

The Impact of Knowledge Management on Faculty Members' Productivity: Testing a Hybrid Model Based on Causal-Transfer Theory, Resource-Based View, and Learning Organization Theory

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ABSTRACT

This study aimed to design and test a hybrid model of the impact of knowledge management on faculty members' productivity by integrating Causal-Transfer Theory, the Resource-Based View, and Learning Organization Theory. The present research is applied in purpose and follows a descriptive-survey correlational design. The statistical population consisted of all faculty members of Islamic Azad University, Region 8 (approximately 350 individuals). Using Cochran's formula and stratified random sampling, 183 participants were selected as the sample. Data were collected through a researcher-developed questionnaire comprising 80 items for knowledge management (across six components), 42 items for faculty productivity (across three dimensions), and 20 items measuring four mediating mechanisms (reduction of organizational rework, acceleration of the innovation process, improvement of decision-making quality, and reduction of the empowerment and training cycle time). Instrument validity was confirmed through expert judgment, and reliability was verified using Cronbach's alpha coefficient. Structural equation modeling was employed for data analysis and conceptual model testing. The findings indicated that knowledge management exerts both direct and indirect positive and statistically significant effects on overall faculty productivity through the four mediating mechanisms. Knowledge management showed the strongest direct effect on improving decision-making quality, followed respectively by acceleration of the innovation process, reduction of organizational rework, and reduction of the empowerment cycle time. Among the mediating mechanisms, reduction of organizational rework demonstrated the greatest direct effect on overall productivity. All indirect paths (mediating effects) were also statistically significant. The results suggest that knowledge management, as a core organizational capability, constitutes a powerful lever for enhancing faculty academic productivity by simultaneously improving key organizational functions, including decision-making, innovation, process efficiency, and organizational learning. By presenting a multi-path causal model, this study provides a more comprehensive understanding of the mechanisms through which knowledge management operates in academic environments and underscores the necessity of systematically developing knowledge management alongside strengthening related organizational mechanisms to achieve superior performance.

Keywords: Knowledge management, faculty productivity, causal-transfer model, resource-based view, learning organization, innovation, decision-making quality, Islamic Azad University.



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Introduction

In contemporary organizational environments, knowledge has emerged as the most strategic intangible asset and the principal driver of sustainable competitive advantage, productivity, and institutional effectiveness. The shift from asset-based economies toward knowledge-based economies has fundamentally transformed how organizations conceptualize performance, value creation, and long-term viability (1, 2). Within this paradigm, knowledge management (KM) is no longer considered a supportive administrative function but rather a central organizational capability that integrates strategy, human capital, technology, and learning processes into a coherent system for value creation (3, 4). This transformation is especially visible in knowledge-intensive institutions such as universities, where intellectual capital, academic expertise, and learning infrastructures form the core productive resources of the organization (5, 6).

Universities operate at the intersection of knowledge production, knowledge dissemination, and societal development. Their performance increasingly depends on how effectively academic knowledge is created, shared, preserved, and translated into innovation and service outcomes (7, 8). Faculty members serve as the primary knowledge workers within these institutions, and their productivity constitutes the central performance indicator of the university system (9, 10). Consequently, the relationship between KM and faculty productivity has become a major concern in higher education research and policy formulation (6, 11). Empirical evidence demonstrates that systematic KM practices significantly enhance research output, teaching quality, professional service effectiveness, and institutional competitiveness (12, 13).

The theoretical foundations of KM are deeply rooted in the Resource-Based View (RBV) and the Dynamic Capabilities perspective, which assert that organizations achieve superior performance by developing rare, valuable, inimitable, and non-substitutable knowledge assets and by continuously reconfiguring those assets in response to environmental change (1, 14, 15). From this perspective, KM operates as a dynamic organizational capability that transforms dispersed individual expertise into collective organizational intelligence (16, 17). In academic organizations, this capability becomes especially critical because faculty knowledge is highly specialized, tacit, and embedded in professional experience and disciplinary culture (18, 19). Effective KM systems enable institutions to capture tacit knowledge, codify best practices, and foster knowledge sharing across organizational boundaries (19, 20).

