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Knowledge Management and Employee Agility in Supporting Organizational Innovation and Sustainable Competitive Advantage in Digital Transformation

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Abstract. Digital transformation requires organizations to integrate knowledge-based capabilities with adaptable employee behavior to support innovation and long-term competitiveness. This study examines the effects of knowledge management and employee agility on sustainable competitive advantage through the mediating role of organizational innovation. A quantitative explanatory design was employed involving 200 employees from organizations undergoing digital transformation. Respondents were selected using purposive sampling based on their involvement in digital work processes, while data were collected through a five-point Likert-scale questionnaire. The proposed relationships were analyzed using Partial Least Squares Structural Equation Modeling. The findings show that knowledge management and employee agility positively strengthen organizational innovation and sustainable competitive advantage. Employee agility demonstrates a slightly stronger contribution to organizational innovation, while organizational innovation provides the strongest contribution to sustainable competitive advantage. Organizational innovation also partially mediates the effects of knowledge management and employee agility on sustainable competitive advantage. These findings imply that organizations should improve knowledge-sharing systems, digital competencies, adaptive work practices, and employee participation in innovation. Integrating knowledge-based capabilities, agile employees, and continuous innovation can help organizations sustain competitiveness throughout digital transformation.

Keywords: Digital Transformation; Employee Agility; Knowledge Management; Organizational Innovation; Sustainable Competitive Advantage.

1. BACKGROUND

Digital transformation has fundamentally changed how organizations create value, coordinate work, and respond to increasingly dynamic business environments. The integration of digital technologies requires organizations to possess not only adequate technological infrastructure but also strong knowledge-based capabilities and adaptable employees. Knowledge must be continuously created, shared, stored, and applied so that technological investments can be translated into improved decisions, processes, and services. Mele et al. (2024) emphasized that knowledge-based dynamic capabilities help organizations recognize changes, reconfigure resources, and sustain transformation initiatives. At the employee level, digital transformation requires individuals to learn new competencies, abandon outdated routines, and adjust rapidly to evolving job demands. Organizational learning therefore becomes essential because it connects technological change with leadership support, knowledge development, and employee readiness (Abbasi et al., 2024). In contemporary management, employee agility represents a critical human capability for responding effectively

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to uncertainty. These conditions demonstrate that knowledge management and employee agility must be studied together as strategic foundations for organizational innovation and sustainable competitiveness.

Existing literature confirms that knowledge management, agility, and innovation contribute to organizational performance, although they have frequently been investigated through separate analytical perspectives. Abbas et al. (2020) demonstrated that knowledge management promotes sustainable innovation by strengthening organizational innovation processes. Knowledge management also contributes to business sustainability by ensuring that relevant knowledge is available and applied to organizational activities (Lau, 2021). Meanwhile, organizational agility enables firms to respond rapidly to environmental uncertainty and can become an important source of competitive advantage (Franco et al., 2024). Arsawan et al. (2022) further showed that innovation and strategic flexibility contribute to the development of organizational agility. Despite these findings, limited attention has been given to the simultaneous roles of knowledge management and employee agility in generating sustainable competitive advantage through organizational innovation. This study addresses that gap by positioning employee agility as a human-level adaptive capability and organizational innovation as the mechanism that converts knowledge and adaptability into enduring business value during digital transformation.

This study aims to examine the effects of knowledge management and employee agility on organizational innovation and sustainable competitive advantage within organizations undergoing digital transformation. More specifically, it investigates whether effective knowledge creation, sharing, storage, and application can strengthen an organization's capacity to develop new processes, services, and managerial practices. It also examines whether employees' ability to respond quickly, learn continuously, and adjust their behavior to changing conditions contributes to stronger organizational innovation. Panda (2025) found that knowledge management capabilities can promote organizational innovation through organizational agility, indicating that knowledge and adaptability are closely connected. Rehman et al. (2025) similarly highlighted the strategic interaction between knowledge management and organizational agility in emerging-market organizations. Accordingly, this study addresses four research questions: Does knowledge management influence organizational innovation? Does employee agility influence organizational innovation? Does organizational innovation strengthen sustainable competitive advantage? Finally, does organizational innovation mediate the effects of knowledge management and employee agility on sustainable competitive advantage during digital transformation?

