

# THE IMPACT OF KNOWLEDGE MANAGEMENT ON ORGANIZATIONAL PERFORMANCE IN CORPORATE SECTOR: A CROSS-CULTURAL CASE STUDY FOR DAIRY INDUSTRY (PAKISTAN & TURKEY)

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**Abstract:** The aim of this study is to analyze the organizational performance in corporate sector related to knowledge management. With the diversification and growing competitive sector, organization emphasizes enhance performance within the organization for better results and it depends on the upto date knowledge management. Knowledge management is an important issue in the business organization. The business firms, which is able to manage knowledge will secure competitive advantage and sustainable growth. In other words, the objective of this study is to analyze the impact of knowledge management on organizational performance with respect to corporate sectors as dairy industries from Pakistan and Turkey. For this purpose, Companies A and B from Turkey and Companies C and D from Pakistan were selected as a sample of the study. The theoretical work is based on four variables such as knowledge conversion, knowledge acquisition, knowledge application and knowledge protection were taken as independent variables whereas organizational performance was taken as dependent variable. The experimental study is based on quantitative methods. However, the well-structure questionnaire is rearranged, and same question was asked from the employees in Turkey and Pakistan and also the interview was conducted with Companies A and B from Turkey and Companies C and D from Pakistan in order to get authentic results. The purpose of these hypothesis is to analyses the impact of KM on organizational performance as different factors are involved which have direct impact on organizational performance such as knowledge sharing, knowledge acquiring, data storage, data protection etc. Five hypothesis was tested regarding the impact of KM on organizational performance in corporate sector a cross cultural case study for dairy industry (Pakistan & Turkey). we also examined frequencies of the questions, Descriptive statistics, regression and correlation test in order to authenticate the hypothesis of this research. In this research we have concluded that knowledge management, knowledge conversion, knowledge acquisition, knowledge application and knowledge protection have positive significant effect on organizational performance. This study has assessed the positive effect of KM and a portion of its practices on Organization performance. Numerous investigations have presumed that KM is the principle motivation to business development. In this manner, it is a great idea to put resources into KM assets to achieve organization improvement, since KM assets and practices are connected legitimately and in a roundabout way to it when they are actualized successfully. Future research can be conducted by seeing either there are any other factors that can affect the impact on knowledge management on organization performance other than Knowledge conversion, Knowledge acquisition, Knowledge protection and Knowledge application in dairy industries and also by taking the sample of developed countries to check the different effect by considering the culture of each country.

**Keywords:** Knowledge Management, Knowledge Conversion, Knowledge Acquisition, Knowledge Application, Knowledge Protection, Organizational Performance.

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## 1. INTRODUCTION

This study analyses that Knowledge Management (KM) has potential on organizational performance in corporate sector. It has been recognized that the knowledge is gradually increasing and using as the innovative tactical tool for organizational competitive advantage. The knowledge research, knowledge formation, knowledge distribution and knowledge utilization are included in the process of KM. It is very essential for the organizational sustainability that what organization know about the KM integrated system and how the knowledge can be stored and protected. All the organizations take actions to keep, approach, and provide the knowledge in integrational way. During this era when there is competing world and knowledge influence is much more considered for business sustainability and business advantage and it help organization to be the top on the business community. The organization can be on the sustainable business when there is an awareness of organizational aim and goals within the organizations and the competitive advantage can only be possible when the knowledge and KM is considered as main asset within the organization. Knowledge has not been considered as a number or data that stored in databases available in the organization and also Knowledge can be the obtained through education, training and skills. Every business has its own dimension and has separately wide range characterization and that specifies its own dimension and has specific as well as precise business knowledge, and due to this it is very complex and difficult for the organization to manage and control as well as to keep in storage and information access when required. Thus, it is encouraged for implementation of KM in the organizations to achieve the goals for the organization that has to be set by the higher management. Reasonably, when the up stated facts were considered within the organizations, most of the points were related to organizational performance and development of new processes for making the already processes smooth to achieve the targets that were defined. Therefore, to make the organization sustainable and profitable in worldwide marketplaces, and it is potential for the organization to implement and improvise the system to increase knowledge capacity and capability that can take part to enhance the management effectiveness and knowledge within the business that can play a major role for organizational performance.

### Research Objective

In this research, our main focus will be on analyzing the KM impact on the performance of organization in corporate business/sector (Dairy Industries within Pakistan and Turkey) and order to reach valuable advantages. The main research focus is to determine that “The Impact of KM on Organizational Performance in Corporate Sector: A Cross-Cultural case study for Dairy Industry (Pakistan & Turkey)

### Research Purpose

The purpose is to find out the KM has an impact on organizational performance and to check either the employees have the understanding related to KM and to study the existing state of KM and its impact and to analyze whether KM is a necessary for dairy industries for improving their services and KP in Pakistan and Turkey.