Beyond its strategic value, KM exerts a direct and measurable impact on individual and organizational productivity. Multiple studies across diverse organizational contexts demonstrate that KM processes significantly enhance employee performance, innovation outcomes, and operational efficiency (21-23). In knowledge-intensive sectors, KM improves task efficiency, reduces redundancy, accelerates learning cycles, and strengthens problem-solving capacity (18, 24). These mechanisms are especially salient in universities, where productivity depends not only on individual competence but also on institutional learning, collaborative knowledge creation, and organizational support systems (25, 26).

Recent empirical studies further confirm the strong association between KM and productivity across higher education settings. For example, Sahibzada et al. demonstrated that KM processes significantly improve organizational performance in Chinese universities through the mediating role of knowledge worker productivity (6). Yousefi et al. found that higher KM maturity directly enhances teachers' performance by improving knowledge accessibility, decision quality, and instructional innovation (9). Similar findings have been reported in public

universities, libraries, municipalities, healthcare institutions, and industrial organizations (17, 27-29). These results consistently highlight KM as a fundamental driver of productivity and organizational excellence.

At the same time, contemporary KM research emphasizes that the impact of KM on productivity is rarely simple or linear. Instead, KM influences performance through complex causal pathways involving organizational learning, innovation, decision-making quality, work environment, leadership, and human resource development (30-32). Knowledge sharing fosters organizational learning, which in turn enhances creativity and innovation performance (30, 33). KM also improves decision-making quality by providing timely, reliable, and structured information for managerial judgment (18, 34). Furthermore, effective KM systems reduce redundant activities, shorten training cycles, and optimize process efficiency (13, 21).

Emerging technological advancements have further strengthened the strategic role of KM. Artificial intelligence, machine learning, and digital platforms are increasingly integrated into KM systems to enhance knowledge discovery, storage, retrieval, and application (3, 35, 36). These technologies accelerate knowledge flows, improve decision accuracy, and support organizational adaptability (24, 37). In universities, digital KM tools enable more effective research collaboration, curriculum innovation, and knowledge transfer between faculty, students, and external stakeholders (5, 18).

Despite the growing body of literature, several critical gaps remain. First, most empirical studies examine KM and productivity using isolated variables and linear models, failing to capture the multi-layered mechanisms through which KM exerts its influence (30, 31). Second, limited research has integrated causal-transfer perspectives with resource-based and learning organization frameworks to construct comprehensive explanatory models (25, 26). Third, empirical evidence from academic institutions—particularly within developing and transitional higher education systems—remains insufficient and fragmented (9, 10). Finally, few studies explicitly examine how KM simultaneously affects productivity both directly and indirectly through intermediate organizational mechanisms such as innovation acceleration, decision quality, process efficiency, and learning cycle reduction (13, 18, 30).

Addressing these gaps is essential for advancing both theory and practice. Universities face increasing pressures to improve academic performance, international rankings, societal impact, and financial sustainability in highly competitive knowledge economies (5, 8). Understanding the full causal architecture of KM's impact on faculty productivity provides decision-makers with evidence-based guidance for designing more effective institutional policies, leadership strategies, and organizational systems (34, 36, 38).

Accordingly, this study integrates Causal–Transfer Theory, the Resource-Based View, and Learning Organization Theory to develop and empirically test a comprehensive model explaining how knowledge management influences faculty members' productivity through multiple direct and indirect pathways.

The aim of this study is to design and empirically test a comprehensive causal model of the impact of knowledge management on faculty members' productivity through key mediating organizational mechanisms.