This study argues that knowledge management alone does not automatically produce sustainable competitive advantage unless organizational knowledge is transformed into innovative actions. Likewise, agile employees can respond effectively to change, but their adaptability generates greater strategic value when supported by systems that facilitate knowledge exchange and experimentation. Organizational innovation therefore serves as a critical pathway connecting knowledge-based and human adaptive capabilities with long-term competitiveness. This argument is consistent with evidence that dynamic capabilities and organizational agility strengthen sustainable competitive advantage through technology and knowledge management (Satar et al., 2023). Waseel et al. (2024) also emphasized the interconnected roles of knowledge creation, organizational agility, and innovation in achieving competitive excellence. Theoretically, this study integrates the Knowledge-Based View and dynamic capabilities perspective by explaining how organizational knowledge and employee agility operate as complementary capabilities. Managerially, the findings are expected to guide organizations in developing knowledge-sharing systems, continuous learning practices, agile work arrangements, and innovation-oriented policies that support sustainable competitive advantage throughout digital transformation.

2. THEORETICAL STUDIES

Knowledge Management

Knowledge management refers to a systematic organizational process for creating, sharing, storing, and applying knowledge to support decision-making and performance improvement. Knowledge creation produces new insights through employee experience, interaction, and experimentation, while knowledge sharing distributes those insights across organizational units. Knowledge storage preserves explicit and tacit knowledge as organizational memory, whereas knowledge application transforms available knowledge into practical solutions, improved processes, and business value. Alharbi and Aloud (2024) found that knowledge management processes contribute to service-sector performance by improving how organizations manage and utilize knowledge. Similarly, Darmawan et al. (2023) identified knowledge creation, sharing, storage, and application as interconnected factors that influence organizational performance. Consequently, the effectiveness of knowledge management depends not merely on technological systems but also on employees' willingness to exchange experience, managerial commitment, and organizational practices that integrate knowledge into routine activities.

Knowledge management becomes particularly important during digital transformation because technological change requires organizations to continually renew their knowledge resources and operational capabilities. Knowledge that is accessible, relevant, and reusable enables employees to solve problems more quickly and supports organizational learning. Djangone and El-Gayar (2021) demonstrated that knowledge acquisition, sharing, and utilization contribute to organizational performance, although their effectiveness is also influenced by organizational culture. Chong and Duan (2025) similarly emphasized that organizational culture and technological turbulence shape the relationship between knowledge transformation and performance. From a strategic perspective, effective knowledge management allows organizations to convert individual expertise into collective capabilities that are difficult for competitors to imitate. These capabilities support innovation, adaptability, and business sustainability because employees can use accumulated knowledge to improve existing practices and recognize new opportunities. Therefore, knowledge management constitutes an essential organizational infrastructure for developing employee agility, organizational innovation, and sustainable competitive advantage.

Employee Agility

Employee agility refers to employees' capacity to anticipate change, learn rapidly, adjust their behavior, and perform effectively under uncertain conditions. Agile employees are not limited to reacting to change; they actively seek information, experiment with new approaches, and collaborate to resolve emerging problems. This capability is increasingly important in digital work environments where technologies, customer expectations, and business processes change continuously. Organizational agility research indicates that rapid adaptation enables organizations to maintain relevance and competitiveness in dynamic markets (Franco et al., 2024). At the individual level, employee agility provides the behavioral foundation for this organizational responsiveness because strategic changes ultimately depend on employees' ability to adopt new systems and work practices. Human resource management also contributes to agility by providing appropriate training, flexible job arrangements, performance support, and opportunities for employee participation (Hameed Marhoon & Omar, 2024).

