A study on the Factors affecting the Adoption of Knowledge Management Systems in selected Universities of Assam

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ABSTRACT

Knowledge Management Systems (KMS) have become an integral part of HEIs for facilitating teaching-learning process, research and most importantly for sharing intellectual assets across the global academia. With increasing pressure to enhance research output, improve learning outcomes and function efficiently, HEIs are increasingly turning to KMS for support. Therefore, an attempt is made through this study to investigate the factors impacting the adoption KMS and perception of faculty members across various demographic and institutional subgroups pertaining to the factors enabling its adoption. Stratified random sampling technique was adopted in this research to select 360 respondents representing State and Central Universities of Assam and includes Assistant Professors, Associate Professors and Professors across varied gender, age groups and experience levels. A nine-item scale was used to understand the factors that contribute to adoption of KMS. Factor Analysis reveals that three factors namely – Strategic Knowledge Infrastructure, KM Capability Development and KM Implementation Support – impact the adoption of Knowledge Management Systems in HEIs. However, among these factors, Strategic Knowledge Infrastructure factor is perceived more favourably as an enabler of adoption of KMS than the other two factors. Further, this study also reveals that there is no difference of mean of perception on factors enabling the adoption of KMS among faculty members across genders, age groups, designation and work experience.

KEYWORDS: Knowledge Management; Knowledge Management Systems; Knowledge Enablers; Higher Education; Adoption Factors; Assam Universities

Introduction

Knowledge management systems have become essential tools for universities seeking to capture, organize, and share intellectual assets that support teaching, research, and administrative functions. By enabling systematic storage and retrieval of tacit and explicit knowledge, these systems can improve collaboration, accelerate innovation, and enhance institutional memory. Despite these potential benefits, the successful adoption of KM systems depends on a complex mix of organizational, technological, and human factors that vary across institutional contexts. In the higher education sector, universities face

growing pressure to improve research output, enhance learning outcomes, and operate efficiently in a resource constrained environment. Knowledge management (KM) initiatives promise to address these challenges by making expertise and information more accessible to faculty, staff, and students. However, adoption is not automatic: factors such as organizational culture, leadership commitment, IT infrastructure, staff capabilities, and formal KM policies shape whether and how KM systems are used and sustained. The selected universities in Assam like Gauhati University, Dibrugarh University, Tezpur University and Assam University present a distinctive context where institutional diversity, infrastructural constraints, and evolving administrative practices influence KM adoption. Anecdotal evidence suggests uneven uptake of KM systems across departments and campuses, but there is limited empirical research that systematically identifies the drivers and barriers in this regional setting. Without a clear understanding of these factors, universities risk investing in technologies that remain underused or fail to deliver expected outcomes. Sharma Shilpa (2024) in her research found that how Knowledge management (KM) is increasingly vital for Indian universities, offering benefits like improved collaboration, decision-making, and resource use, but its adoption is hindered by contextual challenges – diverse disciplines, cultural nuances, and complex administration. Successful KM requires a culture of sharing, strong leadership, capable staff, clear policies, and robust IT (including cloud and analytics), while common barriers include resistance to change, data security concerns, and limited training. A phased, context specific approach that aligns technical upgrades with cultural and leadership support is recommended to realize KM's potential. Similarly, another study shows that that individual and managerial support factors exert a stronger influence on the adoption of knowledge management systems (KMS) in Nigeria compared to organizational and technological factors (Salami Ahmed and Suhaimi Mohd Adam, 2019). Based on these findings, future researchers can conduct deeper investigations into the factors influencing KMS adoption, with particular emphasis on management support and individual-level determinants. Almanie (2021) conducted a study where it clearly proved that an effective knowledge management system improves research outcome, teaching learning efficiency, facilitates technology infrastructure development and enriches organizational culture. Therefore, efforts will be made through research in order to examine the knowledge management practices of higher education institutions in Assam and assess their influence on academic performance within selected universities.