Methods and Materials

This study was conducted as an applied research with a descriptive–survey correlational approach. The statistical population of the study included all faculty members of Islamic Azad University, Region 8, in the academic year 2024–2025 (approximately 350 individuals). Using Cochran's formula and assuming a 0.05 margin of error, the sample size was calculated as 183 participants. To enhance reliability and prevent sample loss, 210 questionnaires were distributed, of which 183 completed and analyzable questionnaires were ultimately collected

through non-probability convenience sampling. The required data were gathered using a researcher-developed questionnaire designed on a five-point Likert scale. The instrument consisted of three main sections: the first section measured the knowledge management variable with 80 items across six components: knowledge creation, knowledge acquisition, knowledge organization and storage, knowledge sharing and transfer, knowledge application, and enabling factors. The second section measured faculty members' productivity using 42 items across three dimensions: research performance, teaching performance, and professional services. The third section assessed the four mechanisms of the integrated theoretical model (based on Causal–Transfer Theory, the Resource-Based View, and Learning Organization Theory) using 20 items (five items for each mechanism). To ensure the quality of the research instrument, the content and face validity of the questionnaire were confirmed through the evaluation of 15 experts in the fields of knowledge management, higher education, and research methodology. In addition, the reliability of the questionnaire was examined by calculating Cronbach's alpha coefficient. The obtained coefficients indicated a high level of reliability of the measurement instrument (Table 1). For data analysis, structural equation modeling was employed using SmartPLS software to test the research hypotheses and examine the goodness of fit of the conceptual model.

Table 1. Reliability of the Research Questionnaire Variables

Variable	Components / Dimensions	Number of Items	Cronbach's Alpha
Knowledge Management in the University	Knowledge Creation	11	0.924
Knowledge Acquisition		12	0.939
Knowledge Organization and Storage		12	0.943
Knowledge Sharing and Transfer		13	0.950
Knowledge Application		7	0.926
Enabling Factors (including technological, cultural–organizational, human resource, leadership, and strategic indicators)		25	0.968
Communication Mechanisms	Reduction of Organizational Rework	5	0.876
Acceleration of the Innovation Process		5	0.860
Improvement of Decision-Making Quality		5	0.888
Reduction of the Empowerment (Training) Cycle Time		5	0.869
Faculty Members' Productivity	Research	18	0.954
Teaching		13	0.943
Professional Services		11	0.944

Findings and Results

Prior to testing the research hypotheses, a descriptive analysis of the questionnaire scores was conducted to obtain an overall perspective on the status of each variable in the study population. Table 2 presents a summary of the descriptive statistics of the questionnaire scores.

Table 2. Descriptive Statistics of the Variables

Variable	Dimensions	Mean	Standard Deviation	Minimum	Maximum
Knowledge Management	Knowledge Creation	3.1040	0.6369	1.45	4.55
Knowledge Acquisition		2.6667	0.6713	1.17	4.33
Knowledge Organization and Storage		2.7896	0.6884	1.42	4.75
Knowledge Sharing and Transfer		2.8886	0.6894	1.46	4.38
Knowledge Application		3.1210	0.7848	1.14	4.71
Enabling Factors		2.7810	0.6466	1.28	4.24
Overall Knowledge Management Score		2.8439	0.4623	1.59	4.04
Reduction of Organizational Rework	—	2.4186	0.7152	1.00	4.20
Acceleration of Innovation Process	—	2.6776	0.7192	1.20	4.60

Improvement of Decision-Making Quality	—	3.2721	0.7978	1.00	5.00
Reduction of Empowerment (Training) Cycle Time	—	3.7891	0.6323	2.00	4.80
Faculty Members' Productivity	Research	3.5115	0.6010	1.94	4.78
Teaching		3.2842	0.6977	1.54	4.77
Professional Services		3.0368	0.7579	1.18	4.91
Overall Faculty Productivity Score		3.3168	0.5102	1.83	4.40

According to the results presented in Table 2, the status of knowledge management, with an overall mean of 2.8439 and a standard deviation of 0.4623, reflects a relatively moderate level of implementation of this concept. Among the dimensions of knowledge management, the highest mean belongs to the knowledge creation component ($M = 3.1040$), indicating that this dimension is in a more favorable condition compared with the other dimensions. This is followed by knowledge application ($M = 3.1210$) and knowledge sharing and transfer ($M = 2.8886$). The lowest mean among the dimensions of knowledge management is related to knowledge acquisition ($M = 2.6667$), suggesting that this dimension requires greater attention relative to the others. The dimensions of knowledge organization and storage and enabling factors, with means of 2.7896 and 2.7810 respectively, are also positioned at moderate levels.