Knowledge management and employee agility are mutually reinforcing organizational capabilities. Knowledge-sharing mechanisms give employees access to the information and experience needed to understand change and respond appropriately. Conversely, agile employees actively seek, exchange, and apply knowledge when confronting unfamiliar situations. Waseel et al. (2024) explained that knowledge creation and agility work together in

supporting innovation and competitive excellence. Employee agility can therefore strengthen the practical value of knowledge management by accelerating the application of newly acquired knowledge. When employees are willing to learn, experiment, and collaborate, organizations can adapt their processes more quickly and transform ideas into innovative outcomes. However, employee agility cannot be sustained solely through individual initiative. It requires leadership support, learning opportunities, psychological readiness, and a work environment that encourages flexibility. Thus, employee agility represents a human-centered dynamic capability that connects organizational knowledge with effective responses to technological and market changes.

Organizational Innovation

Organizational innovation is the implementation of new or significantly improved products, services, operational processes, managerial practices, or organizational arrangements. It extends beyond technological innovation because it also involves changes in work systems, organizational structures, employee management, and decision-making procedures. Aggarwal et al. (2025) described organizational innovation as a strategic mechanism through which organizations renew their capabilities and respond to environmental change. Juergensen et al. (2024) likewise highlighted the importance of examining innovation as a broad organizational phenomenon involving multiple functions and international business contexts. Within digital transformation, organizational innovation enables firms to convert knowledge and employee adaptability into tangible improvements. Knowledge provides ideas and expertise, while agile employees facilitate experimentation and implementation. Therefore, organizational innovation represents the organizational outcome of successfully combining knowledge-based resources with adaptive employee behavior.

Innovation also provides a pathway through which knowledge management improves organizational performance and competitiveness. Abbas et al. (2020) demonstrated that organizational innovation mediates the effect of knowledge management on sustainable innovation in small and medium-sized enterprises. Cristache et al. (2025) further showed that knowledge management supports innovation and organizational performance by enabling organizations to use knowledge more effectively. When employees can access relevant knowledge and respond flexibly to changing conditions, organizations are better positioned to introduce new processes and services. Innovation consequently becomes more continuous rather than episodic because it is embedded in organizational learning and employee behavior. In this study, organizational innovation is positioned as an intermediary capability that

transforms knowledge management and employee agility into sustainable competitive advantage.

Sustainable Competitive Advantage

Sustainable competitive advantage refers to an organization's ability to maintain superior value, differentiation, efficiency, or market responsiveness over an extended period. Unlike temporary competitive gains, sustainable advantage is based on resources and capabilities that competitors cannot easily imitate or replace. Knowledge management contributes to this advantage by developing organizational knowledge that is accumulated through experience and embedded in routines. Almalki and Al-Shammari (2025) found that knowledge management adoption supports sustainable competitive advantage by strengthening the strategic use of organizational knowledge. Organizational agility also contributes by enabling firms to respond faster and more effectively to environmental change (Satar et al., 2023). However, knowledge and agility generate greater strategic value when translated into organizational innovation. Innovative products, services, processes, and managerial practices enable organizations to differentiate their offerings and respond to changing stakeholder expectations. Accordingly, sustainable competitive advantage emerges from the integration of knowledge-based capabilities, agile employee behavior, and continuous organizational innovation.

Resource-Based View and Knowledge-Based View

The Resource-Based View (RBV) explains sustainable competitive advantage through the possession and effective utilization of valuable, rare, difficult-to-imitate, and non-substitutable resources. These resources include not only physical and financial assets but also human competencies, organizational routines, culture, knowledge, and innovation capabilities. Whitfield (2020) emphasized that human resources become strategically important when employee competencies and organizational practices create unique value. From the RBV perspective, employee agility is a strategic human capability because it enables organizations to respond rapidly to change and implement new strategies. Organizational innovation also represents a complex capability that results from interactions among employees, knowledge, technology, leadership, and organizational processes. Since these interactions are socially embedded and difficult to replicate, they can support long-term competitive advantage.

