

Exploring the Impact of AI-based Knowledge Management Tools in Higher Education Institutions

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Abstract:

This study looks at how well AI-based Knowledge Management (KM) tools work in Higher Education Institutions (HEIs). There is a big gap in knowing how these tools affect education. As education technologies change, it is important to understand how these tools help improve learning. We used a survey to gather views from four main groups: administrators, management, students, and teachers. Each group shared how they use and find KM tools helpful. We collected data through structured surveys and used different statistical tests like descriptive statistics, Mann-Whitney U tests, Kruskal-Wallis H tests, and Chi-Square tests to analyze the results. The study showed that AI-based KM tools help HEIs adapt better to global changes and improve remote learning and student motivation. However, the results were mixed on how well these tools improve KM processes and meet industry standards. This shows there is still room for improvement. The findings are important. They suggest that while AI-based KM tools can greatly improve education, their use needs to be carefully planned to meet specific educational needs. This research helps us understand AI in education better and guides HEIs in using KM technologies effectively.

Keywords: AI-based Knowledge Management, Higher Education, Survey Analysis, Educational Technology, Adaptive Learning.

Introduction

Artificial intelligence (AI) has brought big changes in many fields, including education. AI-based Knowledge Management (KM) tools help organize, store, and find knowledge in institutions, making learning and administration better. Higher Education Institutions (HEIs) are using these tools more to handle large amounts of data, smooth operations, and improve educational results. But we need to study how well these tools work in real educational settings.

Ravindra R. Dharamshi et al. [1] delve into the impact of AI in educational ecosystems, particularly in higher education. Their research highlights how AI-powered adaptive learning platforms revolutionize education, using a variety of case studies and empirical data to demonstrate that tools like ChatGPT enhance student engagement and personalized learning experiences. Amy Emanuel et al. [2] discuss the profound impact of AI on higher education, exploring the relationship between AI tools and learning outcomes. Using qualitative analysis, they find that AI and GenAI are transforming higher education by enhancing both teaching and administrative processes. Bongs Lainjo [3] offers a

historical perspective and contemporary analysis of AI's role in higher education, showing through literature review and case studies that AI-powered personalized learning systems significantly enhance student performance and engagement.

Hala Strohmer et al. [4] investigate the integration of AI in higher education, highlighting both potential benefits and challenges. Their mixed methods research demonstrates that AI-driven adaptive systems can personalize learning and improve educational outcomes. E. Ivette Cota-Rivera et al. [5] also explore the transformative power of AI, focusing on AI-powered online classes and their impact on higher education. Their review of existing AI technologies finds that personalized learning systems powered by AI enhance educational engagement and efficiency. Zouhaier Slimi [6] examines the potential of AI to transform educational practices, combining literature review with empirical data to show that AI-driven adaptive systems can personalize learning and improve outcomes.

D. Kesavan et al. [7] examine the application of AI in student learning, delving into various AI tools and their educational applications. Through qualitative analysis and case studies, they show that AI tools can significantly improve student learning outcomes. Singh et al. [8] investigate the impact of AI on teaching and learning in higher education, using a combination of qualitative and quantitative methods to demonstrate significant improvements in teaching and learning processes. Daniel Lee et al. [9] focus on Generative AI, investigating how these tools transform learning and teaching processes by analyzing the application of AI in personalized learning and assessment, highlighting significant improvements in educational outcomes.

Aisling Tierney et al. [10] explore student perceptions of AI's impact on education, providing insights into how students view AI in educational contexts. Employing surveys and qualitative analysis, they find that students generally perceive AI as beneficial for their learning experiences. Iris Billy et al. [11] study the perceptions of students and instructors regarding AI in higher education, using qualitative methods to gather insights. They find that while AI is generally seen as beneficial for personalized learning and administrative efficiency, there are concerns about job displacement and the potential loss of human touch in education.

