

# **Why Knowledge Infrastructure Capability Matters for Faculty Knowledge Management Engagement in Higher Education of Pakistan?**

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## **Abstract**

The study's purpose is to establish the impact of Knowledge Infrastructure Capability on Individual Knowledge Management Engagement in Pakistani institutions via Degree of Knowledge Base with Incentive System, with an emphasis on the university sector which is one of the world's most booming businesses. The study's major objectives are to look into faculty knowledge engagement in universities and the practices used by Pakistani businesses to increase staff knowledge engagement. It is undeniable that the Pakistani education industry is under pressure to engage its instructors to stay competitive. Approximately 210 university faculty members provided the study's main data. After data analysis our hypotheses are get accepted. The overall conclusion of the poll suggested that Pakistani institutions might grow by involving their employees and being more aware of global educational trends. Engagement in knowledge management is certainly crucial in the workplace of a university. This research has been shown to represent all of Pakistan's universities as well as other sectors, regardless of field. In a nutshell, knowledge infrastructure's capability is determined by three factors: technology, structure, and culture. All of these factors are centered on employee knowledge management participation at work and at home, which is derived from an employee's work ethic and environment.

**Keywords:** Knowledge Management Infrastructure, Individual Knowledge Engagement, Incentive system, Pakistani universities.

## **1. Introduction**

Knowledge Engagement is the most vibrant issue and there is a substantial body of literature available on the topic in which researchers recommended strategies to improve Knowledge Management (KM). Although all of the principles are valuable to implement, it has been noticed multiple times that little work has been done in the discipline of Faculty Knowledge Management Engagement (FKME). According to Shujahat et al., (2019) Knowledge Management has a significant impact on performance regarding innovation. KM is the core function of the institutions which cultivates most of the outcomes of culture, including organizational performance, knowledge application, and competitive advantage. The two most important components are the knowledge management infrastructure and the knowledge management methodology.

Tseng and Fan (2011) is defined as how involved knowledge worker is in the knowledge management initiatives of the organization. Enterprises must use their existing knowledge

while also develop new information to choose a better position in the market and compete effectively with other businesses (Cohen & Levinthal, 1990). The maximization of social capital is aided by three essential infrastructures: technical, structural, and cultural. The presence of norms and trust mechanisms is referred to as structural infrastructure, and these infrastructures aid in boosting organizational effectiveness and performance by helping to promote organizational effectiveness and performance (Nonaka, 1995). The organization must be able to efficiently store, reconcile, transform, and convey knowledge to keep the infrastructure knowledge management (KM) process work smoothly (Sanchez & Mahoney, 1996).

Individual knowledge management engagement has received very little attention, even though a substantial study has been done on Knowledge Infrastructure Capability and Knowledge Process Capability (Shujahat et al. 2019). As a result, additional research into the relationships between Knowledge Infrastructure Capability, degree of knowledge base, and individual knowledge management engagement is needed in developing countries. Many studies have been conducted on knowledge management and the knowledge management process, but little study has been done on IKME and the productivity of the worker. This variable will have a positive effect if it is employed as a mediating, intervening, and interacting variable with individual knowledge management engagement. Individual knowledge management engagement is a crucial concept in knowledge management for theoretical advancement, practical consequences, and research extension, yet there is only a small body of literature on the subject (Butt, et al., 2018).

Numerous studies on the influence of IKM and the Degree of Knowledge Base have been undertaken, however, additional research into individual knowledge management engagement, knowledge-base degree, and their impact on developing countries is still needed. Actual knowledge management, according to Eskandani et al. (2015), can make the procedure easier. It simplifies the operations of data collecting, conversion, application, and protection, as well as meeting current advancement requirements. It improves the execution of innovative ideas by nurturing new mentalities and capacities.

When an organization has a large knowledge base, it generates a lot of individual knowledge. If universities focus on the care methods one at a time, they may be able to completely change the game and deal with the challenges. A lack of knowledge competencies leads to low IKME. To sustain the infrastructure knowledge management (KM) process (Sanchez & Mahoney, 1996), the firm must effectively store, reconcile, convert, and transport knowledge, and this can only be accomplished if professors are actively involved in knowledge management.

