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Impact of Knowledge Sharing on Organizational Performance: The Moderating Role of Organizational Culture Proxies

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Abstract

The paper aims to test an explanation of how organizational culture affects the relationship between knowledge sharing and organizational performance. It was expected that organizational culture proxies significantly mediate the relationship between knowledge sharing and performance. The study used a quantitative survey method for the collection of data. A sample of 200 respondents was drawn from the higher education institutes (HEIs) situated in Lahore. The findings revealed that a positive relationship exists; except for when the components were tested individually for their role in moderating it, then learning environment became insignificant. The strong impact of interpersonal communication and trust highlights its significance in boosting knowledge sharing in an organization that results in improved performance. This finding helped the authors to draw on future research implications regarding the components of organizational culture.

Keywords: interpersonal communication, knowledge sharing, learning environment, organizational culture, performance, trust

1. Introduction

The rise in global competition has diverted the attention away from the traditional sources of production such as land, labor, and capital (Drucker, 1993a). The focus of organizations has been drawn towards knowledge as a valuable economic resource and organizations now perceive knowledge as a key success factor (Drucker, 1994; Nonaka & Takeuchi, 1995; Teece, 1998). Knowledge provides a sustainable competitive advantage and is considered a critical factor of production in a competitive economy (Davenport & Prusak, 1998; Foss & Pedersen, 2002). To gain competitive advantage, organizations rely on recruitment and training that focus on selecting employees who have explicit knowledge, skills, abilities, and competencies (Brown & Duguid, 2001).

Organizations should also reflect on how to transfer skills and learning from experts to amateurs (Hinds, Patterson & Pfeffer, 2001). Employees use knowledge sharing as the basic means that can exploit and capitalize on knowledge based resources through knowledge application and development (Jackson, Chuang, Harden & Jiang, 2006). Many organizations have put their resources into knowledge management activities including the development of knowledge management system (KMS) to utilize the benefits of knowledge sharing. A vital explanation behind the poor performance of KMS is the absence of knowledge about the impact of the hierarchical and interpersonal connections and singular attributes (Voelpel, Dous & Davenport, 2005).

This research focuses on understanding the organizational culture's attributes that influence knowledge sharing among employees. This is considered significant because teamwork and organizational level knowledge is influenced by the extent to which sharing of knowledge occurs among employees (Cabrera & Cabrera, 2005; Navimipour & Charband, 2016; Nonaka, 1994).

1.1. Contribution of the Study

Academic research is considered a critical source of knowledge development and innovation in the developed world. It contributes greatly towards the growth of a country's GDP by facilitating and solving various issues faced by the country's manufacturing and services sectors. Research conducted by academia at various levels regarding organizational hierarchy has come up with its own dynamics. Knowledge sharing is vital in boosting work environment. Organizational culture has proven its importance but its moderating impact on knowledge sharing has been scantly researched in previous studies. This is especially true for Pakistan where academic institutions are struggling to develop and boost research culture. The issue of research funding is gradually being resolved but the cultural, social, and psychological barricades within institutions require intensive efforts to identify and propose solutions.

This research adds to the existing knowledge by exploring the relationship between three variables including knowledge sharing, performance and organizational culture. It investigates the potential relationship between knowledge sharing and organizational performance with the moderating role of organizational culture in the light of Social Cognitive Theory. This investigation includes a dig-down comparison to highlight the moderating effect of various proxy variables which combine to influence organizational culture. The study should provide academia with valuable and practical information to develop or refine their existing

research culture and should also encourage employees to improve their performance through knowledge sharing.

The following research questions were formulated for this research:

1. What is the relationship between knowledge sharing and organizational performance?
2. How do organizational culture proxies moderate the relationship between knowledge sharing and organizational performance?