With respect to the mechanisms associated with the implementation of knowledge management in universities, the reduction of training cycle time, with a mean of 3.7891, represents the highest level, indicating the positive effect of knowledge management on accelerating educational processes. This is followed by the improvement of decision-making quality ($M = 3.2721$), which reflects a relative enhancement in decision-making processes. The variables of acceleration of innovation and reduction of organizational rework, with means of 2.6776 and 2.4186 respectively, were evaluated at lower levels, which may indicate the existence of challenges in the areas of innovation and process optimization.

Regarding faculty members' productivity, the overall mean of this variable is 3.3168, indicating a relatively good level of performance across different dimensions. Among the productivity dimensions, the highest mean is associated with research productivity ($M = 3.5115$), suggesting that faculty members' research activities are in a more favorable condition. This is followed by productivity in professional services ($M = 3.0368$) and productivity in teaching ($M = 3.2842$). These findings indicate that although teaching productivity has the lowest mean among the three dimensions, it still remains at a moderate-to-high level.

In order to analyze the relationship between knowledge management in the university and each dimension of faculty members' productivity, as well as the examined mediating mechanisms, pairwise correlation coefficients were estimated. Prior to estimating the correlation coefficients, the assumption of normality of the empirical distribution of the data for each variable dimension was tested to determine the appropriate type of statistical tests. Table 3 presents the results of the Kolmogorov–Smirnov test for assessing the normality of the data distribution.

Table 3. Test of Data Normality

Variables	Test Statistic	Significance
Knowledge Management in the University	0.574	0.896
Faculty Members' Productivity	0.907	0.384
Reduction of Organizational Rework	1.217	0.103
Acceleration of the Innovation Process	1.256	0.085
Improvement of Decision-Making Quality	0.876	0.427
Reduction of the Empowerment (Training) Cycle Time	1.978	0.001

Based on the obtained significance levels of the Kolmogorov–Smirnov test for verifying the assumption of normality, it is observed that for all research variables, except for the scores of the mechanism “reduction of the empowerment (training) cycle time” ($p = 0.001$), the assumption of normality is confirmed at the 0.05 significance level. Therefore, in analyzing the relationships between knowledge management in the university and faculty members’ productivity and the mediating mechanisms, Spearman’s correlation coefficient was used for the variable “reduction of the empowerment cycle time,” and Pearson’s correlation coefficient was applied to the remaining relationships. Table 4 presents the results of these correlation estimates.

Table 4. Results of the Correlation Test between Knowledge Management in the University, Faculty Members’ Productivity, and Mediating Mechanisms

Row	Variable	1	2	3	4	5	6
1	Knowledge Management	1					
2	Reduction of Organizational Rework	0.544	1				
3	Acceleration of the Innovation Process	0.615	0.322	1			
4	Improvement of Decision-Making Quality	0.688	0.298	0.302	1		
5	Reduction of the Empowerment (Training) Cycle Time	0.490	0.294	0.244	0.280	1	
6	Faculty Members’ Productivity	0.955	0.458	0.557	0.643	0.404	1

Note. Significant at the 0.01 level.

The results of the correlation matrix of the research variables (Table 4) indicate that all relationships are statistically significant at the 0.05 error level. Among these, the strongest positive and significant relationship is observed between knowledge management and faculty members’ productivity, with a correlation coefficient of 0.955. This finding confirms the central and decisive role of knowledge management in enhancing faculty members’ academic performance and demonstrates that any improvement in the processes of knowledge creation, acquisition, organization, sharing, and application within the university can directly and powerfully lead to increased productivity in the domains of research, teaching, and professional services.

Furthermore, knowledge management shows positive and significant correlations with all mediating mechanisms assumed in the research model, including reduction of organizational rework ($r = 0.544$), acceleration of the innovation process ($r = 0.615$), improvement of decision-making quality ($r = 0.688$), and reduction of the empowerment (training) cycle time ($r = 0.490$). These results indicate that the establishment of a knowledge management system can provide the foundation for transformation in these organizational mechanisms. On the other hand, each of these mechanisms is also related to faculty members’ productivity; among them, improvement of decision-making quality ($r = 0.643$) shows the strongest association, whereas reduction of the empowerment cycle time ($r = 0.404$) exhibits the weakest association.