There is still a lot of potential for research on the short- and long-term effects of university faculty knowledge management. The objective of the study is to determine the effects of knowledge infrastructure, which can either improve or eliminate competence, by doing additional research. In the health industry, examining infrastructure and process capabilities, as well as the impact of knowledge management and knowledge engagement on industrial competence, could be an interesting approach (Haughom & Advisor 2014).

## **2. Literature Review**

The method, function, and discipline of fostering a culture of knowledge generation, sharing, and application for enhanced innovation, organizational performance, and competitive advantage is known as knowledge management. The two most important components are the knowledge KM and KM processes which has been highlighted in his study. (Shujahat et al. 2017). These knowledge management aspects, according to this study, are ineffectual unless

each individual worker participates in knowledge management procedures and infrastructure (Tseng & Fan 2011). Individual knowledge management engagement is a person's perception of their level of involvement in an organization's knowledge management efforts (Tseng & Fan 2011). Among many concepts relatively undervalued conceptions and KM contrasts of knowledge management, it is well known findings to the researchers for Knowledge management while limited knowledge is available of the subject (Tseng & Fan 2011; Cabrera et al. 2006). Tseng and Fan (2011) had research on IKME and the same has in the job Satisfaction and Job Performance on the wider model. The consequences have been proven to be important and beneficial.

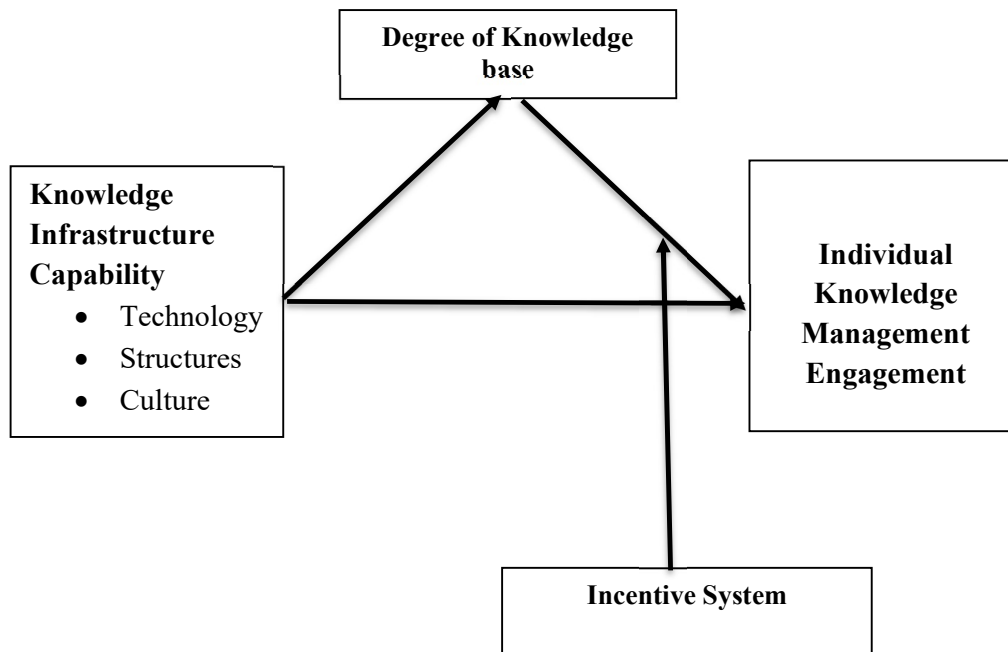
Knowledge base views theory claims that institution or organization depends on relevant knowledge resources for gaining edge at the market place (Shujahat et al. 2017). This is due to the resource's based view theory, value, and difficulty in duplicating it. As a result, as compared to competitors who do not try to build, spread, and use these knowledge resources, the comparative organizational performance of the firm that tries to produce, distribute, and use them will improve with sustainability (Costa & Monteiro 2016). As a result, getting instructors involved in knowledge-related activities can help them become more productive. Many employees in diverse firms, however, continue to be unaware of or uninterested in the value of knowledge infrastructure skills. There is a need to explore the relationship between knowledge process skills in corporate culture and knowledge-intensive sectors so that knowledge management practices may be implemented easily by each section of the organization (Heavin & Adam, 2014).

