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Impact of Knowledge Management Environment on Knowledge Sharing Processes

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Abstract- The purpose of this study is to examine the mediating effect of organizational cultural factors on knowledge sharing processes in the banking sector of Pakistan.A survey technique was used for the collection of data. The data was collected by email and onsite survey. The collected data was analyzed using Windows PLS Smart.The results show that knowledge management environmental factors (tacit and explicit), plus the organizational factors (collaboration, trust, and learning) have significantly and positively contributed to knowledge sharing processes (internal and external) in Pakistan's banking sector.This study sets out to explore knowledge management as a set of processes and cultural and environmental aspects that affect knowledge sharing in the banking sector of Pakistan. This relationship has not yet been investigated in the context of the banking sector of Pakistan. By managing knowledge, organizations can gain a competitive advantage in local as well as international markets. This study is helpful for organizations for the creation of a collaborative culture which can enhance employees' knowledge and the success of the organization. This study is also a contribution to existing literature on knowledge management.

Keywords: Knowledge Management, Knowledge Sharing, Knowledge Based Systems, Organizational Culture, Organizational Behaviour, Banking.

I. INTRODUCTION

Irrespective of the firm's size and structure, most organizations strive to manage knowledge efficiently to gain a competitive advantage in the national and international markets. Because of globalization and technological advancements, the nature of work, organizational culture, decision making, communication, and information have changed over time. These factors cause pressure on the organization's ability to respond quickly to change and also affect its survival. The knowledge economy has replaced the industrial economy. Knowledge management is essential for enhancing collaboration among groups and nations. But it is a challenge for organizations in terms of how they respond to these changing technological advancements, expanding the significance of international business and individual needs. In this century of knowledge, corporations use knowledge acquisition as a tool for getting competitive rewards. Organizations make knowledge transferable and entrench it in their organizational memory for productive use. To accomplish this, a base of knowledge is used that boosts the influences of the knowledge sharing process(Grant, 1996a; Zheng et al., 2010). Providing a customized knowledge sharing database for each sub-institution is a part of supported culture.

To accomplish this, a base of knowledge is used that boosts the influences of the knowledge sharing process (Grant, 1996a; Zheng et al., 2010). The development of knowledge as a source and a means of competitiveness increased its adoption in knowledge-practicing organizations (Roberts, 2017). These procedures are maintained to deal with the difficulties of knowledge disintegration, locality, changeability, severance, and to boost knowledge memory (Alegre et al., 2013; M. H. Zack, 1999).

Previous studies have shed light on the edifice of conceptual framework for knowledge management (Alavi & Leidner, 2001; Wiig, 2003), theory building (Spender, 1996), and the practical uses of knowledge (Ruggles, 1998). Numerous studies have been undertaken on building integrative knowledge

management models (Ki-Sik, 2006; H. Lee &Choi, 2003), and on the relationship between climate, organizational culture, system and knowledge management performance (Bae, 2002; Fonseca, 2003; S. Y. Lee, 2005; Pérez-Nordtvedt, 2005; Zheng et al., 2010).

In this study, knowledge management in the banking sector of Pakistan is explored as a set of cultural and environmental aspects, and processes which can affect knowledge sharing. Organizational culture augments knowledge sharing among employees and requires that they collaborate with one another for the enhancement of their knowledge and organizational success.

According to organizational literature, knowledge sharing has been defined from different perspectives. It is the practical approach to organizational learning and has developed from three models: a stimulus response (Dierkes et al., 2003; March, 1991; Meyer, 1982; Weick, 1991), information handling (Huber, 1991), and knowledge making (Argote, 1999; Nonaka, 1994). According to Song (2008), knowledge sharing is a knowledge–creation procedure and human collaboration which highlights the dearth of thought in the aforesaid viewpoint in Pakistani organizations, particularly in the banking sector. knowledge management variables based on organizational culture, consisting of trust, learning and collaboration that can boost the knowledge sharing among the organizational members should be verified (Alavi et al., 2005). Hence, this paper will investigate the association between the knowledge management environment, the organizational culture, and the knowledge-sharing process in the banking sector of Pakistan.

The aim of this study is to enquire about the individual perceptions of the knowledge management environment, organizational culture and knowledge sharing in knowledge-management-practicing banking corporations in Pakistan. This study investigated the associations of a knowledge management environment (knowledge management explicit and knowledge management tacit), organizational culture (collaboration, learning trust), and knowledge sharing process (internal knowledge sharing and external knowledge sharing).

