to environmental changes.

Table 3

Barrier	n	(%)
Lack of skilled staff / expertise	78	(65.0%)
High implementation cost	60	(50.0%)
Data quality / data governance issues	54	(45.0%)
Resistance to change / organizational culture	48	(40.0%)
Integration with legacy systems	42	(35.0%)
Regulatory / compliance uncertainty	30	(25.0%)
Ethical / privacy concerns	24	(20.0%)
Vendor lock-in / lack of vendor options	18	(15.0%)
Other (specify)	12	(10.0%)

The Table-3 results show that organizations face multiple and overlapping barriers when attempting to implement AI for strategic decision-making. The most frequently reported challenge was the lack of skilled staff or expertise (65%), underscoring a critical talent gap in AI-related competencies. High implementation costs were also a major concern for half of the respondents (50%), suggesting that financial constraints remain a significant deterrent, particularly for developing organizations. Data quality and governance issues were identified by 45% of participants, indicating persistent problems with data infrastructure and standardization. Cultural resistance and organizational inertia were cited by 40%, highlighting the human and behavioral challenges associated with AI adoption. Additional barriers included difficulties integrating AI with legacy systems (35%), regulatory uncertainty (25%), ethical and privacy concerns (20%), and vendor-related constraints (15%).

Table 4

Recommendations & Themes from Open-Ended Responses (n-120)

Theme	Subthemes	theme	Actionable recommendations
Leadership Strategy	& Clear AI vision; strategic alignment	32	Establish executive sponsorship; include AI in strategic planning; set KPIs linking AI to agility & innovation.
Skills Training	& Upskilling, hiring data scientists	28	Invest in targeted training programs; create cross-functional data/AI teams; partner with universities/vendors.
Data Infrastructure	& Data quality, governance, integration	26	Implement data governance framework; standardize data pipelines; invest in modular APIs to ease legacy integration.
Change Management & Culture	& Manage resistance; promote experimentation	24	Run pilot projects; communicate wins; create incentives for innovation and cross-unit collaboration.
Cost Evidence	& ROI Need for business cases; pilot ROI	18	Start with low-risk pilots with clear ROI metrics; use staged scaling based on measured benefit.
Ethics Compliance	& Privacy, transparency, regulation	12	Adopt ethical AI guidelines; privacy-by-design; maintain audit trails and model documentation.

The Table-4 results show that the qualitative data generated a set of coherent themes reflecting actionable strategies for improving AI-enabled strategic decision-making. Leadership and strategy emerged as the most frequently mentioned theme, with 32 respondents emphasizing the need for a clear AI vision, strategic alignment, and executive sponsorship. Skills and training were highlighted by 28 respondents, indicating strong recognition of the importance of upskilling employees, hiring data specialists, and building cross-functional AI teams. Twenty-six respondents emphasized data and infrastructure needs, pointing to the importance of enhancing data governance, improving data pipelines, and integrating modular systems. Cultural and change-management issues were noted by 24 participants, stressing the necessity of managing resistance, promoting experimentation, and communicating success stories. Cost and ROI evidence emerged from 18 responses, reflecting the need for low-risk pilot projects with measurable



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outcomes to justify further investment. Ethical and compliance considerations were mentioned by 12 respondents, focusing on transparency, privacy-by-design, and documentation.

DISCUSSION

The aim of this study was to investigate how the integration of artificial intelligence (AI) into strategic decision-making affects organizational agility and innovation, to identify the principal barriers to effective AI implementation, and to derive practical recommendations for organizations seeking to leverage AI for stronger strategic outcomes. The sample comprised 120 professionals from diverse industries and hierarchical levels, producing a demographic profile that supports reasonable internal generalizability to mid-career, technically aware organizational respondents (Table-1 results). The demographic distribution—balanced gender representation, concentration in the 25–34 age band, a majority holding Master’s degrees, and broad sectoral coverage indicates the sample consists largely of educated professionals with operational and managerial exposure to technology and decision processes; therefore, the findings can be interpreted as reflecting the views of digitally engaged organizational actors rather than lay populations.

The Table-2 results show that organizations categorized as having high AI integration reported substantially higher organizational agility ($M = 4.02$, $SD = 0.45$) than those with low AI integration ($M = 3.45$, $SD = 0.55$), a difference that was statistically significant ($t(118) = 6.21$, $p < .001$) with a large effect size (Cohen’s $d = 1.13$). This empirical pattern aligns with contemporary work indicating that AI capabilities—through faster data processing, predictive analytics, and decision support—enhance sensing and response capacities that underlie organizational agility (Atienza-Barba, del Río, Meseguer-Martínez, & Barba-Sanchez, 2024; Aweidah, 2024). Recent empirical studies similarly report positive associations between AI adoption intensity and measures of responsiveness, flexibility, and strategic decision quality, suggesting AI’s contribution to dynamic capabilities and time-sensitive strategic adjustments (Chen, Zhou, & Frankwick, 2025).

The Table-3 results show that barriers to AI implementation are multi-faceted, with the most frequently reported obstacles being lack of skilled staff (65%), high implementation cost (50%), and data quality/governance issues (45%). This pattern mirrors contemporary evidence emphasizing human capital shortages, resourcing constraints, and poor data ecosystems as principal bottlenecks for scaling AI beyond pilot initiatives (Khan, Lajber, Bilal, Khan, & Ahmad, 2024; Nikiforova et al., 2025). Several recent reports and studies have documented persistent skills gaps and training shortfalls for AI roles, alongside widespread concerns about data readiness and governance frameworks that limit confident strategic deployment of AI systems (Sidhu, Sayem, Taslima, Anwar, Chowdhury, & Rowshon, 2024; VAN HAEFTEN, ZHANG, BOESEN-MARIANI, LUB, RAVESTEIJN, & AERTSEN, 2024). The consistency between the present frequency profile and those independent studies strengthens the conclusion that successful AI integration requires parallel investment in people, data, and budgetary planning rather than only in algorithmic tools.