In the field of knowledge acquisition, the process of obtaining knowledge holds an essential place. It is a process of getting data, establishing new sources of knowledge, gaining knowledge from various sources, capturing it, and collaborating. All of these terms are interchangeable. Knowledge acquisition approaches reinforce sustaining the ability and develop it to a more effective form for future applications (Bloodgood, 2019). Existing Knowledge can be [RW1] transformed into something more valuable and practical for the organization using the conversion knowledge management process. Knowledge conversion requires appropriately organizing Knowledge, merging several sources of information into an accessible manner, and developing a framework to help knowledge conversion. The distribution of Knowledge is also a crucial component (Zaim, Tarim, & Muhmmad, 2019). [RW1] Refine the language. Use literary language. Get it edited by some linguistic experts. The technique for putting knowledge to use is known as knowledge application. According to the research, if an organization can develop knowledge, it is expected that it will apply it more successfully. Knowledge application improves an organization's efficiency, effectiveness, productivity, and cost-cutting efforts (Ahbabi, Kumar Singh, & Sreejith, 2019).

### **Research Model & Hypotheses**

The hypotheses, as mentioned below are tested in various universities of the twin cities of Pakistan. To investigate the faculty knowledge management engagement, H<sub>1</sub> to H<sub>5</sub> Hypotheses were formulated are described as follows:

Figure 1. Theoretical Framework for the Knowledge Infrastructure Capability



**H<sub>1</sub>:** Increase in Knowledge Infrastructure capability could enhance the individual Knowledge Management Individual.

**H<sub>2</sub>:** Increase in Knowledge Infrastructure capability could enhance the degree of knowledge-base.

**H<sub>3</sub>:** Increase in the Degree of the Knowledge base could enhance the individual Knowledge Management Individual.

**H<sub>4</sub>:** Degree to the knowledge base has a mediating role between Knowledge Infrastructure capability and Knowledge Management Engragement.

**H<sub>5</sub>:** Incentive system in an organization can enhance the individual knowledge management engagement.

### 3. Research Methodology

#### 3.1 Data Collection process

The quantitative data for this study was collected utilizing a closed-ended questionnaire and a data collection procedure. With the support of literature analysis, the questionnaire was built from various studies. All the items were well measured on the 5-point Likert scale, from strongly disagree to strongly agree. Intangible copies of the questionnaire were delivered to numerous university faculty members. Primary data sources were employed to compile the information for this study. Preliminary data was gathered through the questionnaire source, as the author acknowledged. A questionnaire survey is used to collect data in an uncontrolled environment. All of the elements used to assess the independent and dependent variables are rated on a Likert scale of 1 to 5, with 1 indicating "strongly disagree," and 5 meaning "strongly agree."

### 3.2 Research Instrument

The latent variables are proposed by choosing variables that have previously been demonstrated to be dependable and valid. All factors were chosen on a Likert scale of 1 to 5, with 1 indicating substantial disagreement and 5 indicating great agreement. Individual participation in knowledge management was created by (Tseng & Fan, 2011). The proportion of compensation that is performance-based (bonus=salary), the percentage bonus that is formula-based vs discretionary, and the percentage bonus that is based on corporate performance versus business-unit success are all metrics of incentive systems (Gupta and Govindarajan, 1986). Knowledge infrastructure capabilities were developed in 2001. (Gold, Malhotra, & Segars, 2001).

### 3.3 Reliability and Validity of the Instrument

The reliability of the instrument is measured through Cronbach's Alpha which is given below like for Faculty Knowledge Management Engagement (FKME) is 0.84, while for DKB is 0.89, IC has 0.92 and KIC has 0.82, the given values are above the threshold value of 0.7. This indicates that the instrument is reliable.