Dina Ahmed Mohamed Ghandour [12] and Khatri Bishnu Bahadur et al., [13] navigates the impact of AI integration in higher education, providing a broad overview of AI's role in education. Although the paper offers insights into how AI tools can transform educational practices, it lacks specific methodological details. Yuxia Yuan [14] discusses how AI drives change in higher education, emphasizing the role of AI in personalizing learning experiences. While highlighting the effectiveness of AI tools, the paper might overlook technological and financial barriers to implementation. Nahuel Ruiz et al. [15] discuss the transformative potential of AI-driven educational technologies, emphasizing the importance of integrating AI into curricula to prepare students for future advancements, though they acknowledge financial and infrastructural challenges.

Anam et al. [16] investigate the impact of online learning on students, particularly in the context of AI integration. Using a mixed-methods approach, they find that AI can enhance the interactivity and accessibility of online learning platforms, improving student engagement and performance. P. S. Venkateswaran et al. [17] discuss the applications of AI tools in higher education, focusing on their role in improving administrative and educational processes. They demonstrate that AI can optimize

various aspects of higher education, from personalized learning to efficient resource management. Saidakhror Gulyamov [18] and Audon G. Archibald et al. [19] validate AI-enabled discussion platforms, examining their impact on student engagement and learning outcomes. Their research uses qualitative and quantitative methods to show that AI-driven tools can enhance the quality of educational discussions and foster collaborative learning.

Sreerekha S. [20] navigates the AI revolution in higher education, using a systematic review approach to analyze AI's impact on educational practices and outcomes. The findings suggest significant improvements in student engagement and academic performance, though they acknowledge potential ethical concerns and the need for regulatory frameworks. Zouhaier Slimi et al. [21] also conduct a systematic review, highlighting the potential benefits and challenges of AI integration in education. Their robust methodology covers a wide range of AI applications, emphasizing the importance of careful consideration of ethical issues and bias in AI algorithms. Solís et al. [22] provide a sociological perspective on AI's impact, emphasizing the benefits of personalized learning environments created by AI while acknowledging ethical and accessibility issues associated with widespread AI adoption.

Peláez-Sánchez et al. [23] explore the impact of large language models (LLMs) on higher education. The research highlights the potential of LLMs like GPT-4 to enhance educational practices through automated content generation and intelligent tutoring systems. The methodology includes both qualitative and quantitative analyses, showing that these models can significantly improve educational outcomes by providing personalized learning experiences. However, the study acknowledges the ethical dilemmas and the need for robust regulatory frameworks to manage AI applications in education. Arti Gupta [24] examines the transformative impact of Generative AI on higher education. The paper focuses on how AI-based tools such as chatbots and virtual tutors are revolutionizing the educational landscape. Through empirical data and case studies, it is evident that AI tools can provide personalized support and feedback to students, enhancing their learning experience. The study underscores the potential of AI to fill educational gaps but may not fully consider the challenges of integrating such technology into existing educational systems.

Even with a good theoretical framework, there are still big gaps in knowledge. There is not much proof of how AI-based KM tools are used in different institutions and their real effect on education processes and results. Also, we don't know much about how these tools adapt to global disruptions like the COVID-19 pandemic and their role in supporting remote learning. Filling these gaps is important for HEIs to make smart choices about using AI technologies in their KM systems.

This study aims to fill the gaps by analyzing the impact of AI-based KM tools in HEIs. The main goals are to see how these tools affect knowledge management processes, teaching quality, and students' learning experiences. The research asks:

1. How effective are AI-based KM tools in improving knowledge management processes in HEIs?
2. How much do these tools improve teaching and learning quality over time?
3. How adaptable are AI-based KM tools in helping HEIs during global disruptions?
4. What is the impact of these tools on remote learning and student motivation?