In addition, significant positive correlations are observed among the mediating mechanisms themselves, indicating that these factors can reinforce one another. For example, the relatively strong relationship between acceleration of the innovation process and reduction of organizational rework ($r = 0.615$) reflects the reciprocal influence of process efficiency and innovation. Overall, the results of this table not only emphasize the direct importance of knowledge management on faculty performance but also clarify the indirect and complementary pathways of this effect through improvements in organizational efficiency, innovation, decision-making, and human resource empowerment processes. This pattern of correlations provides robust empirical support for testing the full structural model of the study and for analyzing the causal relationships among the variables. In this context, the structural equation model of the research was fitted based on the variable codings presented in Table 5.

Table 5. Variable Coding in the Structural Model

Variable	Symbol
Knowledge Management	Knw.Man
Reduction of Organizational Rework	Redo.Reduc
Acceleration of the Innovation Process	Innov.Fas
Improvement of Decision-Making Quality	Dec.Qual
Reduction of the Empowerment (Training) Cycle Time	Edu.Tim.Redu
Productivity	EFF

Figure 1 presents the estimated coefficients of the research structural model using the symbols defined in Table 5.

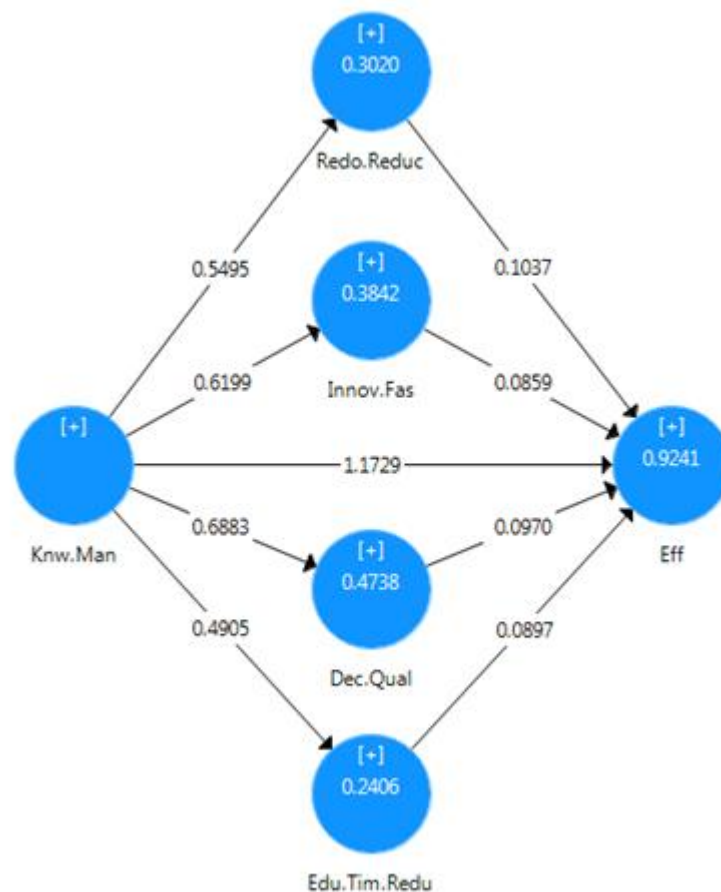


Figure 1. Estimated Coefficients of the Structural Model

Based on the effect coefficients obtained from the structural model, it is observed that knowledge management in the university has a direct effect on each of the mediating mechanisms, and each of these mechanisms, in turn, has a direct effect on faculty members' productivity. Figure 2 displays the significance test results of these coefficients within the research model.