2. Literature Review

Turban and Frenzel (1992) defined knowledge as understanding developed on the basis of belief and experience. The terms knowledge and information have been used by many researchers interchangeably (Bartol & Srivastava, 2002). Therefore, we consider knowledge as information that includes expertise, acts, judgments, and ideas processed by individuals and applicable to all types of performance levels (Alavi & Leidner, 2001; Bartol & Srivastava, 2002). Sowa (1984) characterized information as the collection of understandings, speculations, and reflections that individuals apply to understand reality. Information has been characterized additionally as data that has been sorted out and broken down to make it comprehensible and relevant to use for decision making and/or problem solving (Allee, 1997).

2.1. Organizational Performance

Many researchers have explored organizational performance in the light of the various constructs and antecedents that influence it. It is also defined as the actual output of an organization in achieving its goals (Luxmi, 2014). It also involves the ability to process and obtain different resources for the sake of attaining the organization's goals and objectives (Masa'deh, Obeidat, & Tarhini, 2016). An organization's ability to utilize its intangible knowledge and, at the same time, the ability to innovate leads to superior performance (Teece, 2001). Knowledge resources are considered as the most strategically important assets. The effective management of this knowledge is no easy task and the sharing of this knowledge is considered to be a challenging but crucial process (Hooff & Ridder, 2004). Knowledge sharing is also tied to organizational performance and it has a positive relationship with it (Wang & Wang, 2012; Garcia-Morales, Martin-Rojas & Lardon-Lopez, 2018).

2.2. Knowledge Sharing

Lee (2001) suggests that knowledge sharing includes the exchange of implicit and explicit information at the individual and organizational levels and such an exchange of learning adds to the organizational repository (Jang, Hong, Bock, & Kim, 2002; Navimipour & Charband, 2016). Knowledge sharing is also defined as the exercise of disseminating and exchanging information among individuals, groups, and organizations (Small & Sage, 2005). Knowledge sharing involves the distribution and synthesis of individually and organizationally held knowledge through an internal integration mechanism with established processes and routines (Loebbecke, Fenema, & Powell, 2016; Zhou & Li, 2012). The global business environment is quickly turning out to be more focused; conventional variables encompassing the factors of production are seemingly less significant in maintaining business (Drucker, 1994; Nonaka & Takeuchi, 1995; Teece, 1998). Organizational focus has been diverted to the estimation of information as an essential monetary asset and organizations look towards knowledge as a key source leading to competitive advantage (Drucker, 1993a). There is a growing recognition of the importance of knowledge sharing in academia including research and development (Al-Kurdi, El-Haddadeh, & Eldabi, 2018; Fauzi, Tan, & Ramayah, 2018; Fullwood & Rowley, 2017; Fullwood, Rowley, & McLean, 2018; Park & Kim, 2018; Rahman, Mannan, Hossain, Zaman, & Hassan, 2018; Skaik & Othman, 2018).

Vries, Hooff, and Ridder (2006) have categorized knowledge sharing practices into two functions, that is, 'knowledge donation' and 'knowledge collection'. Knowledge donation is an individual's sharing of scholarly capital, while knowledge collection is depicted as a person's eagerness to receive and acknowledge new information and expertise from his or her associates (Adler & Kwon, 2002; Lin, 2007). Lee, Shiue, and Chen (2016) suggest that experienced employees maintain their competitive advantage over others through knowledge. While donating knowledge, the willingness of experienced employees is one practical challenge. On the other hand, in knowledge collection the acceptance of new knowledge by senior members, especially senior employees, is a critical factor.

Individuals willing to share their insight will anticipate that others will respond in a similar manner for common advantage and achieving objectives (Vries et al., 2006; Liao, Chen, & Hu, 2018; Lin, 2007). The readiness and excitement involved in knowledge sharing is pivotal to an organization, as it is about straightforward data sharing as well as about fortifying the trading of considerations, encounters and thoughts among people inside an organization (Ismail, Nor, & Marjani, 2009).

Knowledge sharing activities are necessary to neutralize the monopoly of employees who are the sole owners of critical knowledge (Lee et al., 2016).