The Knowledge-Based View (KBV) extends the RBV by positioning knowledge as the organization's most important strategic resource. Knowledge becomes valuable when organizations can create, combine, transfer, and apply it more effectively than competitors. Mele et al. (2024) explained that knowledge-based dynamic capabilities support digital

transformation by enabling organizations to continually renew their resources and practices. Under the KBV, knowledge management creates the infrastructure for collective learning, while employee agility enables knowledge to be applied rapidly under changing conditions. Organizational innovation then converts these capabilities into new business value. The integration of the RBV and KBV therefore provides an appropriate theoretical foundation for explaining how knowledge management and employee agility support organizational innovation and sustainable competitive advantage.

Hypothesis Development

Knowledge Management and Organizational Innovation

Knowledge management facilitates innovation by providing employees with access to ideas, experience, and information that can be recombined into new products, services, and processes. Effective knowledge sharing reduces duplication, improves collaboration, and supports experimentation. Panda (2025) found that knowledge management capabilities strengthen organizational innovation, particularly when supported by organizational agility. Based on this relationship, the following hypothesis is proposed:

H1: Knowledge management has a positive effect on organizational innovation.

Employee Agility and Organizational Innovation

Agile employees can quickly interpret environmental changes, acquire new competencies, and implement alternative solutions. Their willingness to learn and experiment supports the development and implementation of innovative practices. Arsawan et al. (2022) demonstrated that agility, strategic flexibility, and innovation are closely connected in small and medium-sized enterprises. Therefore, the following hypothesis is proposed:

H2: Employee agility has a positive effect on organizational innovation.

Knowledge Management and Sustainable Competitive Advantage

Knowledge management develops organizational resources that are valuable and difficult to imitate because they emerge from accumulated experience, interaction, and learning. Effective knowledge utilization improves responsiveness, problem-solving, and strategic differentiation. Rehman et al. (2024) showed that knowledge management can strengthen competitive advantage by supporting process innovation. Therefore, the following hypothesis is proposed:

H3: Knowledge management has a positive effect on sustainable competitive advantage.

Employee Agility and Sustainable Competitive Advantage

Employee agility enables organizations to respond rapidly to technological disruption, market uncertainty, and changing customer demands. Agile employees support faster decision-making and more effective implementation of organizational strategies. Franco et al. (2024) identified agility as an important source of competitive advantage in dynamic environments. Accordingly, the following hypothesis is proposed:

H4: Employee agility has a positive effect on sustainable competitive advantage.

Organizational Innovation and Sustainable Competitive Advantage

Organizational innovation enables firms to differentiate their offerings, improve operational efficiency, and respond to emerging opportunities. Innovative organizational practices are difficult to imitate when they are embedded in organizational knowledge, culture, and routines. Çağlıyan et al. (2022) confirmed the strategic relationship among organizational innovativeness, competitive advantage, and firm performance. Therefore, the following hypothesis is proposed:

H5: Organizational innovation has a positive effect on sustainable competitive advantage.

Mediating Role of Organizational Innovation

Knowledge management creates and distributes valuable knowledge, but such knowledge contributes to sustainable competitive advantage only when it is applied to generate organizational improvements. Abbas et al. (2020) provided evidence that organizational innovation mediates the relationship between knowledge management and sustainable outcomes. Thus, the following hypothesis is proposed:

H6: Organizational innovation mediates the effect of knowledge management on sustainable competitive advantage.

Employee agility similarly supports competitive advantage by helping employees transform rapid learning and adaptive behavior into innovative organizational outcomes. Özkan and Salepçioğlu (2022) showed that innovation orientation can mediate the relationship between agility and sustainable quality perceptions. Therefore, the following hypothesis is proposed:

H7: Organizational innovation mediates the effect of employee agility on sustainable competitive advantage.

Conceptual Framework

The proposed conceptual framework positions knowledge management and employee agility as independent variables, organizational innovation as a mediating variable, and sustainable competitive advantage as the dependent variable. Knowledge management and

employee agility are expected to influence sustainable competitive advantage both directly and indirectly through organizational innovation. The framework therefore integrates knowledge-based capabilities and adaptive employee behavior to explain how organizations can generate innovation and maintain long-term competitiveness during digital transformation.