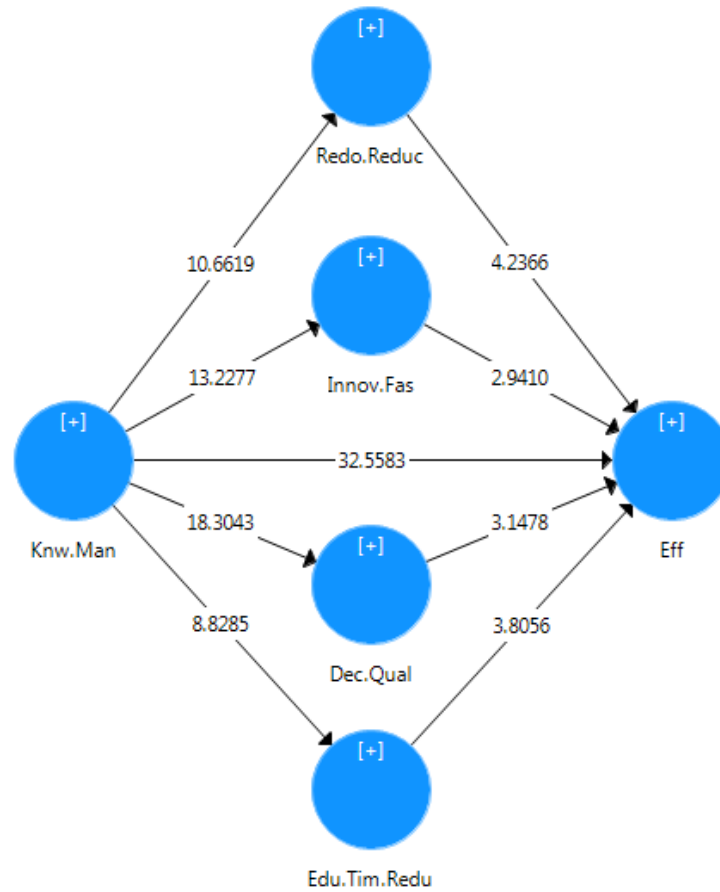


Figure 2. Significance Estimates of the Structural Model Coefficients

Based on the estimated significance test statistics presented in Figure 2, it is observed that the absolute values of the test statistics for all examined effects are greater than the critical value of 1.96; therefore, all effects in the research model are statistically significant. Table 6 presents the results of the significance tests for each effect in the structural model of the study.

Table 6. Results of Predicting Faculty Members’ Productivity Based on Knowledge Management and Mediating Mechanisms

Independent Variable	Mediating Variable	Dependent Variable	Effect Coefficient (β)	t	Significance
Knowledge Management	—	Reduction of Organizational Rework	0.550	10.662	0.001
Knowledge Management	—	Acceleration of the Innovation Process	0.620	13.228	0.001
Knowledge Management	—	Improvement of Decision-Making Quality	0.690	18.304	0.001
Knowledge Management	—	Reduction of the Empowerment Cycle Time	0.491	8.828	0.001
Knowledge Management	—	Productivity	1.173	32.558	0.001
Reduction of Organizational Rework	—	Productivity	0.104	4.237	0.001
Acceleration of the Innovation Process	—	Productivity	0.086	2.941	0.003
Improvement of Decision-Making Quality	—	Productivity	0.097	3.148	0.002
Reduction of the Empowerment Cycle Time	—	Productivity	0.090	3.806	0.001

Knowledge Management	Reduction of Organizational Rework	Productivity	0.060	3.775	0.001
Knowledge Management	Acceleration of the Innovation Process	Productivity	0.053	2.836	0.005
Knowledge Management	Improvement of Decision-Making Quality	Productivity	0.067	3.165	0.002
Knowledge Management	Reduction of the Empowerment Cycle Time	Productivity	0.044	3.588	0.001

The results of predicting faculty members' productivity within the research model reveal a multi-layered pattern of influence of knowledge management on faculty members' productivity. The model indicates that knowledge management affects overall faculty productivity both directly and indirectly through the four mediating mechanisms. The direct effect of knowledge management on productivity ($\beta = 1.173$) reflects the strong explanatory power of this construct. In other words, improvement of the knowledge management system, by itself and independent of the mediating mechanisms, is a strong predictor of a significant increase in overall productivity.