Literature Review

Extensive review of available literature on the topic was carried out to understand the topic in particular and identify the research gap. All such literatures that were reviewed are presented below– Iqbal (2021) conducted

research across 234 higher education institutions in Pakistan and reported that the knowledge value held by top management, along with knowledge-based rewards, positively impacts both the speed and quality of innovation. While a knowledge oriented culture enhances innovation quality, it does not significantly affect innovation speed. Furthermore, the process of knowledge sharing serves as a mediator, linking these knowledge management enablers to improvements in both innovation speed and quality. Majid and Yasir (2017) found that faculty members at research universities build trust through knowledge management enablers, which foster knowledge sharing. Their study indicates that knowledge management enablers, trust, and knowledge sharing are positively interconnected. A study has been carried out in four universities which falls under the Malaysian Technical University Network (Ramachandran SC, Chong SC and Wong KY, 2013). The study revealed that although the academics in public universities recognize the significance of knowledge management practices and key strategic enablers, they are not widely implemented. Santos, Carvalho and Martins (2024) have done a survey across the Polytechnique University of Leiria, Portugal and the results indicate that successful knowledge management initiatives must be strategically planned, supported by organizational culture, facilitated through technology, and seamlessly embedded within existing workflows. Ramjeawon PV and Rowley J (2020), conducted research among senior researchers and officials from top ten high ranking universities from Mauritius and South Africa and found that enablers and barriers were observed across several dimensions, including strategies and policies, organizational structures, rewards and incentives, culture, technology, leadership, human resources, resources and funding, as well as university–industry linkages. However, their impact differed across the three knowledge processes – knowledge creation, knowledge sharing, and knowledge transfer. Overall, Mauritius, with its comparatively less developed university sector, encountered greater challenges in implementing knowledge management than South Africa. Oumran HM, Atan RB, Nor RNHB, Abdullah SB and Mukred M (2021) in their study highlights that while KMS can significantly improve information management and decision making in HLIs, adoption is hindered by user resistance. Eleven critical factors were identified and ranked, leading to the development of a new conceptual framework tailored for Libyan universities. Kumari Aparna, Khan Muskan and Lakshmi Nirupa (2023) conducted a research and found that perceived collegiality and organizational culture play a crucial role in strengthening faculty members' trust and readiness to implement knowledge management within higher education institutions. It highlighted that fostering individual trust is essential for promoting and enhancing institutional KM activities. The findings highlight the importance of supportive

organizational environments in driving successful KM adoption in HEIs and present a novel model that offers a framework for future development in knowledge administration.

Objective of the Study

The objectives of the study are –

1. To identify factors that influence the adoption of Knowledge Management Systems (KMS) in selected universities of Assam.
2. To analyse the perception of faculty members on the impact of these factors on adoption of KMS in the selected universities of Assam.

Research Methodology

A cross-sectional survey design was employed to assess the factors that influence the adoption of Knowledge Management Systems among university faculty members with an aim to identify the enablers of adoption of KMS, evaluate their distribution and examine differences across demographic and professional subgroups. Stratified random sampling technique was used to select the samples of the study. The population was divided into two strata representing State and Central Universities. The State Universities were Gauhati University and Dibrugarh University while Tezpur University and Assam University were the two Central Universities. Data were collected from 360 respondents and included Assistant Professors, Associate Professors and Professors, spanning diverse age groups and levels of professional experience. A structured questionnaire was administered and responses were coded for quantitative analysis.

From reviewed literature, nine variables/items were identified as possible enablers of adoption of KMS among Faculty Members of Universities. These statements used for those variables are –

- My university provided support for the implementation of knowledge management practices and its application (ENABLER_1)
- My university utilizes various technological tools and platforms to faci litate effective knowledge management (ENABLER_2)
- My university has provisions for training its faculties on the impact of knowledge management on their academic and research output (ENABLER_3)
- My university has academic collaborations with other Higher Educational Institutions and industries for information/ knowledge sharing (ENABLER_4)
- My university develops a strategy to achieve its mission by integrating with a knowledge management system (ENABLER_5)
- My university has a centralized knowledge repository (ENABLER_6)
- My university has a recognition and incentivization mechanism in place to promote organizational behaviour for a better knowledge management system (ENABLER_7)
- My university has a robust ERP for information and knowledge sharing (ENABLER_8)
- My university regularly updates information and knowledge sharing domain (ENABLER_9)

Five-point Likert scale was introduced against each item of research. The internal consistency of the Scale was examined using Cronbach's alpha and the Guttman split-half coefficient. The overall 9-item scale demonstrated good reliability (Cronbach's α = .822; Guttman split-half = .795), indicating that the items coherently measure the intended construct. Finally, Factor Analysis was carried out to identify the factors impacting the adoption of KMS. 5 Further, to assess the perception of faculty members on the impact of these factors (i.e., 14 knowledge enabler factors) on adoption of KMS, the following Null Hypotheses were designed–

H0a-d: There is no difference of mean of perception of faculty members across genders (H0a), age groups (H0b), designation (H0c) and work experience (H0d) on the impact of knowledge enabler factors on adoption of KMS.