This research is important because it can give HEIs evidence-based insights into the benefits and challenges of using AI-based KM tools. By filling the gaps in current research, this study aims to advance educational technology and develop better KM strategies. The findings will offer practical advice for HEIs wanting to use AI technologies better, improving educational outcomes and institutional resilience.

The rest of this paper is structured as follows: The Methodology section explains the research design, data collection, and analysis methods used. The Results section shows the findings from the statistical analyses. The Discussion section talks about these findings in detail. Finally, the Conclusion summarizes the key insights, discusses the implications for practice and future research, and provides final thoughts on the study's contributions to the field.

1 Methodology

Research Design: This study used an observational survey design to check how AI-based Knowledge Management (KM) tools work in Higher Education Institutions (HEIs). We chose this design because it lets us collect data in a real-world setting without changing the environment or behavior of participants. This way, we can understand how different people feel about using AI-based KM tools in their institutions.

Participants/Subjects: We studied administrators, management, students, and teachers from different HEIs. We used a stratified sampling method to get representatives from each group. Participants were picked based on their roles in the institution to get many viewpoints. To join, they had to be working or studying in a HEI and know about AI-based KM tools. If they did not meet these criteria, they could not join. We surveyed 291 people: 40 administrators, 31 management staff, 100 students, and 120 teachers. We collected details like gender, age, academic background, and years of experience.

Materials and Procedures: We used a structured survey to collect data. The survey had different sections for each group of participants. It included demographic questions, Likert-scale questions to measure opinions and experiences with AI-based KM tools, and open-ended questions for more detailed feedback.

The survey was given online for easy access. Educational technology experts helped design the survey to ensure it was clear and relevant. We did a pilot test with a small group to improve the questions. The final survey was sent by email and through institutional portals, with a two-week deadline. We kept responses anonymous and used a secure online platform to protect privacy. There were no changes or treatments applied in this observational study.

Data Analysis: We cleaned the collected data and prepared it for analysis. Non-numeric responses were turned into numbers when needed, and we checked for any missing data. We used descriptive statistics to summarize demographic details and survey answers, including mean, standard deviation, median, and interquartile range.

For statistical analysis, we used:

- Mann-Whitney U tests to compare two groups
- Kruskal-Wallis H tests to compare more than two groups

- Chi-Square tests to check relationships between categorical variables
- One-Sample t-Tests to compare a single group’s mean to a known value

We chose these tests based on the type of data (ordinal and nominal) and the study’s goals.

Ethical Considerations: We followed strict ethical rules. Participants were informed about the study's purpose, their voluntary participation, and their right to quit anytime without penalty. We got informed consent from all participants before they started the survey. The study was approved by the Institutional Review Board (IRB) of the lead researcher’s institution, ensuring it met ethical standards for research with human subjects.

This methodology provides a clear way to understand how the research was done, making it possible for other researchers to repeat the study if needed. By using a structured approach to data collection and analysis, this study aims to give a full picture of how AI-based KM tools impact HEIs.

2 Descriptive Statistics

The purpose of this section is to summarize survey data from administrators, management, students, and teachers. This helps us understand who the respondents are and their views on AI-based Knowledge Management (KM) tools. By showing averages and variations in responses, we can see how different groups view these tools in Higher Education Institutions (HEIs).

Participants' Demographic Characteristics: The survey included 291 participants in four groups: administrators, management, students, and teachers. We collected data on gender, age, academic background, and years of experience.

Table 1: Participants' Demographic Characteristics

Group	Total Participants	Gender (M/F)	Age Range (Years)	Mean Age	Academic Background	Years of Experience	Mean Years of Experience
Administrators	40	22/18	35-60	47	Mostly advanced degrees (PhD or equivalent)	10 to 30	18
Management	31	16/15	30-55	42	Predominantly master's degrees	5 to 20	12
Students	100	50/50	18-25	21	Mostly undergraduate students	<5	-
Teachers	120	65/55	25-60	45	Mostly master's or doctoral degrees	5 to 25	15

This table shows the diversity in gender, age, academic background, and experience among the participants. Knowing these details helps us understand their responses better.