Significance of the Study

This study fulfills the research gap and emphasizes on both internal and external knowledge sharing. By implementing this study, organizations can improve the performance of their employees by sharing internal and external knowledge and thereby gain a competitive advantage in local and international markets. This study will help organizations create a collaborative culture which enhances employees' knowledge and the success of the organization, while also contributing to existing literature on the subject.

II. THEORETICAL FRAMEWORK AND HYPOTHESES

The conceptual structure of this research is based on theories of organizational capabilities, knowledge creation and organization learning literature (Argote, 1999; Andrew H. Gold et al., 2001; Grant, 1996b; Nonaka, 1994). Knowledge creation theory demonstrates the ways of creating, sharing and embedding knowledge in the organization. The two perspectives of knowledge management are structure and procedure (Davenport & Prusak, 1998; Wiig, 2003). The knowledge infrastructure consists of organizational culture, arrangement and technology, while a knowledge management process consists of acquirement, creation, allocation, and alteration.

The effective and efficient usage of knowledge management as a tool of competitive advantage and higher firm performance is widely acknowledged in existing knowledge management literature (Magnier-Watanabe & Benton, 2017; Zaim, 2016). According to Alavi *et al.*(2005), Gold *et al.*(2001) and Zheng(2005) the impact of a knowledge management environment on organizational culture and the knowledge sharing process needs to be investigated. The constructs that are developed from the literature review, which are highly relevant to knowledge management, are presented in Figure 1. Knowledge management explicit and knowledge management tacit form a knowledge management environment. Collaboration, learning, and trust form the organizational culture (i.e. infrastructure). Internal and external knowledge sharing forms a knowledge sharing process, (i.e. knowledge management process). But first, let us define all the variables of the construct.

Figure 1. Theoretical Framework

III. LITERATURE REVIEW

Knowledge

Different scholars have defined knowledge differently. According to D'Eredita and Barreto(2006), Nonaka and Toyama(2003)and Zaim(2016), knowledge is useful when properly ordered, categorized, given a shape, and used in the right way.

Defining knowledge, Alavi and Leidner(2001)say that it's associated with information that only occurs in the minds of individuals. According to Nonaka(1994), knowledge is an acceptable true belief. Knowledge can also be defined as knowing something about everything, or knowing everything about something. According to Davenport and Prusak(1998), knowledge is a combination of practices, ideals, information, and expert opinions. It provides a basis for evaluation and incorporation of new information. In organizations, knowledge is rooted in both documental sources and in organizational cultural practices.

Knowledge Management

Knowledge management has made progress in the last two decades, and has become a common function in business corporations, as stated by Martelo-Landroguez and Cepeda-Carrión(2016) and Zack *et al.*(2009). Existing literature shows that studies on knowledge management and its implementations have been increasing rapidly (McAdam & McCreedy, 1999).

According to Skyrme(2011), knowledge management is the explicit and organized management of important knowledge and its linked process of creation, diffusion, organization, exploitation and use in achieving business objectives. Popadiuk and Choo(2006), stated that knowledge management is a collection of intellectual capital to produce monetary value. Intellectual capital is the knowledge about all stakeholders of the organization.

The importance of knowledge management cannot be denied because well and proficient management of knowledge has been proven to result in greater organizational performance (Andreeva & Kianto, 2012; Magnier-Watanabe & Benton, 2017; Zaim, 2016).

Tacit Knowledge Management

Knowledge is a result of continual interactions amid tacit knowledge and explicit knowledge. Tacit knowledge is that which is rooted in the mind of individuals. It has a personal quality, and is not easy to explore and communicate. Tacit knowledge is subterranean in commitments and actions in a particular context. According to Polanyi (1966), it is a complete cognizance of a human's mind and body. Tacit

knowledge is made up of technical and cognitive aspects. The cognitive model is also called the mental model because human beings create different models in their minds about what they see in the world.
The working models which are included in the mind are paradigm, beliefs, schemata, and viewpoints that provide stances to help individuals describe and perceive the world. The mechanical component of tacit knowledge embraces specific knowingness and skills about the particular situation. Tacit knowledge is a perpetual act of knowing and embodying, which is referred to as an analogue quality by Bateson (2000).
Organizations provide both formal and informal opportunities to their employees to share their knowledge and mutually discuss problems for understanding and resolving them. This is the way through which tacit knowledge can be explored through the mind of individuals. Brown and Duguid(2001), stated that tacit knowledge mostly exists in individuals' minds; it may consist of their experiences and memories and also exists in the societal fabric of corporations. Garrick and Chan (2017) stated that transfer for tacit knowledge is problematic.