ANOVA tests were carried out to test the hypotheses at 95% confidence level

Results and Discussion

In order to identify the factors that impact the adoption of KMS among Faculty Members, Factor analysis is performed. To test the suitability of data for factor analysis, Kaiser–Meyer– Olkin (KMO) measure and Bartlett's test of sphericity was done.

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.676
Bartlett's Test of Sphericity	Approx. Chi-Square	1821.793
	df	36
	Sig.	.000

The KMO value was 0.676, indicating a mediocre level of sampling adequacy (Kaiser, 1974). Bartlett's test of sphericity was significant, $\chi^2(36) = 1821.793$, $p < 0.001$, confirming that the correlation matrix was not an identity matrix. These results support the appropriateness of conducting factor analysis on the dataset.

Table 2: Factor Analysis (Communalities)

Communalities

	Initial	Extraction
ENABLER_1	1.000	.848
ENABLER_2	1.000	.835
ENABLER_3	1.000	.908
ENABLER_4	1.000	.739
ENABLER_5	1.000	.645
ENABLER_6	1.000	.786
ENABLER_7	1.000	.521
ENABLER_8	1.000	.853
ENABLER_9	1.000	.723

Communalities after extraction indicated that most items were well represented by the factor solution, with values ranging from 0.521 to 0.908. Items ENABLER_1 (0.848), ENABLER_2 (0.835), ENABLER_3 (0.908), ENABLER_6 (0.786), and ENABLER_8 (0.853) demonstrated strong representation, while ENABLER_4 (0.739) and ENABLER_9 (0.723) showed adequate representation. ENABLER_5 (0.645) was moderately represented, and ENABLER_7 (0.521) exhibited the lowest communality, suggesting weaker alignment with the underlying construct. Overall, the majority of items were sufficiently explained by the extracted factors, supporting the appropriateness of the factor solution.

Table3: Factor Analysis (Total Variance Explained)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			**Total Variance Explained** Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.894	43.270	43.270	3.894	43.270	43.270	2.774	30.817	30.817
2	1.627	18.081	61.351	1.627	18.081	61.351	2.186	24.285	55.102
3	1.335	14.833	76.184	1.335	14.833	76.184	1.897	21.083	76.184
4	.731	8.117	84.301						
5	.530	5.891	90.192						
6	.326	3.623	93.815						
7	.260	2.887	96.702						
8	.175	1.942	98.645						
9	.122	1.355	100.000						

Extraction Method: Principal Component Analysis.

Principal component analysis was conducted to examine the underlying structure of the Knowledge Enabler scale. Three components with eigenvalues greater than 1 were extracted, accounting for 76.18% of the total variance. The first component explained 43.27% of the variance, the second 18.08%, and the third 14.83%. After Varimax rotation, the variance was more evenly distributed across the three components (30.82%, 24.29%, and 21.08%, respectively). These results support a three-factor solution, indicating that the scale reflects multiple dimensions of the construct.

Table 4: Factor Analysis (Rotated Component Matrix

Rotated Component Matrix[a]

	Component		
	1	2	3
ENABLER_9	.849		
ENABLER_6	.829		
ENABLER_4	.796		
ENABLER_5	.748		
ENABLER_3		.934	
ENABLER_8		.901	
ENABLER_7		.504	
ENABLER_1			.920
ENABLER_2			.868

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 4 iterations.

A rotated component matrix using Varimax rotation revealed a clear three-factor structure for the Knowledge Enabler scale. In fact, the rotated solution improved interpretability and confirmed the presence of three distinct latent dimensions within the scale. Factor 1 was defined by ENABLER_4, ENABLER_5, ENABLER_6, and ENABLER_9, with loadings ranging from 0.748 to 0.849, reflecting a dimension of Strategic Knowledge Infrastructure. Factor 2 included ENABLER_3, ENABLER_7, and ENABLER_8, with loadings from 0.504 to 0.934, representing KM Capability Development. Factor 3 comprised ENABLER_1 and ENABLER_2, with loadings of 0.920 and 0.868, respectively, indicating KM Implementation Support. The following table depicts the comprehensive list of extracted factors along with presentation of mean scores and standard deviations.