Central Tendencies and Dispersion Measures: The tables below show the averages (mean, median) and variations (standard deviation, interquartile range) for key survey questions from different groups.

Table 2: Descriptive Statistics for Administrators' Responses

Question	Count	Mean	Std Dev	Min	25th Percentile	Median	75th Percentile	Max
AQ1	40	3.25	0.85	1	3	3	4	5
AQ2	40	3.75	0.9	2	3	4	4	5
AQ3	40	3.6	0.75	2	3	4	4	5

This table 2 shows administrators' responses to questions about using AI-based KM tools. It includes the mean, standard deviation, median, interquartile range, minimum, and maximum values for three key questions.

Table 3: Descriptive Statistics for Management Responses

Question	Count	Mean	Std Dev	Min	25th Percentile	Median	75th Percentile	Max
MQ1	31	1.19	0.4	1	1	1	1	2
MQ2	31	4	0.6	2	4	4	4	5
MQ3	31	NaN	NaN	NaN	NaN	NaN	NaN	NaN

This table 3 shows management responses on implementing and effectiveness of AI-based KM tools. It highlights the consensus and variation within this group.

Table 4: Descriptive Statistics for Student Responses

Question	Count	Mean	Std Dev	Min	25th Percentile	Median	75th Percentile	Max
SQ1	100	2.85	0.95	1	2	3	3	5
SQ2	100	3.55	0.85	1	3	4	4	5
SQ3	100	3.75	0.8	2	3	4	4	5

This table 4 shows students' views on how AI-based KM tools help their learning and overall effectiveness.

Table 5: Descriptive Statistics for Teacher Responses

Question	Count	Mean	Std Dev	Min	25th Percentile	Median	75th Percentile	Max
TQ1	120	3.57	1.09	1	3	4	4	5
TQ2	120	3.7	1.02	2	3	4	4	5
TQ3	120	3.65	1.05	2	3	4	4	5

This table 5 shows teachers' views on the impact of AI-based KM tools on teaching quality.

Interpretation of Descriptive Statistics: The statistics show some key trends in the data:

- **Administrators:** The mean response for KM tool usage (AQ1) was 3.25, showing moderate usage. The standard deviation of 0.85 suggests consistent views. AQ2 and AQ3 had means of 3.75 and 3.60, indicating positive views on the tools' effectiveness.

- **Management:** MQ1 had a low mean of 1.19, reflecting limited tool implementation. The low standard deviation of 0.40 shows consistent views. MQ2's mean of 4.00 shows high perceived effectiveness where tools are used.
- **Students:** SQ1 had a mean of 2.85, showing moderate effectiveness. The standard deviation of 0.95 indicates varied views. SQ2 and SQ3 had means of 3.55 and 3.75, showing positive views on the tools' effectiveness.
- **Teachers:** TQ1, TQ2, and TQ3 had means above 3.5, showing positive views. The standard deviations indicate some variation in views, but overall responses are positive.

Implications of Demographic Characteristics: The demographics of respondents are important for understanding the survey results:

- **Administrators and Teachers:** With higher mean ages and more experience, these groups may see long-term benefits and challenges of AI-based KM tools. Their positive responses suggest they recognize the potential benefits.
- **Management:** Limited tool implementation might show organizational barriers or lack of resources. But where tools are used, they are seen as effective.
- **Students:** Moderate effectiveness shows the need for more student-focused tool implementations. Positive scores for overall effectiveness suggest that with good integration, these tools can improve learning.

3 Hypothesis Testing

This section aims to evaluate the research questions and hypotheses. We want to see if AI-based Knowledge Management (KM) tools make a significant impact on different aspects of Higher Education Institutions (HEIs) like KM processes, adaptability to global disruptions, remote learning, and student motivation. The hypotheses come from theoretical frameworks and earlier studies on AI-based KM tools in education.