The Table-4 results show that qualitative responses cluster around coherent, actionable themes—leadership and strategic alignment, skills and training, data and infrastructure, change management and culture, cost/ROI evidence, and ethics/compliance—with leadership and strategy and skills development the most frequently cited. These thematic findings resonate with literature that highlights the centrality of executive sponsorship and strategic alignment in digital transformations, the need for targeted upskilling and cross-functional teams to translate business problems into AI solutions, and the imperative of pilot-driven, ROI-focused scaling to overcome financial and cultural resistance (Papagiannidis, Mikalef, & Conboy, 2025; Themann, 2025). Recent studies also emphasize the importance of governance and ethical practices as prerequisites for sustainable AI adoption; correspondingly, participants’ calls for data governance, ethics-by-design, and documented ROI pathways reflect best-practice recommendations in the field (Machucho & Ortiz, 2025).

Taken together, the quantitative and qualitative findings both corroborate and extend prior work in three ways. First, the strong relationship between AI integration and agility observed here supports theoretical claims that AI functions as a capability-enhancing resource that improves firms’ sensing and responding processes (dynamic capabilities perspective), and it accords with recent empirical analyses showing AI’s positive effect on responsiveness and performance (Atienza-Barba et al., 2024; Aweidah, 2024; Ramesh). Second, the prominence of skills, cost, and data issues as barriers corroborates multi-industry surveys and academic studies that identify talent shortages and data readiness as recurring impediments to AI scaling (Khan et al., 2024; Nikiforova et al., 2025). Addressing these bottlenecks is therefore not merely practical advice but a central strategic priority for firms aiming to convert AI pilots into sustained competitive advantage. Third, the thematic recommendations echo contemporary governance and implementation frameworks: executive sponsorship and strategic alignment are repeatedly shown to increase the odds of successful AI assimilation, while modular, pilot-based rollouts coupled with robust data governance and ethical practices increase sustainability and stakeholder trust (Themann (Machucho & Ortiz, 2025; Papagiannidis, Mikalef, & Conboy, 2025; Themann, 2025).

PRACTICAL IMPLICATIONS OF THE STUDY

There are practical implications for managers and policymakers. Organizations wanting to convert AI investments into higher agility should prioritize leadership commitment to integrate AI into strategic processes, structured capability building through hiring and upskilling, investment in data quality and governance, and staged pilot projects with clear ROI metrics to justify scale-up. This study’s results also imply that without concurrent attention to governance and ethics, AI initiatives risk faltering even if technically sound models are developed. Policy actors and industry associations can support the ecosystem by sponsoring training initiatives, clarifying regulatory expectations, and promoting data standards that lower the barrier to entry for smaller firms.

CONCLUSION

The study concludes that the integration of artificial intelligence into strategic decision-making significantly enhances organizational agility and fosters innovation. Organizations with high AI adoption demonstrate greater responsiveness, adaptability, and capability to sense and react to environmental changes, confirming that AI functions as a critical enabler of dynamic capabilities. However, successful AI implementation is contingent upon overcoming multiple barriers, including skills shortages, high costs, data quality and governance issues, cultural resistance, and ethical or regulatory concerns. The qualitative findings further emphasize that executive leadership, strategic alignment, targeted upskilling, robust data infrastructure, change management, and ethical governance are essential for translating AI investments into tangible strategic benefits. Collectively, the study underscores that AI is not merely a technological tool but a strategic resource that, when effectively implemented and supported by organizational capabilities, can drive sustained competitive advantage, innovation, and adaptive capacity in complex and dynamic business environments.

LIMITATIONS AND RECOMMENDATIONS OF THE STUDY

This study has several limitations that should be considered when interpreting the findings. First, the sample was limited to 120 professionals from selected industries, which may restrict the generalizability of the results to other sectors or geographic contexts. Second, the cross-sectional design provides a snapshot of AI integration and organizational

outcomes at a single point in time, limiting the ability to draw causal inferences regarding the relationship between AI adoption, agility, and innovation. Third, data were primarily self-reported, which may introduce response bias, including social desirability or overestimation of organizational capabilities. Fourth, although qualitative insights were obtained through open-ended survey responses, the depth of these data may not be as rich as that obtained through in-depth interviews or longitudinal case studies. Finally, the study focused on perceived organizational agility and innovation, without directly measuring objective performance metrics, which may limit the assessment of actual organizational outcomes.

Based on the findings and limitations, several recommendations are proposed for both practice and future research. Organizations should prioritize strategic alignment and leadership support for AI initiatives, ensuring executive sponsorship and clear articulation of AI-related goals and KPIs. Investment in workforce development is crucial; training programs, hiring AI specialists, and creating cross-functional teams can address skills gaps and improve adoption success. Strengthening data governance, improving infrastructure, and ensuring seamless integration with legacy systems are essential for sustaining AI-driven decision-making. Change management initiatives, including pilot projects, communication of successes, and incentives for innovation, can mitigate resistance and foster a culture receptive to AI. Organizations should also adopt ethical AI frameworks and maintain compliance with privacy and regulatory standards. For future research, longitudinal studies examining the causal impact of AI on organizational agility and innovation across diverse industries and countries are recommended. Additionally, combining objective performance metrics with perceptual data and conducting in-depth qualitative case studies can provide richer insights into the mechanisms through which AI contributes to strategic outcomes.

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