Explicit Knowledge Management

In contrast to tacit knowledge, explicit knowledge can be communicated and transmitted in systematic language. It is also known as codified knowledge, which can be shared easily. Explicit knowledge is digital in nature and is captured via historical records such as databases, archives, and libraries. Explicit knowledge can be obtained from databases and documents of the organizations that can be shared and saved conveniently.

Organizational Cultural Factors

According to Hansen *et al.*(1999) and Leonard-Barton and Sensiper(1998), several factors such as culture, technology, strategy, and leadership can interact and affect knowledge management's cultural effectiveness, creating an environment to enhance it. The factors of organizational culture that support this research are collaboration, learning, and trust.

Collaboration

Collaboration is a mix of efforts by individuals to work in a group to achieve shared goals. The trust factor does not support collaboration but even then, both sometimes look synonymous. Collaboration is a behavior of individuals that encourages them to work with others to accomplish common goals. According to Eisenberger*et al.*(1990), collaboration breeds feelings of value among employees and motivates them to innovate in the best interest of the organization.

Trust

Different researchers have defined trust in different ways. According to Krogh (1998), trust is reciprocity while Johnson-George and Swap (1982), define trust as a keenness to take risks. Dirks and Ferrin(2001), define trust as a degree of dependability and the intensity to which individuals care for common interest. Trust is an organizational cultural element that supports knowledge sharing, is a concept rooted in organizational culture, and provides a base for building relationships among group members.

Learning

Learning is a knowledge-seeking process. It is a life-time process. Organizations provide various formal and informal learning opportunities to their employees to enhance their knowledge, skills and visions, so that theycan augment the organization's effectiveness. Formal learning is one which is achieved through identical processes, while informal learning is obtained from social interactions and networks (Marsick, 2009). Learning is an organizational, cultural variable which assists the knowledge sharing process. Organizations with aims to gain a competitive advantage should provide learning and training opportunities to their employees.

Knowledge Sharing Process

Nonaka *et al.*(2000), introduced four models of knowledge conversion known as socialization, externalization, combination, and internalization. The socialization model converts tacit knowledge to tacit knowledge, the externalization model converts tacit knowledge to explicit knowledge, the combination model converts explicit knowledge to explicit knowledge, and the internalization model converts explicit knowledge to tacit knowledge. The knowledge sharing process is developed to make knowledge flow and to create synergies among the members of the organizations (Boateng et al., 2017; Van Den Hooff & Ridder, 2004).
According to Nonaka *et al.*(2000), the SECI model is used to create knowledge from individuals that is then applied in multiple departments of organizations. The conditions for creating, sharing and utilizing knowledge as described by the same study (Nonaka et al., 2000) are commitment, love, care, creative chaos, trust and autonomy. It is the knowledge management environment and organization culture that can provide the foundation for creating and sharing knowledge that will be helpful in measuring its influence on the knowledge sharing process.
Knowledge sharing has been investigated in the contexts of worker communication, knowledge sharing networks, health, emergency services, academia, and information technology (Fullwood et al., 2013).

According to Hendricks (1999), knowledge sharing is a continuous action between communication and information distribution. The knowledge sharing process consists of internal knowledge sharing and external knowledge sharing while the knowledge management environment consists of knowledge management tacit, and knowledge management explicit.

Internal Knowledge Sharing

Knowledge sharing is the dissemination of information from one system to another system, from one person to another person, from one group to another group and from one organization to another organization via a physical or virtual space. Organizations create a database for knowledge management effectiveness. Knowledge from this database is used for solving problems, decision making and application in other departments. Only those organizations that provide opportunities to their employees in building a knowledge sharing environment that strengthens the knowledge sharing process benefit from this database.

External Knowledge Sharing

External knowledge sharing is the sharing of knowledge with other organizations of the same industry. According toKumar and Thondikulam(2006), by distributing knowledge and participating in conferences and ceremonies of other organizations, the participating organizations bring new knowledge, new technologies, and new dimensions back to their organizations. Knowledge sharing of procedures in the banking sector enhanced technological innovativeness. But during the knowledge sharing process, there must be privacy, security, and trust among the knowledge sharing partners.