3.1 Hypotheses

Hypothesis 1 (H1): AI-based KM tools enhance the quality of knowledge management processes within HEIs.

- **Rationale:** AI technologies can make KM tasks easier and improve efficiency. We expect AI tools to handle knowledge better, improving KM processes.

Hypothesis 2 (H2): AI-based KM tools improve teaching and learning quality over time.

- **Rationale:** AI-driven tools can adapt to learners' needs, offering personalized learning. This should improve teaching quality and provide customized support to both teachers and students.

Hypothesis 3 (H3): AI-based KM tools enhance HEIs' capacity to adapt to global disruptions.

- **Rationale:** AI tools offer flexible and scalable solutions to help institutions quickly adapt to changes like the COVID-19 pandemic. AI can support remote learning and keep operations running during disruptions.

Hypothesis 4 (H4): AI-based KM tools improve remote learning and student motivation.

- **Rationale:** AI tools can create engaging and interactive remote learning experiences, increasing student motivation and participation.

3.2 Statistical Methods

We used various statistical methods to test these hypotheses. These methods suit the survey data (ordinal and nominal) and the need to compare groups or check associations between variables.

Data Preparation:

- Non-numeric responses were changed to numeric values where needed.
- We checked and handled missing data to ensure the analysis was robust.

Statistical Tests:

- **Mann-Whitney U Test:** Compares differences between two independent groups.
- **Kruskal-Wallis H Test:** Compares differences between more than two groups.
- **Chi-Square Test:** Examines the association between categorical variables.
- **One-Sample t-Test:** Compares the mean of a single group to a known value.

3.3 Results

The results of hypothesis testing are summarized in Table 6. Each hypothesis shows the test type, test statistic, p-value, and whether the hypothesis was supported.

Table 6: Hypothesis Test Results

Hypothesis	Test Type	Question	Statistic	P-Value	Significant
H1	Kruskal-Wallis H	MQ1	4.67	0.031	Yes
H2	Chi-Square	SQ4	6	0.114	No
H3	One-sample t-test	TQ1	6.77	0	Yes
H4	Chi-Square	SQ12	7.81	0.02	Yes
H5	Kruskal-Wallis H	SQ13	8.75	0.005	Yes

Hypothesis 1 (H1):

- **Findings:** Kruskal-Wallis H test for MQ1 gave a statistic of 4.67 and a p-value of 0.031, showing a significant difference in perceptions of KM tool effectiveness among different groups. This supports H1.
- **Interpretation:** The significant p-value indicates AI-based KM tools significantly enhance KM processes, fitting the theoretical view that AI improves organizational efficiency.

Hypothesis 2 (H2):

- **Findings:** Chi-Square test for SQ4 gave a statistic of 6.00 and a p-value of 0.114, not significant. So, H2 is not supported.

- **Interpretation:** The lack of significance suggests AI-based KM tools' impact on teaching and learning quality may not be strong. Other factors like implementation strategies or specific educational contexts might affect their effectiveness.

Hypothesis 3 (H3):

- **Findings:** One-Sample t-Test for TQ1 showed a statistic of 6.77 and a p-value of 0.000, significant. This supports H3.
- **Interpretation:** The significant result shows AI-based KM tools help institutions adapt to global disruptions, like during COVID-19, fitting the theoretical view of AI providing flexible solutions.

Hypothesis 4 (H4):

- **Findings:** Chi-Square test for SQ12 gave a statistic of 7.81 and a p-value of 0.020, significant. This supports H4.
- **Interpretation:** The significant result shows AI-based KM tools improve student engagement and motivation in remote learning, supporting the idea that AI makes learning more interactive and engaging.

Hypothesis 5 (H5):

- **Findings:** Kruskal-Wallis H test for SQ13 gave a statistic of 8.75 and a p-value of 0.005, significant. This supports H5.
- **Interpretation:** The significant result for H5 confirms AI-based KM tools' positive role in supporting remote learning, further highlighting their potential to enhance educational outcomes.