**Table: Reliability of the Instrument**

Item Name	Cronbach's Alpha
FKME	0.84
DKB	0.89
IC	0.92
KIC	0.82

Note: FKME= Faculty Knowledge Management Engagement, KICB = Knowledge Infrastructure capability, DKB = Degree of Knowledge Base

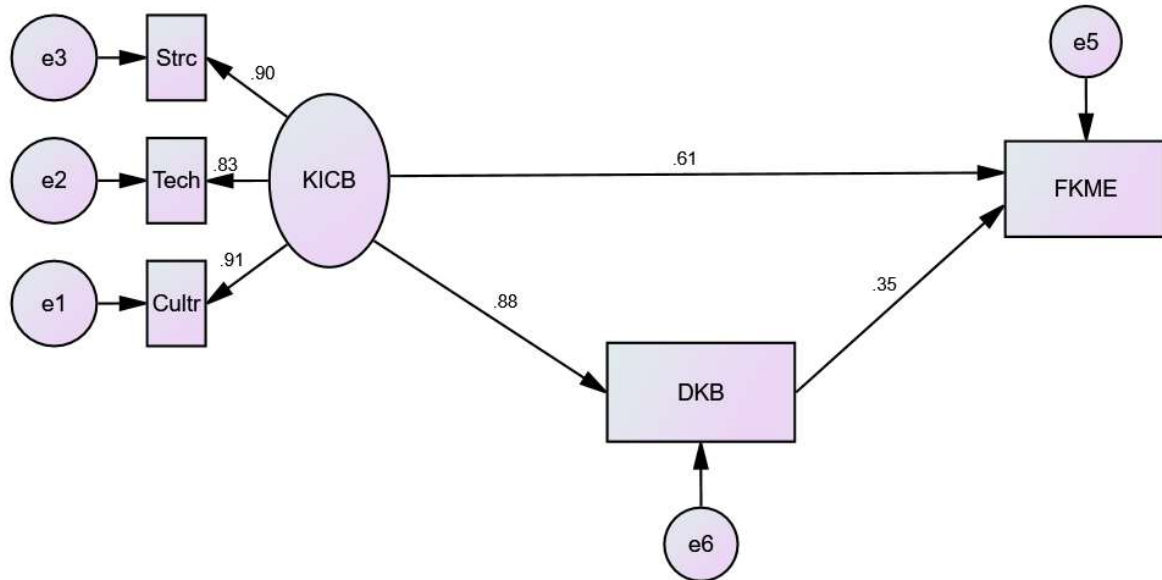
Reliability is determined by Cronbach's Alpha value, the data is supposed to be reliable if the value is above or equal to 0.70 (Cronbach, 1951). The reliability of values are for FKME is 0.84 which is above the threshold value of 0.70, while DKM is 0.89, IC is 0.92 and KIC is 0.82. Moreover, the validity of the instrument has been checked through the face and content validity, for this three academicians and three industrial experts have checked the content and theme of the instrument. They suggested minor language related changes which are incorporated.

### 4. Data Analysis and Results

SPSS and AMOS are the two most well-known data analysis tools. The fundamental distinction between these two applications is that SPSS is employed for statistical analysis, and AMOS is utilized for model fit statistics. The information gathered from the study's target audience is utilized to construct a data sheet using SPSS. Using both direct and indirect effects, the hypothesis was accepted at a significant 0.05 level. One of the most dependable tools for path analysis is structural equation modeling. The moderating effects of knowledge management and organizational culture were discovered to have a positive impact on competitive advantage,

the entire model was appropriate, and all values were within an acceptable range. As a result, the truth of H1, H2, and H3 was established.

Figure 2. Path Analysis



According to the findings of the study, individual knowledge management engagement has a positive relationship with knowledge infrastructure capabilities. Assume that ( $\beta = .61, p = .000$ ) is true. The first assumption is correct. Furthermore, with a correlation value of 0.64 and a p-value of 0.05, the correlation coefficient between the two constructs reveals a positive and significant association. This illustrates the need for Knowledge Infrastructure Capability for firms to engage in knowledge management and, as a result, create organizational success.