2.3. Organizational Culture

Organizational culture is defined as the pattern of shared basic assumptions learned by a group which solves its problems of external adaptation and internal integration (Schein, 2004). Organizational culture is made up of symbols, language, ideology, beliefs, rituals, and myths of an organization. This is in line with the Social Cognitive Theory by Hawryszkiewycz, (2019) which indicates that an individual behavior is affected by social influences and personal perceptions. Culture prevails everywhere and covers all areas of organizational life (Schein, 1990). Hofstede (1991) suggested that culture is the collective programming of the human mind that distinguishes members of one human group from another. Moreover, each individual carries patterns of feelings and thinking acquired during childhood that stay with them throughout their life.

2.3.1. The significance of organizational culture. Organizational culture is considered as a sub-culture within the community or country where the organization operates (De Long & Fahey, 2000). Culture has been seen as a powerful force, as argued by Greenberg (2014), that plays an important role in controlling the organization. It includes generating employee commitment to the organization's mission, providing a sense of identity, as well as supporting and clarifying the standards of behavior. A strong culture provides employees a strong sense of identity and attachment with their distinct organizational structure. Clearly defined cultural values contribute strongly in providing behavioral stability throughout the organization. This can be further elaborated by the Social Cognitive Theory.

2.3.2. Social Cognitive Theory (SCT). In SCT of self and society, personal agency (an agent is an individual who engages with the social structure) and social structure function interdependently. Social systems are the core products of human activity. The authorized rules and practices of social systems implemented by social agents influence human development and functioning. As argued by Greenberg (2014), culture is a powerful force that plays an important role in controlling the organization. As suggested by SCT, personal agency and social structure are interdependent that leads us to a discussion of knowledge sharing between individuals and their connection with the organizational culture.

2.4. Knowledge Sharing and Organizational Culture

Lai and Lee (2007) propose that cultural values that are deeply embedded and

shared among employees lead to improved organizational performance. Studies show that the cultural values of individual employees bear a strong influence on knowledge sharing activities (Hofstede, 2003; Jennex & Zakharova, 2006; Oyemomi, Liu, Neaga, Chen, & Nakpodia, 2018). The influence of organizational culture on knowledge sharing can be explained in four ways: 1) culture influences the adoption and creation of new knowledge; 2) it mediates the relationship among individuals, groups, and organizational knowledge; 3) it creates organizational context for social interactions and; 4) and it clarifies which knowledge is important (De Long & Fahey, 2000). Factors of organizational culture involved in the success of knowledge sharing play an important role in breaking obstacles in its way by defining the relationships among staff.

2.4.1. KS and organizational culture: critical success factors. According to Castaneda and Toulson, (2013), interpersonal trust is the confidence of an individual or a group in the reliability of the promise or actions of others. Interpersonal trust is considered to be an extremely important factor that influences knowledge sharing. (Ding, Choi, & Aoyama, 2018; Gruenfeld, Mannix, Williams, & Neale, 1996; Park & Kim, 2018; Qureshi, Fang, Haggerty, Compeau, & Zhang, 2018; Rutten, Blaas-Franken, & Martin, 2016) argued that knowledge sharing is dependent upon the presence of trust between team members.

Interpersonal communication is essential in promoting knowledge transfer. It refers to verbal conversations and the use of body language during human interaction while communicating. Smith and Rupp (2002) suggested that the presence of social networking in the workplace enhances human interaction.

Jones, Herschel, and Moesel (2003) argued that organization's learning environment enables individuals and organizations to reflect on the consequences of their behaviors and actions through sharing of knowledge, obtaining insights into an environment, understanding the environment and interpreting its meaning and hence, responding to it in a more accurate way. Liu (2018) and Park and Kim (2018) suggest that knowledge sharing positively affects organizational learning. Appelbaum and Goransson (1997) argued that organizational learning does not only refer to unending cognitive processes; rather, it also includes the social construction of learning. They identified five elements and if any one of these elements is missing, then the organization either learns at a rate less than its full potential or learn the wrong things. These five elements are rapid sharing of information, inventiveness, a leader with a clearly defined vision, a detailed, measurable action plan and the ability to implement the plan. Dewey (1933) pointed out that all learning is a continuous process of discovering insights, inventing new

possibilities for action, producing actions and observing the consequences leading to insights. Senge (2014) suggested that real learning has two critical dimensions that are embedded in the phrase 'expand the capacity to create'. Just creating is not enough.