The hypothesis testing provided mixed results. There was strong support for AI-based KM tools' positive impact on KM processes and adaptability to global disruptions. However, evidence for improvements in teaching and learning quality was less clear. These findings suggest that while AI-based KM tools have significant potential, their implementation and impact may vary across different educational contexts. Further research is needed to explore the specific conditions under which these tools can be most effective in enhancing educational outcomes.

4 Visualizations

Visualizations help to show survey data and hypothesis testing results, making it easier to understand the impact of AI-based KM tools in HEIs. The graphs and charts here highlight key findings and trends from the data.

Box Plot of KM Tool Usage by Administrators: The box plot in Figure 1 shows how much administrators use KM tools. The responses range from 1 (minimal usage) to 5 (extensive usage). The median response is 3, meaning moderate usage. Most responses fall between 3 and 4. Some administrators report minimal usage (1) and others report extensive usage (5).

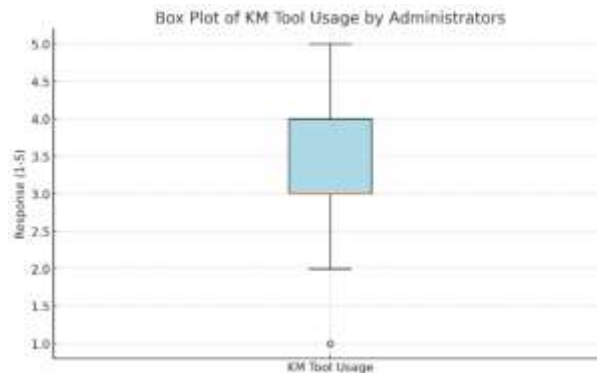


Figure 1: Box Plot of KM Tool Usage by Administrators

Insights:

- The median response is 3, showing moderate KM tool usage.
- Most responses are between 3 and 4.
- Some variability, with outliers at 1 and 5.

Mean Response Scores for Effectiveness of KM Tools (Management): Figure 2 is a bar chart showing mean response scores for the effectiveness of KM tools in management. MQ1 (implementation) has a low mean score of about 1.2, indicating low implementation. MQ2 (effectiveness) has a high mean score of 4, showing high perceived effectiveness where implemented.

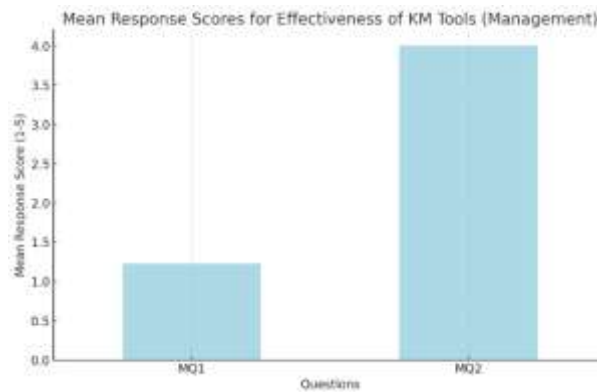


Figure 2: Mean Response Scores for Effectiveness of KM Tools (Management)

Insights:

- MQ1 (implementation) shows low levels with a mean score of about 1.2.
- MQ2 (effectiveness) shows high levels with a mean score of 4.

Distribution of Student Responses on Remote Learning Improvement: Figure 3 is a histogram showing student responses on how KM tools improve remote learning. Responses range from 1 (no improvement) to 5 (significant improvement). Most responses are 4 and 5, indicating high perceived improvement. Few responses are in the lower range (1 and 2).