Empirical Studies on the Knowledge Management Environment, Organizational Culture, and the Knowledge Sharing Processes

The proposed associations amid concepts are investigated by empirical studies. The success of knowledge sharing is significantly influenced by the organizational culture, Zheng(2005). Three constructs of organizational culture, namely collaboration, trust and learning that effect the knowledge management sharing process are internal and external knowledge sharing. Knowledge culture consists of employee relations, management upkeep and clarity of vision.

Organizational efficacy components are productivity, creativity, and internal and external customer satisfaction. Some studies also linked to organizational culture and the knowledge sharing process. According to Mooradian *et al.*(2006), there is an association between organizational culture and the knowledge sharing process at the team level. This research pays attention to the development of relational trust among team members to share within and without the team. This study proposed the following hypotheses:

Hypothesis 1. The organizational culture mediates the relationship between tacit knowledge management and the knowledge sharing process.

Hypothesis 2. The organizational culture mediates the relationship between explicit knowledge management and knowledge sharing process.

IV. METHODOLOGY

Data Collection Technique and Sample Size

The survey technique was used for the collection of data. The data was collected by email and on-site survey. Branch managers, operation managers, cash officers, credit officers, planning officers, knowledge management experts and knowledge management officers responded to the survey. A total of 440 questionnaires were distributed to 140 branches of different banks located in Multan, Lahore, Karachi, Faisalabad, Sargodha, Bahawalpur, Yazman, and Muzaffargarh. Only 315 questionnaires from 125 branches of the 140 branches were received. Of those, 300 questionnaires were used for data analysis and 15 questionnaires were excluded during the data preparation process.

Instrumentation

A survey instrument was divided into three sections: (1) a knowledge management environment section; (2) an organizational culture section; and (3) a knowledge sharing process section. Questions of the survey were taken from experts in the field of knowledge management. The 11 questions on knowledge management environments (seven on knowledge management explicit and four on knowledge management tacit) have been taken from the work of Popadiuk and Choo(2006). The organizational cultural factors consist of three variables, namely collaboration, trust and learning. The four questions on collaboration have been taken from the work of Burke (1989), while the six questions on trust and five on learning have been taken from the work of Hurley and Hult(1998). The seven questions from the work of Allatta(2005), and Park (2006), have been used for measuring internal knowledge sharing processes by combining their survey tools. The eight questions from the original tools of Gold (2001), were used for external knowledge sharing processes.

V. DATA ANALYSIS AND RESULTS

The SmartPLS software was used to analyze the collected data, because the software is made for the measuring of partial least structural equation modeling. Other software, like LISREL and AMOS, can also be used for this type of data analysis, but SmartPLS was used because it provides the ability to test the complete research at once and display information through interesting graphs. It's the newest, most efficient and easiest software with colorful and graphical interactions.

R-Squared

R-squared, or the coefficient of determination, measures the proportion of change in the dependent variable caused by the independent variable. Henseler*et al.*(2009), has described the rule for acceptance of R^2 as 0.75 substantial, 0.50 moderate, and 0.25 weak. Table 1 and Figure 2 present the results of r-squared which reveal the proportion of a construct's modification in the model while the path coefficients showed the strengths of association between the constructs. In this study, the r-squared of external knowledge sharing and internal knowledge sharing are 0.578 and 0.675 respectively, and so are acceptable considering that, in social science studies, r-squared is acceptable at 0.2 and above. Both r-squared values are greater than the minimum criteria. Therefore, r-squared is significant in this study for acceptance.