3. Theoretical Framework

The rise in global competition has divrted the attention away from the traditional factors of production (Drucker, 1993b). Indeed, organizations have realized knowledge as a valuable and profitable resource and a key success factor (Drucker, 1994; Loebbecke et al., 2016; Nonaka, 1991; Teece, 1998). Hence, it is hypothesized that:

- **H1:** Knowledge sharing is positively related to organizational performance.

According to SCT, social influences and personal perceptions affect individual behavior (Hawryszkiewycz, 2019). Organizational culture is defined as the pattern of shared basic assumptions learned by a group as it solves its problems of external adaptation and internal integration (Schein, 2004). There is extensive research available on the impact of organizational culture on knowledge sharing (Hofstede, 2003; Hutchings & Michailova, 2004; Al-Alawi, Al-Marzooqi, & Mohammed, 2007; Jennex & Zakharova, 2006; Lee et al., 2016). The researchers unanimously agree that the powerful impetus of organizational culture is responsible for shaping the knowledge sharing practices in an organization. It is therefore hypothesized that:

- **H2**: Organizational culture proxies positively moderate the relationship between knowledge sharing and organizational performance.

This research includes a dig-down comparison to analyze the moderating effect of different proxy variables which combine to measure organizational culture.

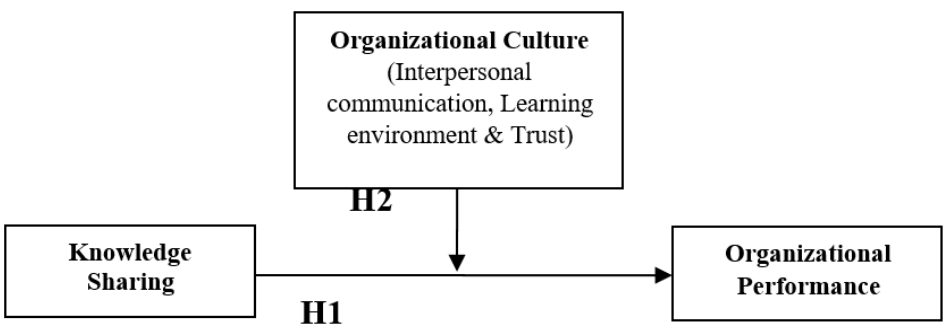

Figure 1. Theoretical framework

4. Methodology

The objectives stated above call for a hierarchical regression analysis. To actualize the relationships, numerical data was required preferably from a population with identical thinking patterns to control systematic bias. This study focused on the faculty of HEIs. There were specific reasons for such a decision, such as HEIs can be considered as centers of relatively higher knowledge sharing. They are strong forces that emanate from within HEIs other than external factors, such as economic, demographic, and political conditions. Yet they are also shaped by various forms of cultures and their performance is relatively easier to perceive and measure. Lahore city was decided to be the only target city due to the availability of data and comparative abundance of HEIs. Around 40 HEIs are located within the territorial boundaries of Lahore as per the documents of Higher Education Commission (HEC) of Pakistan.