Knowledge management also exerts positive and statistically significant direct effects on each of the four mediating mechanisms. The strongest direct effect is observed on improvement of decision-making quality ($\beta = 0.690$), indicating that access to organized and up-to-date knowledge plays the most critical role of knowledge management in enhancing judgment and strategic choices. This is followed, respectively, by its effects on acceleration of innovation ($\beta = 0.620$), reduction of organizational rework ($\beta = 0.550$), and reduction of training cycle time ($\beta = 0.491$). These findings clearly delineate the primary pathways through which knowledge management operates: better knowledge leads to better decision-making, faster innovation, elimination of redundant activities, and facilitation of learning processes.

Finally, all four mediating mechanisms themselves exert positive and statistically significant effects on overall productivity. Among them, reduction of organizational rework ($\beta = 0.104$) demonstrates the strongest direct impact on productivity. Moreover, all indirect paths (mediating effects) are statistically significant, indicating that part of the overall effect of knowledge management on productivity is transmitted through the strengthening of these four mechanisms. For example, the indirect effect of knowledge management on productivity through reduction of organizational rework is $\beta = 0.060$; through improvement of decision-making quality is $\beta = 0.067$; through reduction of training cycle time is $\beta = 0.044$; and through acceleration of innovation is $\beta = 0.053$. Collectively, these findings, in addition to confirming both research hypotheses, demonstrate that knowledge management is a pivotal construct that contributes to substantial improvement in faculty members' productivity both directly and by enhancing key intermediate organizational functions, including decision-making, innovation, process efficiency, and training. Accordingly, the model not only confirms the causal relationship but also specifies clear pathways through which knowledge management exerts its influence.

Discussion and Conclusion

The present study provides robust empirical evidence for the pivotal role of knowledge management (KM) in enhancing faculty members' productivity within university settings through a multi-layered causal structure. The structural model demonstrates that KM exerts both strong direct effects and substantial indirect effects through four mediating organizational mechanisms, namely reduction of organizational rework, acceleration of innovation processes, improvement of decision-making quality, and reduction of the empowerment and training cycle time. The magnitude of the direct effect of KM on overall productivity underscores KM's status as a core organizational

capability that fundamentally shapes academic performance. This finding is theoretically consistent with the Resource-Based View and Dynamic Capabilities perspectives, which conceptualize knowledge as the most strategic asset for sustainable performance advantage (1, 14, 15) and empirically aligns with extensive evidence demonstrating the productivity-enhancing impact of KM across diverse organizational contexts (11, 12, 21, 22).

The exceptionally strong direct relationship between KM and faculty productivity observed in this study reinforces the argument that academic institutions are fundamentally knowledge-driven systems whose outputs depend on the effectiveness of their internal knowledge processes. Similar results have been reported in higher education contexts, where KM maturity and KM processes have been shown to significantly improve research productivity, instructional quality, and service performance (6, 9, 10). This convergence of findings suggests that regardless of institutional or cultural context, the strategic value of KM remains stable and universally consequential for academic performance outcomes.

Beyond the direct effect, the results reveal that KM strongly influences each of the four mediating mechanisms, thereby illuminating the causal pathways through which KM translates into productivity gains. Among these pathways, the strongest effect of KM is observed on decision-making quality. This finding substantiates the theoretical proposition that the primary functional contribution of KM lies in improving managerial cognition, judgment accuracy, and strategic choice. Organized, accessible, and current knowledge enhances analytical capacity, reduces uncertainty, and strengthens organizational foresight, which in turn improves institutional effectiveness (18, 34). Prior studies have similarly concluded that knowledge-based decision environments significantly improve organizational outcomes by enabling evidence-based management and strategic alignment (19, 30).

The second most influential pathway involves the acceleration of innovation processes. The findings indicate that KM substantially accelerates innovation, which in turn positively affects faculty productivity. This result is highly consistent with the literature demonstrating that knowledge sharing, organizational learning, and collective knowledge formation constitute the primary engines of innovation in knowledge-intensive organizations (16, 18, 30). In academic environments, where innovation manifests as new research directions, pedagogical methods, and interdisciplinary collaboration, KM serves as the structural foundation that sustains creative activity and scholarly advancement (5, 8).