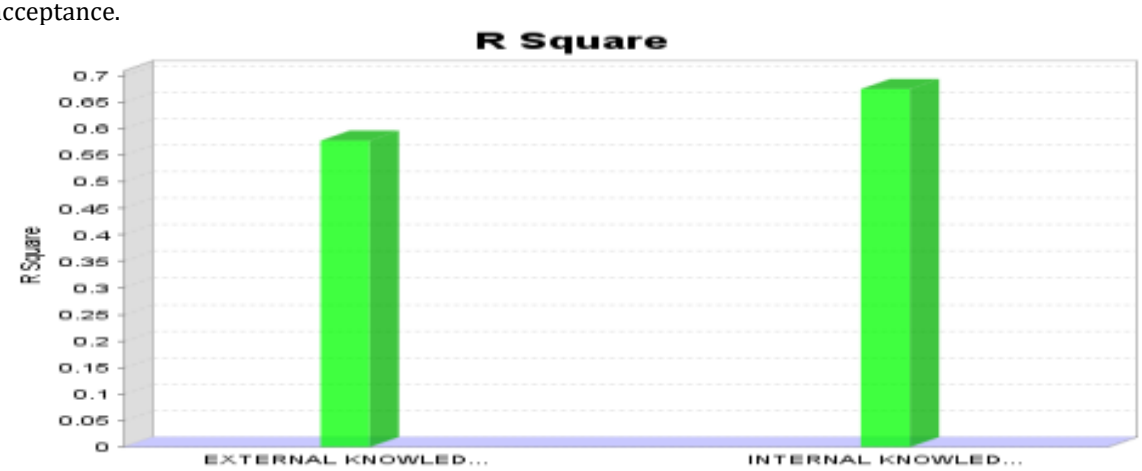

Figure 2. R Square

Adjusted r-squared

Adjusted r-squared is used to provide adjustments to the statistic depending on the number of independent variables in the research model. Adjusted r-squared is used to measure how good of a fit a model is and where variables are more than one. Both r-squared and adjusted r-squared can be used interchangeably where there is a single independent variable in the model. Adjusted r-squared gives better results than the r-squared. Table 1 and Figure 3 present the results of adjusted r-squared of external knowledge sharing and internal knowledge sharing, showing results of 0.571 and 0.670 respectively, which is greater than the minimum criterion of acceptance.

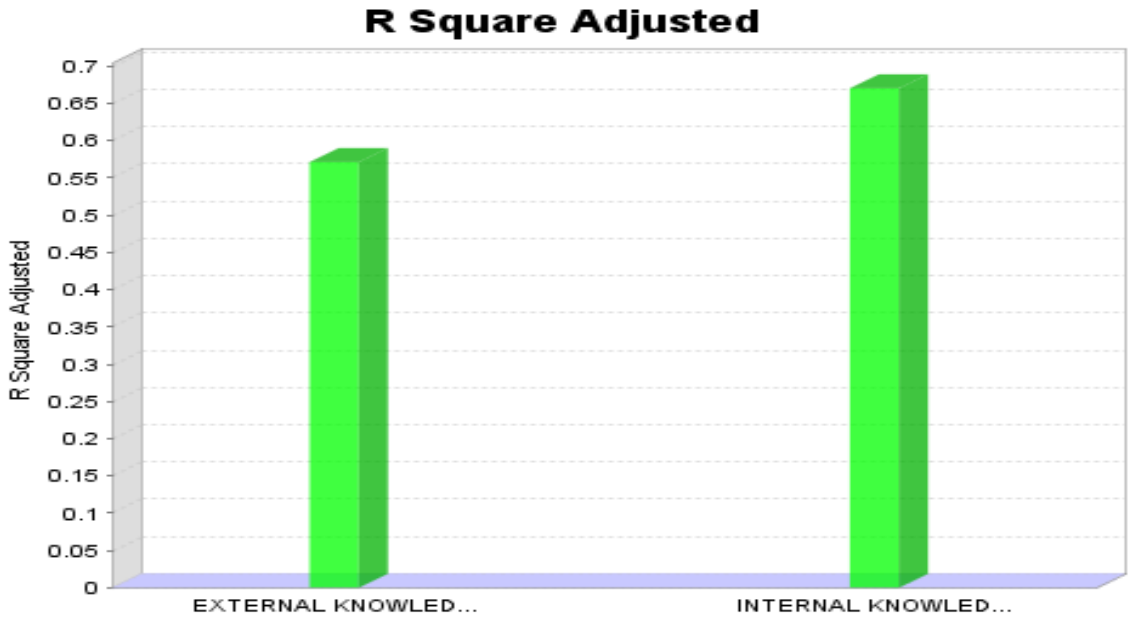

Figure 3. R Square Adjusted

Table 1. R-Squared and Adjusted R-Squared

	R-Squared (R^2)	Adjusted R-Squared
External Knowledge Sharing	0.578	0.571
Internal Knowledge Sharing	0.675	0.670

Composite Reliability

In this research paper, composite reliability is adopted to estimate the reliability of the constructs. According to Hulland(1999), preferred value for composite reliability is 0.7 or above. For an exploratory study, the value of 0.6 or above is suitable (Bagozzi & Yi, 1988). As presented in Table 2 and Figure 4, the results of composite reliability, ranging from 0.892 to 0.918 of all the variables, is significant, as it is greater than 0.7 therefore confirming the reliability of the research constructs.