4.1. Instrumentation and Sampling Technique

A questionnaire was specially designed for this study to gather the required data and convenient sampling technique was employed. Organizational culture was measured based on key dimensions such as interpersonal communication as advocated by Smith and Rupp (2002), learning environment as discussed by Appelbaum and Goransson (1997), trust as taken from Schoorman, Mayer, and Davis (2007), performance as measured by Delaney and Huselid (1996) and knowledge sharing as discussed by Van Den Hooff and De Ridder (2004) with a total of 40 items in the questionnaire. Hair, Black, and Babin (2006) suggested that a sample size of 40 × 5 = 200 would be enough to capture the necessary variations for the analysis since this includes the teaching faculty from both public sector and private sector universities. No deliberation was made to distinguish between teachers of public and private sector universities. Similarly, no distinction was made on the basis of the gender of teachers.

5. Analysis and Discussion

After defining and labeling 123 questionnaires received, the data was entered in SPSS and scrutinized for problems such as input errors, coding problems, outliers, and missing values.

5.1. Correlations and Reliabilities

There was a positive correlation among all the variables with high significance that can be seen in Table 1. Alpha value (Cronbach, 1951) for the questionnaire was also measured on the basis of a pilot survey conducted on a similar population. All the variables showed a high reliability value as suggested in the literature.

Table 1
Correlations and Reliabilities of Variables

Variable	1	2	3	4	5
1. KS	*(0.823)*	.308***	.341**	.212***	.392**
2. Performance	.308***	*(0.692)*	.152***	.062**	.054***
3. Trust	.341***	.152***	*(0.667)*	.246***	.190**
4. Comm	.212***	.062***	.246***	*(0.617)*	.329***
5. Learning	.392**	.054***	.190**	.329***	*(0.826)*

N=123, Cronbach's alpha for each scale is listed on the diagonal in italics
** p < .05, ** p < .01, *** p < .001*

5.2. Factor Analysis

A sampling adequacy test (Kaiser-Meyer-Olkin, (KMO)) was carried out (Kaiser, 1974). The KMO values were all well over satisfactory level with (chi square (.000)) indicating adequate inter-correlations and suitability for factor analysis as shown in Table 2a.

Table 2a
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)

	KMO	Chi-Square	Sig.
Model	.834	3700	.000
Performance	.881	1327	.000
KS	.901	1504	.000
Trust	.879	1291	.000
Comm	.941	1564	.000
Learning	.814	1310	.000

This study adapted instruments from previous studies conducted in other fields. Therefore, an exploratory factor analysis was used for the knowledge sharing construct with ten items to check the validity in the local context of Pakistan, as shown in Table 2b.

Table 2b
Exploratory Factor Analysis (EFA) of Knowledge Sharing Items

Knowledge Sharing Items	Component 1	2	3	Cronbach's Alpha
Knowledge Sharing				0.823
Knowledge Donating				
KD1	.695			
KD2	.673			
KD3	.688			
KD4	.856			
KD5	.881			
KD6	.821			
Knowledge Collecting				
KC1		.897		
KC2		.827		
KC3		.716		
KC4		.684		

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Exploratory factor analysis for knowledge sharing is in line with the results reported by Hooff and Ridder (2004) and supports the factorial independence of the two constructs. Table 2c contains the results of the factor analysis of performance related items. The results of factor analysis support factorial independence consistent with the results reported in previous researches (Delaney & Huselid, 1996). All the measuring items used to measure organizational culture's impact were found to be loaded successfully with one to three components with a factor loading above 0.6 (Hair et al., 2006). The components were named according to the underlying variables as shown in Table 2d.

A moderation analysis was conducted to test the Hypothesis 2. A typical moderation analysis is an extension of the conventional regression analysis where a comparison is made between models developed without the moderator (called direct model) and with the moderator (called indirect model). The verdict regarding moderation is based on the numerical and directional differences between these two (direct and indirect) models. In the following tables, the upper half of each

table depicts the direct regression model while the lower half depicts the indirect regression model. The results for *H1* can be seen in Table 3. A positive beta value of 1.632 with a significance (p value = 0.049) shows that H1 is accepted.