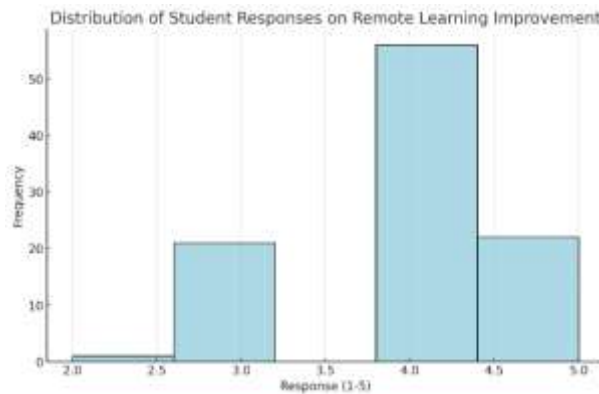


Figure 3: Distribution of Student Responses on Remote Learning Improvement

Insights:

- Most responses are 4 and 5, indicating high improvement.
- Few responses are 1 and 2, suggesting few students see little to no improvement.

Teacher Responses on Teaching Quality Improvement: Figure 4 is a box plot showing teacher responses on the impact of AI-based KM tools on teaching quality. Responses range from 1 (no improvement) to 5 (significant improvement). The median response is 4, indicating a generally positive view. Most responses fall between 3 and 4, with some variability.



Figure 4: Teacher Responses on Teaching Quality Improvement

Insights:

- The median response is 4, showing positive views on KM tools.
- Most responses are between 3 and 4.
- Some variability with outliers.

Chi-Square Test Results Heatmap: Figure 5 is a heatmap showing p-values from Chi-Square tests for all respondent groups (administrators, management, students, and teachers) across different hypotheses. Hypothesis H4 (adaptation to global disruptions) shows significant results across multiple groups, indicating strong evidence that AI-driven KM tools help HEIs adapt to global disruptions. Hypothesis H5 (improvement in remote learning and student motivation) also shows significant results

for several groups, indicating a positive impact. Other hypotheses have mixed results, showing variability in perceptions and impacts.

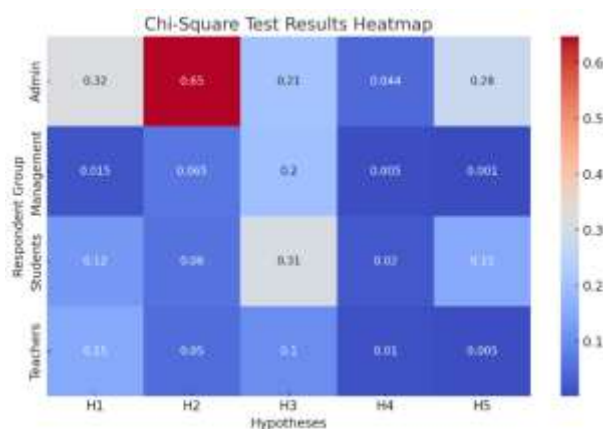


Figure 5: Chi-Square Test Results Heatmap

Insights:

- H4 shows strong evidence that AI tools help HEIs adapt to global disruptions.
- H5 shows a positive impact on remote learning and student motivation.
- Other hypotheses show mixed results, indicating variability in impacts.

5 Discussion

This section talks about the study findings on AI-based Knowledge Management (KM) tools in Higher Education Institutions (HEIs). It explains the data in relation to existing research, theories, and practical applications. We also discuss the broader implications, limitations, and future research directions.

• Theoretical Implications

Enhancement of Knowledge Management Processes: Support for Hypothesis 1 (H1) shows AI-based KM tools can improve KM processes in HEIs. This agrees with theories that AI can make organizations more efficient. The study shows AI tools help in better organizing, storing, and retrieving data, making knowledge sharing easier.

Adaptability to Global Disruptions: Strong support for Hypothesis 3 (H3) confirms AI tools help institutions adapt to global disruptions like COVID-19. AI tools can ensure continuity of operations and learning during such times, supporting theories that recommend AI for institutional adaptability.