Table 2. Composite Reliability and Cronbach's Alpha

	Composite Reliability	Cronbach's Alpha
Collaboration	0.896	0.843
External Knowledge Sharing	0.899	0.857
Internal Knowledge Sharing	0.918	0.950
Knowledge Management Explicit	0.902	0.920
Knowledge Management Tacit	0.910	0.926
Learning	0.908	0.849
Trust	0.892	0.878

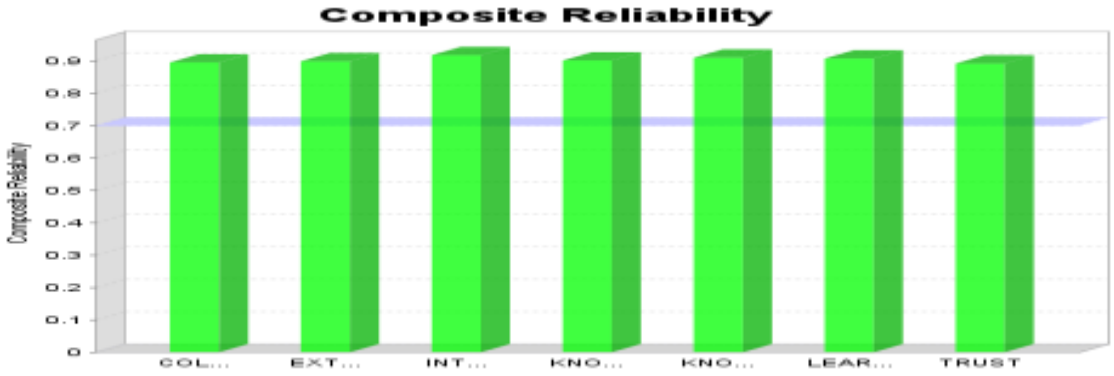

Figure 4. Composite Reliability

Cronbach's Alpha

To measure the reliability of the research construct, Cronbach's alpha technique is also used and must be greater than 0.7 for reliability, according to Nunnally and Berstien(1994). The values of Cronbach's alpha of all variables, as presented in Table 2 and Figure 5, range from 0.843 to 0.950, and so are greater than the standard minimum acceptable value. Since all the variables of this study have significant Cronbach's alpha for acceptance, the reliability of the research constructs is established.

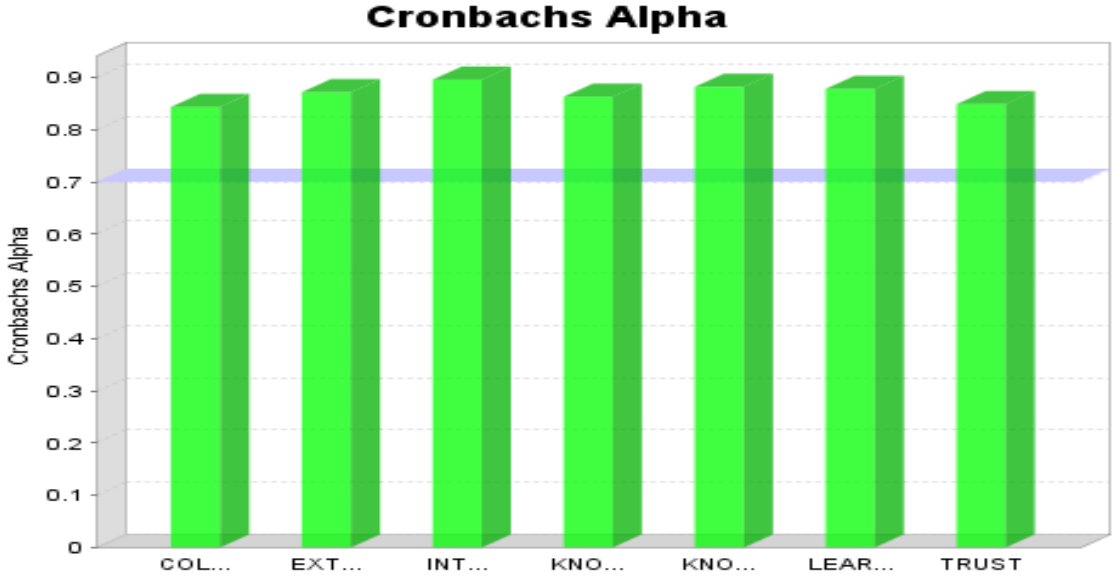

Figure 5. Cronbachs Alpha

Discriminant Validity

Table 3. Latent Variable Correlations

	Collaboration	External Knowledge Sharing	Internal Knowledge Sharing	Knowledge Management Explicit	Knowledge Management Tacit	Learning	Trust
Collaboration	**0.826**						
External Knowledge Sharing	0.635	**0.727**					
Internal Knowledge Sharing	0.667	0.727	**0.785**				