Table 2c

Exploratory Factor Analysis of Organizational Performance

Performance Items	Component			Cronbach's Alpha
	1	2	3	
Performance	*0.86*			
Perform1	.771			
Perform2	.790			
Perform3		.823		
Perform4			.702	
Perform5			.727	

Table 2d

Exploratory Factor Analysis of Organizational Culture Proxies

Learning environment items	Component			Cronbach's Alpha
	1	2	3	
Learning environment				*0.826*
Learnenvi1	.711			
Learnenvi2	.690			
Learnenvi3		.823		
Learnenvi4		.802		
Learnenvi5	.841			
Communication				*0.617*
Commatm1	.861			
Commopen2	.794			
Commcoop3	.893			
Trust				*0.667*
Trustemo	.889			
Trustaffec	.831			
Trustrepair		.788		
Trustrisk	.765			
Trustreci		.863		
Trustviol			.755	
Trustcont			.892	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization

Table 3
Regression Results for Organizational Performance Depending on Knowledge sharing as Moderated by Organizational Culture

Model Variables	Unstandardized		Standardized	*t*	*P*
	β	Std. Error	*B*		value
Constant	2.349	0.446		5.269	0.000
Knowledge Sharing	1.632	0.986	1.234	1.655	0.049
Constant	1.787	1.001		1.785	0.038
Knowledge Sharing	2.002	0.676	0.996	2.962	0.002
Org. Culture	1.348	0.965	0.113	1.397	0.820
Interaction of Knowledge Sharing & Org. Culture	1.782	0.250	1.223	7.128	0.000

With reference to the second hypothesis *H2*, which says that *"*Organizational culture proxies positively moderate the relationship between knowledge sharing and performance", when organizational culture was tested for moderation the beta value was 2.002. Hence, an increase of 0.37 or 23% (0.37/1.632x100=23%) was observed and the interaction term was found to be significant (p=-0.000) showing that organizational culture is moderating the model. For the sake of further testing, organizational culture's components were examined. The results are depicted in Table 4.

With reference to the relationship between performance and knowledge sharing, the beta value was 1.632 (p=0.049). In order to check the moderator effect, organizational culture's components were added one by one. Internal communication moderated the model considerably as beta value increased to 2.781, showing an increase of 1.149 and the interaction was highly significant (p = 0.000). The interaction of the second component labelled learning environment brought a minor change of 0.069 with a beta value of 1.701. The interaction (p = 0.364) was above the 0.05 limit and was insignificant. The third component trust when tested for interaction yielded the model value of 2.071 with a difference of 0.439 and p =0.000 was highly significant.

To graphically represent the above mentioned moderating effect of organizational culture's individual components a bar diagram is used (Figure 2).

The model value of 1.632 is taken as a base standard and the percentage difference is calculated.

Table 4

Regression Results for Organizational Performance Depending on Knowledge sharing as Moderated by Different Organizational Culture proxies

Model Variables	Unstandardized *B*	Std. Error	Standardized *B*	*t*	*p* value
Constant	2.349	0.446		5.269	0.000
Knowledge Sharing	1.632	0.986	1.234	1.655	0.049
Constant	2.201	1.223		1.80	0.034
Knowledge Sharing	2.781	0.221	1.997	12.58	0.000
Int. Communication	1.782	0.250	1.223	7.128	0.000
Interaction Term	0.776	0.081	0.231	9.580	0.000
Constant	1.684	1.021		1.649	0.050
Knowledge Sharing	1.701	1.102	0.911	1.544	0.062
Learning Environment	0.205	1.455	0.007	0.141	0.444
Interaction Term	0.343	0.988	0.221	0.347	0.364
Constant	1.967	0.999		1.969	0.025
Knowledge Sharing	2.071	0.667	1.989	3.105	0.001
Trust	2.229	1.456	2.003	1.531	0.064
Interaction Term	1.002	0.231	0.912	4.338	0.000