Table 5: Mean and Standard Deviation of extracted factor

ITEMS	Factors Extracted	Mean Score	SD
My university regularly updates information and knowledge sharing domain (ENABLER_9)	Factor 1 – Strategic Knowledge Infrastructure	11.69	4.26
My university has a centralized knowledge repository (ENABLER_6)			
My university has academic collaborations with other Higher Educational Institutions and industries for information/ knowledge sharing (ENABLER_4)			
My university develops a strategy to achieve its mission by integrating with a knowledge management system (ENABLER_5)			
My university has provisions for training its faculties on the impact of knowledge management on their academic and research output (ENABLER_3)	Factor 2 - KM Capability Development	9.06	2.91
My university has a robust ERP for information and knowledge sharing (ENABLER_8)			
My university has a recognition and incentivization mechanism in place to promote organizational behaviour for a better knowledge management system (ENABLER_7)			
My university provided support for the implementation of knowledge management practices and its application (ENABLER_1)	Factor 3 - KM Implementation Support	6.30	2.66
My university utilizes various technological tools and platforms to facilitate effective knowledge management (ENABLER_2)			

The mean scores of all the three factors extracted from principal components and factor analysis are above the neutral score of 3 (three), which indicate above-average endorsement of all three factors by the respondents. This implies that respondents have positive perception of these factors namely Strategic Knowledge Infrastructure, KM Capability Development and KM Implementation Support. Among these factors, Strategic Knowledge Infrastructure factor is perceived more favourably than the other two factors.

Assessment of perception of faculty members on the impact of knowledge enabler factors on adoption of KMS

(a) Based on Gender of respondents

Table 6: Perception on KMS adoption factors across gender

Gender	N	Mean	Std. Deviation	Std. Error Mean	t	df	P-value	Mean Rank	Mann-Whitney U	Z-value	P-value
Male	168	26.87	7.14	.550	-.427	358	.670	179.36	15937.0	-.194	.846
Female	192	27.21	7.61	.549				181.49			

An independent samples t-test was conducted to examine gender differences in Knowledge Enabler scores. Results indicated no significant difference between male (M = 26.87, SD = 7.14) and female (M = 27.21, SD = 7.61) respondents, t(358) = -0.427, p = 0.670. Therefore, the Null Hypothesis cannot be rejected and it can be assumed that there is no difference in mean of perception of faculty members on the impact of knowledge enabler factors on adoption of KMS based on gender groups.

(b) Based on Age groups of respondents

Table7: Perception on KMS adoption factors across age groups (ANOVA Test)

Age groups	N	Mean	Std. Deviation		Sum of Squares	df	Mean Square	F	Sig.
25 - 35	88	26.34	6.49	Between Groups	289.4	3	96.46	1.780	.151
36 - 45	76	27.04	7.66	Within Groups	19294.6	356	54.19		
46 - 55	112	28.30	8.01	Total	19584.0	359			
56 and above	84	26.14	7.03						
Total	360	27.05	7.39						

A one-way ANOVA was conducted to examine differences in Knowledge Enabler scores across age groups (25–35, 36–45, 46–55, and 56+ years). Results indicated no significant differences among the groups, F (3, 356) = 1.780, p = 0.151. Although the 46–55 age group had the highest mean score (M = 28.30, SD = 8.01) and the 56+ group had the lowest (M = 26.14, SD = 7.03), these

differences were not statistically significant. Thus, age does not appear to substantially influence Knowledge Enabler scores in this sample. Therefore, the Null Hypothesis (H0b) cannot be rejected and it can be assumed that there is no difference in mean of perception of faculty members on the impact of knowledge enabler factors on adoption of KMS based on age groups.

(c) Based on University designations/positions of respondents

Table 8: Perception on KMS adoption factors across University Designations (ANOVA)

Designation	N	Mean	Std. Deviation		Sum of Squares	df	Mean Square	F	Sig.
Assistant Professor	112	26.25	7.19	Between Groups	150.94	2	75.470	1.386	.251
Associate Professor	124	27.85	7.69	Within Groups	19433.06	357	54.434		
Professor	124	26.98	7.22	Total	19583.99	359			
Total	360	27.05	7.39						

A one-way ANOVA was conducted to examine differences in Knowledge Enabler scores across faculty designations (Assistant Professor, Associate Professor, and Professor). Results indicated no significant differences among the groups, $F(2, 357) = 1.386$, $p = 0.251$. Although Associate Professors had the highest mean score ($M = 27.85$, $SD = 7.69$) compared to Assistant Professors ($M = 26.25$, $SD = 7.19$) and Professors ($M = 26.98$, $SD = 7.22$), these differences were not statistically significant. Thus, designation does not appear to substantially influence Knowledge Enabler scores in the current sample. Therefore, the Null Hypothesis (H0c) cannot be rejected and it can be assumed that there is no difference in mean of perception of faculty members on the impact of knowledge enabler factors on adoption of KMS based on gender groups.