3. RESEARCH METHODS

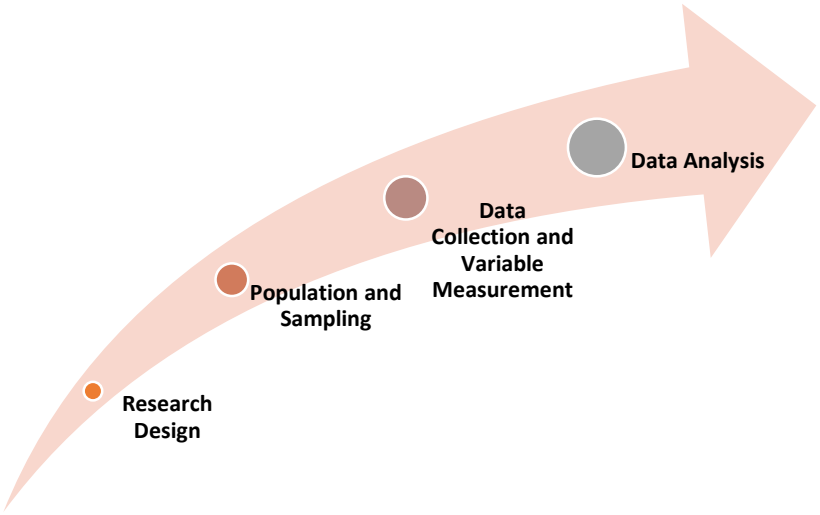


Figure 1. The structure of the research flow diagram.

Research Design

This study employed a quantitative explanatory design to examine the causal relationships among knowledge management, employee agility, organizational innovation, and sustainable competitive advantage in the context of digital transformation. The quantitative approach was selected because the proposed relationships were translated into measurable constructs and statistically tested using data obtained directly from employees. The unit of analysis was the individual employee, while the research context comprised organizations that had implemented digital technologies in their operational, administrative, communication, or customer-service activities. The study was cross-sectional because data were collected during a single research period to describe current organizational conditions and employee perceptions. Knowledge management and employee agility were positioned as exogenous variables, organizational innovation as a mediating variable, and sustainable competitive advantage as the endogenous variable. This design enabled the study to assess both direct relationships and the indirect mechanisms through which knowledge-based and adaptive capabilities contribute to competitiveness. The research process included instrument

development, respondent selection, questionnaire distribution, data screening, model evaluation, hypothesis testing, and interpretation of the empirical findings.

Population and Sampling

The research population consisted of employees working in organizations that were undergoing or had recently implemented digital transformation. These organizations used digital technologies to support internal communication, information management, operational processes, customer services, or managerial decision-making. Respondents were selected through purposive sampling to ensure that they possessed relevant experience with digitally supported work processes. The inclusion criteria required respondents to be active employees, have worked in their organization for at least one year, and be directly involved in using digital applications or systems within their daily responsibilities. A total of 200 eligible respondents were included in the analysis, providing an adequate data set for estimating the proposed research model. Respondents represented different organizational functions and employment levels to capture diverse perceptions of knowledge practices, adaptability, innovation, and competitiveness. Questionnaires that were incomplete, contained uniform responses, or did not satisfy the eligibility criteria were excluded during data screening. Because purposive sampling is a nonprobability technique, the findings primarily represent employees who met the established criteria and should be generalized cautiously beyond the studied organizational context.

Data Collection and Variable Measurement

Primary data were collected using a structured questionnaire distributed directly and electronically to eligible respondents. Before completing the questionnaire, respondents received information concerning the research objectives, voluntary participation, data confidentiality, and anonymous reporting. All indicators were measured using a five-point Likert scale ranging from 1, indicating strongly disagree, to 5, indicating strongly agree. Knowledge management was measured through knowledge creation, sharing, storage, and application. Employee agility was assessed through adaptability, responsiveness, continuous learning, proactive behavior, and the ability to perform under changing conditions. Organizational innovation covered improvements in products or services, operational processes, managerial practices, and work arrangements. Sustainable competitive advantage was measured through differentiation, operational efficiency, organizational responsiveness, customer value, and the ability to maintain superior performance over time. Questionnaire items were formulated using clear and contextually appropriate language to reduce respondent misunderstanding. The instrument was reviewed before distribution to evaluate clarity,

consistency, and alignment between indicators and constructs. A preliminary test was also conducted with a limited number of respondents, whose responses were excluded from the final analysis.