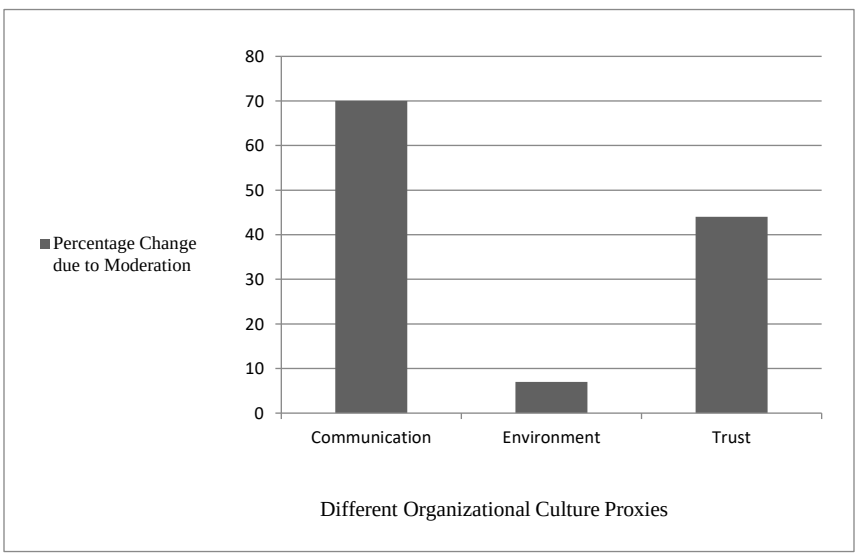

Figure 2. Moderating effect of organizational culture

The objective of this research was to study the relationship between knowledge sharing and organizational performance and the role played by organizational culture and its components when interacting with knowledge sharing. Regression and hierarchical regression analyses were used to test the Hypotheses 1 and 2, respectively. A positive relationship between knowledge sharing and performance has been highlighted in many researches and is verified in this research. Hence, *H1* is accepted. The impact of culture was tested as an independent variable along with knowledge sharing in various studies but in this research, culture's role as a moderator was hypothesized and developed when the model value was strengthened from 1.632 to 2.002 (p = 0.000).

While examining the moderating components, somewhat different results were depicted. Interpersonal communication had the strongest impact when the value increased by 1.149 (p = 0.000), revealing that it caused the highest percentage change in our model and highlighted the significant role communication played in knowledge sharing. This is according to SCT and, on the other hand, with (Smith & Rupp, 2002) findings that social networking plays an important role in enhancing human interaction at the workplace and is fundamental in encouraging knowledge transfer.

The moderating effect of learning environment brought a minor change and the value of this factor was insignificant showing that it had little or no effect on the relationship between knowledge sharing and performance. The last component trust, when tested for interaction yielded the model value 2.071 with a difference of 0.439 and p value of 0.000 that was highly significant, revealing that mutual trust is very important in this relationship and there is more knowledge sharing leading to improved performance where mutual level of trust is higher.

6. Conclusion

For academic purpose, this research offers a framework for researchers if they want to study the indirect impact of culture on the relationship between knowledge sharing and organizational performance. There is a possibility of other moderating variables affecting this relationship and further studies can be conducted, using both quantitative and qualitative approaches, to find out other possibilities. The strong impact of interpersonal communication and trust highlights the significance they hold in boosting knowledge sharing in organizations that result in their improved performance. Trust holds the key for unlocking the seamless flow of knowledge between various organizational entities that is further made possible through different interpersonal communication mechanisms including formal and informal mechanisms.

7. Future Implications

The implications of the results suggest that managers must ensure knowledge sharing to flourish in their respective domains and the role of organizational culture's components needs to be aligned to attain the desired performance results. Otherwise, simply implementing knowledge sharing processes may not do any good at all. The role of politics needs to be addressed as well to check whether it acts as a stumbling block to knowledge sharing or not. The moderating effect of learning environment requires further research as it includes cognitive processes and social construction of learning; it also requires investment to cash its long term advantage through guidance and training. Our findings also affirm the moderating role of culture as a whole that ultimately leads to improved organizational performance.

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