Figure 3. Hypotheses Result

Connection Between Variables	$\beta$	Critical Value	Sig.	Status
$\beta_1$ (FKME←KICB)	0.61	11.48	0.00	Supported
$\beta_2$ (DKB← KICB)	0.88	25.12	0.00	Supported
$\beta_3$ (FKME←DKB)	0.35	7.05	0.00	Supported

Note FKME= Faculty Knowledge Management Engagement, KICB = Knowledge Infrastructure capability, DKB = Degree of Knowledge Base

The findings of this study support the alternative hypothesis H2, indicating that Knowledge Infrastructure Capability is positively and significantly connected to Knowledge Base Degree. Furthermore, with a correlation value of 0.54 and a p-value of 0.05, the correlation coefficient between the two constructs reveals a positive and significant association. Furthermore, the beta coefficient of the link between KICB and DKM is 0.88 at a 0.05 p-value, indicating that KICB is a prominent aspect and plays a vital role in DKB. This shows that institutions should prioritize KICB to increase DKB, which will eventually contribute to organizational growth. Similarly,

H3 suggests that a Degree in Knowledge Base has a positive and significant impact on faculty knowledge Management Engagement, with a beta value of 0.35 and a critical value of 7.02. This emphasizes the significance of DKB. H3 DKB has a positive and strong impact on FKME, with a beta of 0.35 and a critical value of 7.02.

**Figure 4. Conditional Indirect Effects of Degree of Knowledge Base on Faculty Knowledge Management Engagement through Incentive System**

Antecedent	Consequent						
	M (DKB)			FKME (Rep. Int.)			
	$\beta$	SE	<i>p</i>	$\beta$	SE	<i>p</i>	
<b>M (DKB)</b>	–	–	–	$b_1$	0.421	0.067	0.04
<b>V (IS)</b>				$b_2$	0.313	0.034	.002
<b>M X V</b>	---	---	--	$b_3$	0.120	0.043	.021
<b>Constant</b>	2.456	0.032	< .001		1.331	0.378	.000

Note FKME= Faculty Knowledge Management Engagement, KICB = Knowledge Infrastructure capability, DKB = Degree of Knowledge Base, IS= Incentive System.

For alternative hypothesis H4, the findings of this research study reveal that the Degree of Knowledge Base Ban mediates between Knowledge Infrastructure Capability and Faculty Knowledge Management Engagement. It also has a beta of 0.41 and is statistically significant at the .00 levels.

**Figure 5. Mediator Model**

Notions	Total Effect	Direct Effect	Indirect. Effect (a*b)	Sig	Status
<b>KICB-DKB-FKME</b>	$\beta = .82$	$\beta = .52$	$\beta = .541$	Significant	Partial
	$p = 0.00$	$p = 0.002$	$p = 0.03$		

Note FKME= Faculty Knowledge Management Engagement, KICB = Knowledge Infrastructure capability, DKB = Degree of Knowledge Base; \*\* $p \leq 0.05$

Because both the indirect and direct paths were positive, it is deemed partial positive. Mediation was used in this case, and the outcome was regarded as favorable and significant. As a consequence, it shows that the Degree of Knowledge Base mediates the relationship between KIC and FKME. It also means that when DKB creates a link between KICB and FKME, there will be interaction. As a result, it was classified as a partial positive mediation once more.