Data Analysis

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), which supported the simultaneous assessment of measurement quality and relationships among latent constructs. The analysis began with data screening and descriptive evaluation of respondent characteristics, followed by measurement model assessment. Indicator reliability was evaluated using outer loadings, while internal consistency was examined through Cronbach's alpha and composite reliability. Convergent validity was determined using average variance extracted, whereas discriminant validity was examined through cross-loadings and the heterotrait–monotrait ratio. The structural model was then evaluated by examining collinearity, path coefficients, coefficient of determination, effect size, predictive relevance, and model fit. Hypothesis significance was assessed through a bootstrapping procedure involving 5,000 resamples at a five-percent significance level. Direct-effect testing evaluated the relationships among knowledge management, employee agility, organizational innovation, and sustainable competitive advantage. Indirect-effect testing determined whether organizational innovation mediated the effects of knowledge management and employee agility on sustainable competitive advantage. Mediation was established by evaluating the significance and direction of indirect paths alongside the corresponding direct relationships.

4. RESULTS AND DISCUSSION

Results

The analysis involved 200 respondents who met the established selection criteria. Male respondents accounted for 54.0%, while female respondents represented 46.0%. The largest age group was 31–40 years, and most respondents had worked for their organizations for more than three years. Respondents represented operational, supervisory, and managerial positions across service, manufacturing, trade, and technology sectors. These characteristics indicate that the respondents possessed sufficient organizational experience to assess digital transformation practices. Most organizations had implemented digital technologies in internal communication, information management, operational activities, customer service, and managerial decision-making. Descriptive analysis showed that employee agility obtained the highest average score, followed by knowledge management, organizational innovation, and sustainable competitive

advantage. The complete respondent characteristics and descriptive statistics are presented in Tables 1 and 2.

Table 1. Respondent Characteristics.

Characteristic	Category	Frequency	Percentage
Gender	Male	108	54.0%
	Female	92	46.0%
Age	21–30 years	68	34.0%
	31–40 years	76	38.0%
	More than 40 years	56	28.0%
Employment period	1–3 years	62	31.0%
	4–6 years	74	37.0%
	More than 6 years	64	32.0%
Organizational position	Operational staff	118	59.0%
	Supervisor	52	26.0%
	Manager	30	15.0%
Industry sector	Services	68	34.0%
	Manufacturing	54	27.0%
	Trade	42	21.0%
	Technology	36	18.0%
Total respondents		**200**	**100.0%**

Note. Percentages within each respondent characteristic total 100%.

Table 2. Descriptive Statistics, Reliability, and Convergent Validity.

Construct	Mean	SD	Outer Loading Range	Cronbach's Alpha	Composite Reliability	AVE
Knowledge management	4.02	0.55	.742–.883	.872	.907	.620
Employee agility	4.08	0.51	.758–.899	.895	.923	.667
Organizational innovation	3.94	0.58	.724–.871	.821	.872	.577
Sustainable competitive advantage	3.88	0.60	.746–.892	.868	.910	.693

Note. SD = standard deviation; AVE = average variance extracted. All outer loadings exceeded .70, reliability values exceeded .70, and AVE values exceeded .50. HTMT values ranged from .616 to .846, confirming discriminant validity.