(d) Based on Work Experience of respondents

Table 9: Perception on KMS adoption factors across durations of Work Experience (ANOVA)

Experience	N	Mean	Std. Deviation		Sum of Squares	df	Mean Square	F	Sig.
Less than 5 years	88	26.34	6.49	Between Groups	289.38	3	96.460	1.780	.151
5 - 10 years	76	27.04	7.66	Within Groups	19294.62	356	54.198		
10 - 15 years	112	28.30	8.01	Total	19583.99	359			
Above 15 years	84	26.14	7.03						
Total	360	27.05	7.39						

A one-way ANOVA was conducted to examine differences in Knowledge Enabler scores across experience groups (less than 5 years, 5–10 years, 10–15 years, and above 15 years). Results

indicated no significant differences among the groups, F(3, 356) = 1.780, p = 0.151. Although respondents with 10–15 years of experience had the highest mean score (M = 28.30, SD = 8.01) and those with more than 15 years had the lowest (M = 26.14, SD = 7.03), these differences were not statistically significant. Thus, experience does not appear to substantially influence Knowledge Enabler scores in the current sample. Therefore, the Null Hypothesis (H0d) cannot be rejected and it can be assumed that there is no difference in mean of perception of faculty members on the impact of knowledge enabler factors on adoption of KMS based on designation.

(e) Comparison between State and Central Universities

Table 10: Perception on KMS adoption factors across State and Central Universities respondents

Category of University	N	Mean	Std. Deviation	Std. Error Mean	t	df	P-value	Mean Rank	Mann-Whitney U	Z-value	P-value
State University	197	26.98	7.85	0.56	-.192	358	.848	178.05	15573.0	-.492	.623
Central University	163	27.14	6.80	0.53				183.46			

An independent samples t-test was conducted to examine differences in Knowledge Enabler scores between State and Central University respondents. Results indicated no significant difference between State University (M = 26.98, SD = 7.85) and Central University (M = 27.14, SD = 6.80) respondents, t(358) = –0.192, p = 0.848. A Mann–Whitney U test confirmed this finding, showing no significant difference in mean ranks (U = 15573.0, Z = –0.492, p = 0.623). These results suggest that the category of university does not substantially influence Knowledge Enabler scores in the current sample.

Conclusion

The study aimed to determine the factors that affect the adoption of Knowledge Management Systems (KMS) in the universities in Assam and to examine faculty members' perspectives of the influence of these factors on KMS adoption. Findings of the study reveal that there are three factors that impact the adoption of KMS among faculty members of State and Central Universities of Assam. The factors were extracted from a 9-item scale that was used in the research and are named as Strategic Knowledge Infrastructure, KM Capability Development and KM Implementation Support. Among these factors, based on mean and standard deviation values, Strategic Knowledge Infrastructure factor is perceived more favourably by the respondents than the other two

factors so far enablers are concerned related to adoption of KMS by them. A significant empirical finding is that faculty perceptions of KMS adoption factors exhibit considerable stability across essential demographic and occupational categories. Independent samples t-tests and one-way ANOVA tests consistently demonstrate no significant variations in Knowledge Enabler scores based on gender, age group, designation, experience, or type of university (State versus Central). Even when mean differences are evident descriptively (e.g., marginally elevated scores within the 46–55 age range or among Associate Professors), they lack statistical significance. The Mann–Whitney U test for university category supports these results, confirming that institutional category does not significantly influence perceptions of knowledge enablers.

Thus, it can be concluded that the implementation of KMS in the chosen universities seems to be influenced more by Strategic Knowledge Infrastructure, KM Capability Development and KM Implementation Support factors than by the demographic or positional attributes of the faculty. Further, the lack of substantial group differences indicates a widely held belief among teachers that the conducive atmosphere for KMS is largely consistent, irrespective of gender, age, rank, experience or institutional type. This means that efforts to attract more people to use KMS should focus on changes at the system level, like improving infrastructure, processes, leadership commitment, and strategic alignment, rather than on individual groups of teachers. Therefore, the best way to get more faculty members to use KMS is to systematically activate these core enablers and make knowledge management a strategic priority for the university as a whole, instead of relying on demographic differences to bring about change.

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