The third mediating pathway—reduction of organizational rework—emerges as the most powerful direct predictor of productivity among the mediators. This finding suggests that eliminating redundant tasks, repeated errors, and inefficient processes yields immediate performance benefits. KM systems prevent the loss of institutional memory, reduce duplication of effort, and ensure continuity of expertise across organizational boundaries (13, 21). Similar conclusions have been reported in industrial, service, healthcare, and public sector organizations, where KM significantly enhances operational efficiency by minimizing wasteful activities (22, 28, 29).

The fourth mediating mechanism—reduction of the empowerment and training cycle time—further clarifies how KM contributes to productivity by accelerating human capital development. Efficient KM systems facilitate faster onboarding, continuous learning, and rapid dissemination of best practices. This result is consistent with prior research demonstrating that KM enhances employee competence, organizational learning capacity, and adaptive performance (25, 26, 33). In universities, shortened training cycles enable faculty members to adapt more quickly to new pedagogical technologies, research methodologies, and institutional requirements, thereby strengthening academic productivity (7, 9).

The statistical significance of all indirect pathways confirms that KM's influence on productivity is not merely mechanical but operates through deeply embedded organizational processes. This multi-path architecture supports contemporary theoretical models that integrate KM with organizational learning, innovation systems, leadership dynamics, and dynamic capabilities (24, 25, 31). The present findings extend these models by empirically validating a comprehensive causal framework within the context of higher education.

Furthermore, the observed interactions among mediating mechanisms suggest the existence of reinforcing feedback loops. Innovation acceleration, process efficiency, decision quality, and training effectiveness appear to mutually strengthen one another, forming a self-reinforcing system of organizational learning and performance improvement. This systemic perspective aligns with learning organization theory, which emphasizes continuous knowledge creation, shared vision, and collective intelligence as foundations of sustainable excellence (8, 26).

The results also carry significant implications for institutional leadership and policy. Leaders who invest strategically in KM infrastructure—technological platforms, knowledge-sharing cultures, leadership practices, and incentive systems—create conditions that systematically amplify productivity through multiple organizational channels (31, 32, 37). The integration of emerging technologies such as artificial intelligence and machine learning further strengthens KM's capacity to support academic performance by enhancing knowledge discovery, retrieval, and decision support (3, 35, 36).

In summary, the findings provide compelling evidence that knowledge management functions as a central organizational capability that not only directly enhances faculty productivity but also orchestrates a network of intermediate mechanisms that collectively drive sustainable academic performance. The study thus contributes theoretically by integrating causal-transfer logic with resource-based and learning organization frameworks, and empirically by validating a comprehensive multi-path model in higher education contexts.

Despite the strength of the findings, this study has several limitations. First, the cross-sectional design restricts causal inference over time. Second, reliance on self-reported questionnaire data may introduce common method bias. Third, the study focused on a specific regional university system, which may limit the generalizability of the results to other institutional or cultural contexts. Finally, although the proposed model explains a substantial proportion of productivity variance, other potentially relevant variables such as organizational culture, leadership style, and external environmental factors were not explicitly included.

Future research should employ longitudinal designs to capture the dynamic evolution of knowledge management effects over time. Expanding the model to include additional organizational variables such as leadership behaviors, digital transformation readiness, and institutional culture could further enrich explanatory power. Comparative cross-national studies would help assess the stability of the proposed relationships across different higher education systems. Moreover, qualitative investigations could provide deeper insight into how faculty members experience and enact knowledge management processes in daily academic practice.

University administrators should institutionalize knowledge management as a strategic priority by developing integrated KM systems that connect technology, leadership, and human resource development. Establishing knowledge-sharing incentives, supporting interdisciplinary collaboration, and embedding KM practices into academic governance structures can significantly enhance productivity. Continuous investment in digital knowledge platforms and faculty training programs will further strengthen organizational learning and long-term academic excellence.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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