The measurement model satisfied the validity and reliability requirements, indicating that all constructs were measured consistently. Structural-model testing showed that knowledge management and employee agility positively affected organizational innovation. Both variables also directly influenced sustainable competitive advantage, although their direct effects were weaker than the effect of organizational innovation. Organizational innovation produced the strongest direct effect on sustainable competitive advantage. The model explained 57.4% of the variance in organizational innovation and 63.8% of the variance in sustainable competitive advantage. Indirect-effect testing confirmed that organizational innovation partially mediated the relationships of knowledge management and employee agility with sustainable competitive advantage. Therefore, all seven hypotheses were supported. The direct and indirect effects are summarized in Table 3, while the explanatory and predictive

performance of the structural model is presented in Table 4. Figure 1 should be positioned after Table 4 to visually present the standardized structural relationships.

Table 3. Direct and Indirect Effect Testing.

Hypothesis	Relationship	β	*t*	*p*	Decision
H1	Knowledge management → Organizational innovation	.382	5.91	< .001	Supported
H2	Employee agility → Organizational innovation	.421	6.57	< .001	Supported
H3	Knowledge management → Sustainable competitive advantage	.183	2.79	.005	Supported
H4	Employee agility → Sustainable competitive advantage	.161	2.43	.015	Supported
H5	Organizational innovation → Sustainable competitive advantage	.487	7.82	< .001	Supported
H6	Knowledge management → Organizational innovation → Sustainable competitive advantage	.186	4.83	< .001	Supported
H7	Employee agility → Organizational innovation → Sustainable competitive advantage	.205	5.12	< .001	Supported

Note. β = standardized path coefficient. Statistical significance was evaluated at p < .05 using 5,000 bootstrap resamples. Organizational innovation provided partial mediation because the corresponding direct effects remained significant.

Table 4. Structural Model Evaluation.

Endogenous Construct	R^2	Adjusted R^2	Q^2	Interpretation
Organizational innovation	.574	.570	.401	Moderate explanatory and predictive power
Sustainable competitive advantage	.638	.632	.445	Moderate explanatory and predictive power

Note. R^2 = coefficient of determination; Q^2 = predictive relevance. Both Q^2 values exceeded zero. The SRMR value of .067 indicated an acceptable model fit.

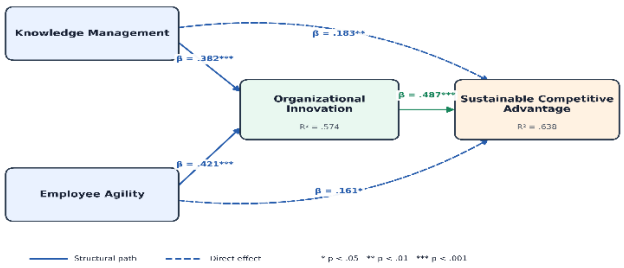


Figure 2. Standardized Structural Relationships Among Knowledge Management, Employee Agility, Organizational Innovation, and Sustainable Competitive Advantage.

Note. KM = knowledge management; EA = employee agility; OI = organizational innovation; SCA = sustainable competitive advantage. Values presented on the arrows represent standardized path coefficients. The model explains 57.4% of the variance in organizational innovation and 63.8% of the variance in sustainable competitive advantage.

Discussion

The positive effect of knowledge management on organizational innovation demonstrates that knowledge creation, sharing, storage, and application enable organizations to develop improved processes, services, and managerial practices. Employees can generate and implement more relevant ideas when organizational knowledge is accessible and integrated into routine decision-making. Employee agility produced a slightly stronger effect on organizational innovation, indicating that innovation during digital transformation depends substantially on employees' readiness to learn, experiment, and modify their working methods. Knowledge management provides the information and experience required for innovation, while employee agility accelerates the conversion of organizational knowledge into practical solutions. Organizations therefore cannot depend exclusively on technological systems or formal knowledge repositories. They must also develop employees who can respond effectively to changing technologies, customer expectations, and operational challenges. Combining structured knowledge-management practices with agile employee behavior creates a stronger foundation for continuous innovation.