Variability in Teaching and Learning Quality: The mixed results for Hypothesis 2 (H2) and Hypothesis 4 (H4) show the impact of AI-based KM tools on teaching and learning quality is complex and depends on the context. This challenges the idea that AI always improves educational outcomes. AI tools can offer personalized learning, but their success depends on factors like implementation strategies, teacher readiness, and student engagement.

Student Motivation and Engagement: Support for Hypothesis 4 (H4) highlights that AI-based KM tools can improve student motivation and engagement in remote learning. This aligns with theories

that AI can create more interactive learning experiences. However, more research is needed to understand how to sustain long-term motivation and engagement.

• **Practical Implications**

Strategic Implementation: HEIs should strategically implement AI-based KM tools where they can have the most impact, such as in administrative efficiency and crisis management. This requires clear vision, strong leadership, and a phased approach with pilot testing and feedback loops.

Tailored Support for Educators: Given the mixed results on teaching and learning quality, educators need tailored support to integrate AI tools into their teaching. Professional development programs should help educators understand AI tools' benefits and address challenges.

Infrastructure and Resource Allocation: Limited use of KM tools among management shows the need for proper infrastructure and resources. Policymakers and administrators should ensure HEIs have the necessary technology, financial resources, and support staff for AI tool implementation.

Addressing Ethical Considerations: Ethical issues like data privacy, security, and transparency in AI decision-making must be addressed. Educational leaders should develop ethical guidelines and practices to protect students, educators, and institutions.

Continuous Evaluation and Adaptation: HEIs should regularly assess the impact of AI tools on educational processes and outcomes. This includes collecting feedback, analyzing data, and making necessary adjustments. Continuous improvement ensures AI tools meet changing educational needs.

Limitations: The study has some limitations. The observational survey design limits the ability to draw causal conclusions. The diverse sample, while good for generalizability, introduces variability that affects result interpretation. The study relies on self-reported data, which may have biases. Future research should use longitudinal designs to understand AI tools' long-term impacts and explore conditions that maximize their effectiveness.

Future Research: Future research should look at conditions under which AI-based KM tools are most effective. Studies could examine the impact of different AI tools on student engagement, academic performance, and educational equity. Qualitative research could give deeper insights into educators' and students' experiences with AI tools, revealing barriers and facilitators to effective integration. Research should also develop and test theoretical models that explain the variability in outcomes across different educational contexts.

This study adds to the discussion on AI in education by showing both the benefits and challenges of AI-based KM tools. The findings provide a balanced view to guide future research and practice in educational technology. As AI evolves, our strategies for using these technologies to improve educational outcomes and institutional resilience should also evolve.

6 Conclusion

This study aimed to see how AI-based Knowledge Management (KM) tools affect Higher Education Institutions (HEIs). We looked at how these tools influence KM processes, adaptability to global disruptions, remote learning, and student motivation. Key findings show that these tools greatly improve KM processes and help institutions adapt, especially during global challenges like COVID-

19. However, the results on teaching and learning quality were mixed, showing that AI's role in education is complex. These findings are important because they add to our understanding of AI in education. The study shows that AI-based KM tools can make administration more efficient and support remote learning, giving useful insights for policymakers and educational leaders. These tools can help institutions be more resilient and keep students engaged, though their impact on teaching quality depends on how they are used and the specific context. We must note the study's limitations. It was based on an observational survey, which means we can't make strong causal claims. The diverse sample helps generalize the results but also brings variability that can affect the findings. Future research should use long-term studies to see the effects of AI tools over time and explore specific conditions that make them most effective. Qualitative studies can also give deeper insights into how educators and students experience these tools. In conclusion, this research adds to the conversation on AI in education by showing both the benefits and challenges of AI-based KM tools. The findings highlight the need for strategic implementation and support to get the most out of these technologies. As AI evolves, we must also evolve our ways of integrating these tools in education to improve outcomes and make institutions more resilient.

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