## 5. Study Discussion

According to Andrewh et al. (2018), the capacities of the knowledge infrastructure depend on three more dimensions: technological advancement, organizational structure, and cultural norms. The participation of each individual in the management of knowledge is influenced in some way by these dimensions. Technology allows for creating new information and

disseminating that information in a way that is useful to everyone. The company can make better use of its existing expertise thanks to the technologies for applying knowledge. A prior study found that technology is advantageous for any organization since it can develop, maintain, manage, and preserve data on a company's customers, partners, employees, and suppliers. This is one of the many ways technology can help a business (Mcdermott, 1999). According to Teece (2000), one of the most important aspects of a firm is its internal structure. Any organization's formal structure may encourage the employees to manage the organization's knowledge. This is true of both large and small businesses. The organizational structure needs to be flexible and adaptable to be successful. In addition, the organization needs to foster an environment conducive to the management of knowledge, the expansion of expertise, and the degree of a knowledge base. Any efforts linked to knowledge management ought to be supported and promoted by the overarching culture of any and every company. Through cultural molding, individuals become better able to effectively and efficiently handle their information. A dysfunctional corporate culture may be the most significant barrier to effective knowledge management (Long, 1997). Individual knowledge management engagement can be operationally defined as the degree to which a knowledge worker participates in knowledge management-related activities within an organization, as stated by Tseng and Fan (2011). This is the operational definition of individual knowledge management engagement. Organizations use knowledge management techniques to collect information from a wide range of skill sets and present it as a valuable asset crucial to the organization's performance. These strategies are essential to the organization's success (Afzal & Afzal, 2014).

### **5.1 Theoretical Implications**

Present study has significant addition to the body of knowledge like the role of incentive base system is very important in this regard when we need to engage our employees. None the less, the degree of knowledge base is another significant addition to this construct. Because the current study utilizes a novel combination of variables, the theoretical framework is similarly novel and original because it has never been done before, facilitating future research in the same area, regardless of the complexity of the variable combinations. Degree is the Knowledge base is of significant domain because it increases employee engagement, promotes the formulation of practical initiatives, and gives a competitive advantage. As a result, most institutions have taken steps to identify and appreciate the factors influencing employee participation in knowledge management. This study focuses on the moderating effect of incentive structures and examines knowledge infrastructure capability and individual knowledge management engagement that is significant contribution to the body of knowledge.

### **5.2 Managerial Implications and Recommendations**

Every university places a high value on faculty Engagement in knowledge management. Only a small percentage of institutions, on the other hand, go to significant measures to promote faculty knowledge management participation among their personnel. Colleges are encouraged to make the most of information to enhance their work processes. More precisely, the sector must ensure that knowledge infrastructure capability is innovative and that knowledge infrastructure is utilized to the utmost extent possible for the advantage of universities. Based on this study, results reveal the direct effect of knowledge infrastructure capabilities on faculty knowledge management engagements at universities. According to previous researches, universities have a significant impact on employee engagement and performance. Universities are vital to the social and economic growth of a country. Furthermore, the education sector contributes to Pakistan's general growth and development favorably and beneficially. As a



result, this study emphasizes the importance of universities in this system, particularly faculty members.

### 5.3 Limitations and Future Directions:

The present study has many limitations like the data is cross sectional while longitudinal data may enhanced the validity of the study. For further studies the relation between Knowledge infrastructure capability and Faculty Knowledge Management Engagement may have new mediating and moderating variable. Testing the mediated moderating effects on these variables should be examined in other universities to get the vast information about these variables that from how much intensity these variables effect the faculty engagement.

### 5.4 Conclusion

This research is assisting in highlighting a knowledge infrastructure competency gap in Pakistani institutions, which is one of the most essential variables. It also supports in determining the various consequences of each of the three knowledge infrastructure capability sequels on firm workers' faculty knowledge management engagements. One of the most important goals of this research was to assess whether Pakistani Education policy makers should concentrate their efforts on improving the sector by going beyond typical regulatory procedures and fostering positive transformation. The goal of this study is to look into and evaluate all of the methodological tools that have been utilized to look into faculty knowledge management in Pakistani universities. This study highlights both the lack of a suitable tool for this as well as the importance of faculty knowledge management in the organization's creation and maintenance of knowledge to improve teaching. Additionally, we can see as the Knowledge Infrastructure capability in universities would be advantageous to Faculty Knowledge engagement with the help of this study. That could be a great tool for universities to gain edge over competitors by assisting them in increasing output, and growth and competing with challenging organizations and other institutions' competitors.

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