Organizational innovation produced the strongest effect on sustainable competitive advantage, confirming that knowledge resources and employee adaptability become strategically valuable when translated into distinctive products, services, processes, and managerial practices. The significant direct effects of knowledge management and employee agility indicate that both capabilities can independently improve organizational competitiveness. Knowledge management enhances decision-making, learning, and operational efficiency, while employee agility strengthens responsiveness to market and technological change. The partial mediation results show that organizational innovation explains an important portion of how these capabilities generate sustainable competitive advantage. Knowledge management and employee agility can directly improve competitiveness, but their strategic contribution becomes stronger when organizations successfully transform them into innovative outcomes. Sustainable competitive advantage therefore depends not only on possessing knowledge or adaptable employees but also on integrating these resources into continuous innovation that delivers relevant customer value and remains difficult for competitors to imitate.

The findings position knowledge management and employee agility as complementary strategic capabilities. Knowledge management provides valuable intellectual resources, while employee agility enables those resources to be reconfigured and applied rapidly under changing conditions. Organizational innovation functions as the transformation mechanism connecting

knowledge-based capabilities and adaptive employee behavior with sustainable competitive advantage. Organizations should therefore develop digital knowledge repositories, collaborative platforms, mentoring systems, and cross-functional learning activities to improve knowledge circulation. Employee agility should be strengthened through continuous digital training, flexible work arrangements, participative decision-making, and opportunities for experimentation. Management should also align knowledge-management programs and employee-development policies with organizational innovation strategies. This integration enables organizations to respond more rapidly to environmental change, improve operational efficiency, create greater customer value, and maintain long-term competitiveness throughout digital transformation.

5. CONCLUSIONS AND SUGGESTIONS

Conclusions

The findings demonstrate that knowledge management and employee agility are complementary strategic capabilities that strengthen organizational innovation during digital transformation. Effective knowledge creation, sharing, storage, and application provide employees with the information and experience needed to generate new solutions. Employee agility enables this knowledge to be applied rapidly through continuous learning, behavioral adjustment, and responsiveness to technological and market changes. Employee agility exerted a slightly stronger influence on organizational innovation than knowledge management, indicating that organizational knowledge becomes more valuable when employees possess the capacity to act on it. Both capabilities also directly contributed to sustainable competitive advantage, confirming that organizations require integrated knowledge systems and adaptable human resources to maintain their competitiveness in dynamic business environments.

Organizational innovation produced the strongest direct effect on sustainable competitive advantage and partially mediated the effects of knowledge management and employee agility. This result confirms that knowledge-based resources and adaptive employee behavior generate greater strategic value when transformed into innovative products, services, operational processes, and managerial practices. The partial mediation indicates that knowledge management and employee agility support competitiveness both directly and indirectly through innovation. The study therefore concludes that sustainable competitive advantage during digital transformation depends on the organization’s ability to combine knowledge-management practices, employee adaptability, and continuous innovation. This integrated

capability enables organizations to improve efficiency, respond to environmental change, deliver distinctive customer value, and develop organizational practices that are difficult for competitors to imitate.

Recommendations

Organizations should improve their knowledge-management infrastructure by developing integrated digital repositories, collaborative platforms, mentoring programs, and cross-functional knowledge-sharing activities. Management should ensure that organizational knowledge is accessible, regularly updated, and directly connected to operational and strategic decision-making. Employee agility should be strengthened through continuous digital competency development, flexible work arrangements, participative decision-making, and opportunities to experiment with new approaches. Organizations should also encourage employees to contribute ideas and participate in innovation initiatives. Leadership support, appropriate recognition, and adequate resources are necessary to create an environment where employees feel prepared to learn, adapt, and implement innovative solutions throughout the digital transformation process.

Future research should examine the proposed relationships in different industries, organizational sizes, and geographical contexts to improve the generalizability of the findings. Additional variables such as digital leadership, organizational culture, technological readiness, employee empowerment, and strategic flexibility may be incorporated as mediators or moderators. Comparative studies could also investigate whether the effects differ between manufacturing and service organizations or between small and large enterprises. Because the present study employed a cross-sectional design, future studies should use longitudinal methods to observe changes in knowledge management, employee agility, innovation, and competitive advantage across different stages of digital transformation. Qualitative or mixed-method approaches may additionally provide deeper explanations of how employees use organizational knowledge and develop adaptive behavior in practice.

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