Knowledge Management Explicit	0.647	0.679	0.723	**0.805**			
Knowledge Management Tacit	0.661	0.674	0.757	0.741	**0.793**		
Learning	0.749	0.662	0.697	0.669	0.671	**0.788**	
Trust	0.680	0.630	0.685	0.693	0.714	0.672	**0.790**

Discriminant validity is estimated in accordance with the Fornell-Lacker criterion by figuring the square-root of variables. Fornell-Lacker recommended values are those greater than 0.50. The value of each element is greater than the values of their rows and columns. The diagonal values, as presented in Table 3, represent the average variance extracted, ranging from 0.727 to 0.826, and so are greater than 0.50—confirming the discriminant validity—and the other values represent the correlations between the research variables.

PLS Model

Figures 6 and 7 show the results of the PLS model. They demonstrate the r-squared of the dependent research constructs and path coefficient (β) of the model. The beta coefficients of all constructs are positive and significant.

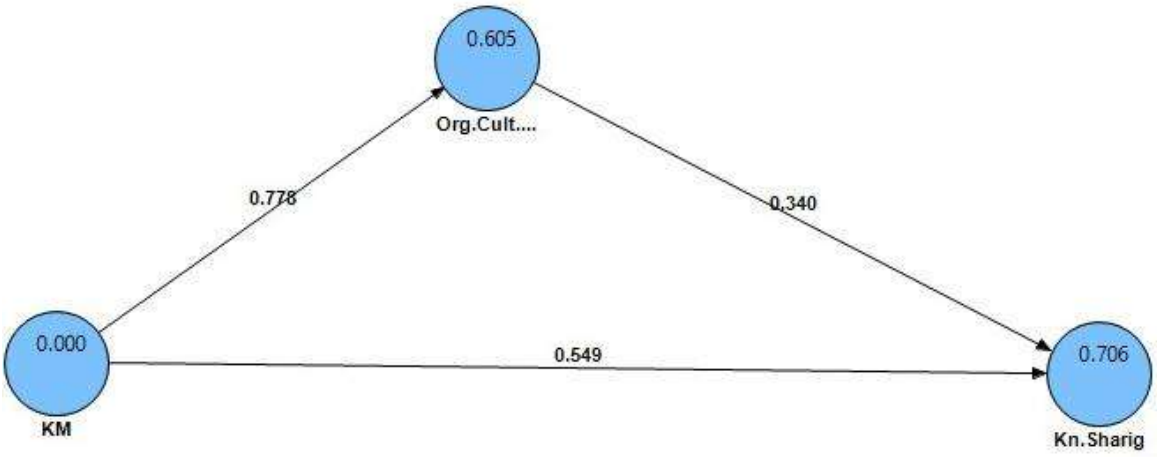

Figure 6. Results of PLS Mediation Model

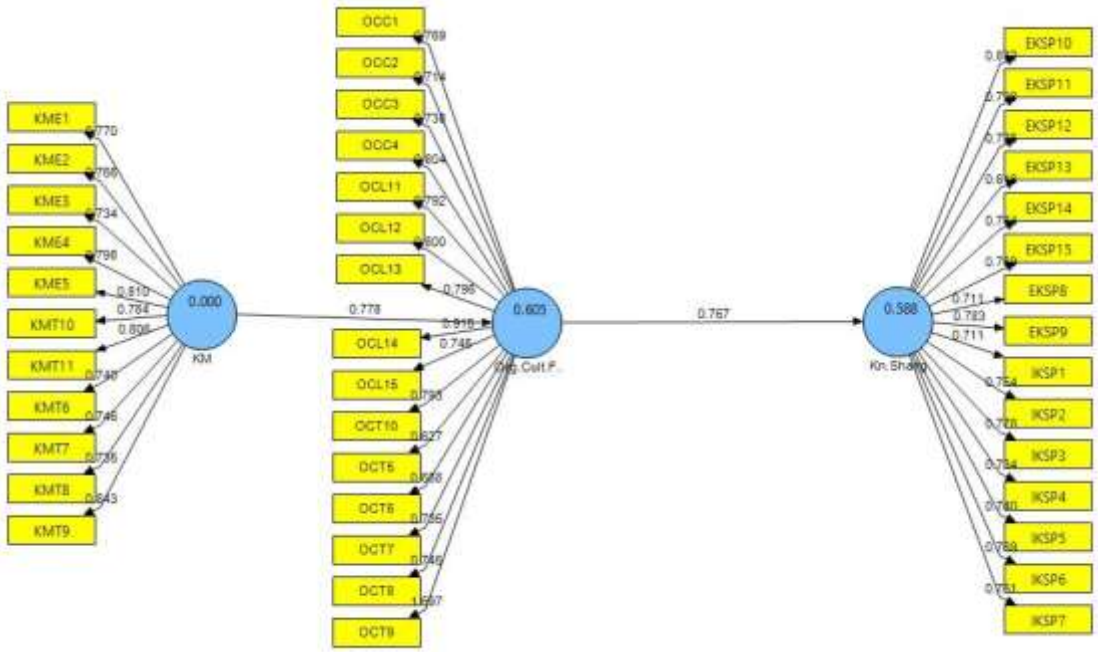

Figure 7. Results of PLS Mediation Model: Indirect Path

Mediation Test

The mediation model is used to identify relationships between the independent variable and dependent variable. In this paper, the mediation model is used to ascertain the relationship between knowledge management environment and knowledge sharing process. The mediation model in Figure 6 and 7 shows that the knowledge management environment has a direct and indirect relationship with knowledge sharing process.

Table 4. Mediation Test

Indepentent	Mediation	Dependent	Direct Effect	Indirect Effect	Total Effect	VAF	Result
Knowledge Management	Organizational Culture	Knowledge Sharing	0.549	0.26452	0.81352	32.52 %	Partial Mediation

Standard:
VAF < 20% = No Mediation; VAF (21-80%) = Partial Mediation; VAF >80% = Full Mediation

Indirect relationships to the knowledge management environment can affect the knowledge sharing process by 0.549, as depicted in Table 4, and can affect organizational cultural factors by 0.778. Organizational cultural factors can affect the knowledge sharing process by 0.340, as presented in Table 4. The knowledge management environment has an indirect effect of 0.265 and total effect of 0.814 on knowledge sharing processes in the banking sector of Pakistan. As per acceptable criteria of mediation, the organizational cultural factors have a partial mediation effect because VAF is 32.52%, as presented in Table 4, which is significant and accepted.

To measure the mediation effect, a Sobel test is used which shows that organizational cultural factors as a mediation variable have a partial effect on the knowledge sharing process. The results of the Sobel test presented in Table 5 reveal that p value is 0.000, which is significant and thus accepted.

Table 5. Soble Test

	T-Statistics	**Std Error**	**P value**
Soble Test	4.222	0.063	0.000

Aroin Test	4.214	0.063	0.000
Goodman Test	4.229	0.062	0.000

VI. Conclusion

The results show that knowledge-management environmental factors (tacit and explicit), and organizational factors (collaboration, trust and learning) contribute to the knowledge sharing processes (internal and external) in the banking sector of Pakistan. Therefore, the knowledge management environment and organizational culture should be built for an effective knowledge sharing process. According to Gold *et al.*(2001), both external and internal knowledge sharing are important. According to Kumar and Thondikulam(2006), organizations bring new knowledge to their own organizations by sharing their knowledge with other organizations. Previous research has focused on internal knowledge sharing only, but this research emphasized both internal and external knowledge sharing.

Supportive organizational culture is also vital for the knowledge sharing processes. The results prove that organizational cultural factors have a mediating effect on the knowledge management environment and on knowledge sharing processes in Pakistan's banking sector. The two variables of knowledge management environment (tacit and explicit) and three variables of organizational culture (collaboration, trust and learning) had a partial effect on the knowledge sharing processes (internal and external) in the banking sector of Pakistan. Hence, both hypotheses are proven true and accepted.

Limitations and Future Research

In this study, a survey technique with a sample size of 300 was used, but in the future, researchers can increase the sample size. For analysis of data collected, SmartPLS software was used. In the future, other software like SPSS, LISREL and AMOS can be used for analyzing data. We considered only the banking sector in this study while future researchers can implement the study in other sectors of Pakistan. In this paper, we have taken collaboration, trust and learning as organizational factors, but to build on this, researchers can consider other factors of organizational culture in studies to come.

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