## 2. THEORETICAL REVIEW

Knowledge is the main source to acquire and use of human beings that differentiate them from others. Philosophers have tried state knowledge since the early Greek age, and this inquiry had led to many philosophical debates. In general, knowledge may be described as recognizable. As per Webster’s dictionary, knowledge is stated diversely as “(i) familiar with facts; awareness, understanding or range of information (ii) the fact, act or state of knowing; a) familiarity or acquaintance (place, with a fact, etc.), b) understanding, c) awareness, (iii) principles, the body of facts etc. gathered by individual and (iv) all that has been grasped or perceived by the mind; enlightenment; learning. Others categorization of knowledge as “immeasurable, invisible, personal, fluid, elusive, ever evolving and intangible” and as “a multi-sided concept with multi-dimensional meaning” (Nonaka, 1994). Many authors defined knowledge from diversified opinion. Knowledge as an object, a state of mind, a capability, access of information, or a process and accentuated that it offers an opportunity to individuals to strengthen their individual learning and apply it to where, there is need. It can be classified into two dimensions: “the range or sum of what has been discovered, perceived, or learned” and “a state of understanding acquired through study or experience” (Alavi and Leidner, 2001). As an ability of information is a continue opinion of knowledge, particularly if someone concentrates on the knowledge availability. Knowledge may be considered as a thing, so it can be stored and handle. Knowledge as a handling means that knowing and acting can come together at the same time, which could indicate to applying expertise. In last, knowledge is a capability. Duly, that have the ability to effect the

future activities. Furthermore, it can be an ability of action in itself knowledge and promote interpreting and utilizing data and information, thus simplifying in the process of decision making (Alavi and Leidner, 2001).

First time, Ancient Greek developed the difference between information and knowledge because they used these terms in other ways. Socrates and Plato used the terms "written speech" and "actual speech" (Müller-Merbach, 2004). "Written speech" usually does not confirm for collaboration. It is often idle and referred to as information. "However, real speech" is a conversation in which people ask questions, and respond to questions, and try to persuade each other based on genuine passion, engagement, belief, and consciousness that may be described as knowledge. In the modern age, information is defined as useful or meaningful and categorized, contextualized, calculated, condensed or corrected data. Information refers to data within a meaningful framework because knowledge is validated information and is considered true (Vance, 1997). The differences between information and knowledge is playing important role in understanding of knowledge creation and sharing, which are interdependent, interpretive, cultural and social activities rather than simple information acquisition and exchange. Knowledge becomes information once it is formally expressed as text, language, words, graphics, or other form of expression, and information becomes knowledge when the information is in the mind of the individual (Alavi & Leidner, 2001). From a traditional point of view, knowledge starts from data that includes certain numbers and facts. If data is organized under certain circumstances, it becomes information, and when experiences and judgments are mixed, it will eventually become knowledge (Ulewicz, 2018). The traditional notion of knowledge can be regarded as a hierarchical model, knowledge is top, information is at the center, and data is at the bottom (Mason, Robert M., 2003).

The KM procedure works complementary and regularly with each other. In this element, a consistent context of KM might be discussed to higher recognize the KM structures. KA can be narrating to as the knowledge base introduction, which involves obtaining information from professionals' minds (Milton, 2007). The understanding base can be demonstrated in several approaches, which includes a information repository, an ontology, or data generation and knowledge save. Milton (2007) said KA as "the exercising of obtaining abilities from humans (and other bases of expertise) and generating a excessive-tech store of this information to be utilized to assist an business enterprise in some specific methods". The employer reveals out while data is received external barriers of the agency and when people reworking tacit into explicit know-how that need to be percentage, and then consolidates that into the prevailing expertise foundation (Büchel & Probst, 2000; Nonaka et al., 2006). The enterprise can achieve understanding either internally or externally. Internal KA could propose to discovery secreted expertise that is already inside the agency, by acquiring and transferring it to different organizational fellows. KM should be deliberate to motivate employees to contribute within the KA tactics, establishing an opportunity for competitive advantages and destiny enterprise. External understanding may be acquired from relationships with suppliers, clients, companions and competition. The employer also can purchase outside know-how by using a merger and acquisition, or thru recruiting specialists (Büchel & Probst, 2000). Simultaneously, individuals can also collect information via perceiving, imitating, practicing, experiencing and interacting with others. Gold et al. (2001) claimed the KC technique as "permits current expertise beneficial". One of the full-size objectives of KM is to make use of the understanding necessary in the agency efficiently (Iftikhar, 2003). The system must rework, keep, and shipping statistics within the enterprise, to allow the corporation to collect, proportion, and switch expertise in a powerful manner (Gold et al., 2001; Iftikhar, 2003). Substantially beneficial knowledge is not disclosed, and if it isn't exploit, it is going to be squander. The conversions or transformation among facts, statistics, and expertise are transitory and cyclical (Bhatt, 2001). KM need to suggest the transformation of records to information, further records to knowledge (Perez-Araos et al., 2007). Segments of information and records have confined value if they are not interpreted, meditated and erudite by using people on the basis in their related situations (Alavi & Leidner, 2001). Moreover, a business enterprise need to no longer extraordinarily emphasize on the conversion or remodeling procedure from statistics and statistics to knowledge and ignore the technique of conversion or transformation from know-how to statistics and information to statistics. When information is no longer proper within the available context, the organization must do considered necessary arrangements for conversion it into records and facts to maintain in its KM gadget, or actually abandon it. In the best time period, KAPP indicates the actual usage of know-how in the company. It incorporates developing knowledge greater lively and sizeable to generate extra price (Bhatt, 2001). Knowledge will become precious to an employer best while it is applied within a business enterprise's system, and on contrary it will likely be wasted (Perez-Araos et al., 2007). KM duly makes sure that information is used and applied in powerful ways to enhance value.

Perez-Araos et al. (2007) defined, “The primary objectives of KM exercise isn’t just creating new expertise but also maintaining that new and present know-how is actually implemented in all techniques in which the know-how may be applied within the organization”. When understanding is successfully applied, an employer can progress its efficiency and reduce charges (Davenport & Klahr, 1998). If an employer flops to decide the proper expertise to practice inside the right circumstances, it can misplace its competitive power.

Most big activities linked with the KAPP are creation of understanding, getting to know, imitation, identity, retrieval, dissemination, utility, sharing, contribution and storage (Gold et al 2001; Bhatt, 2001; Iftikhar, 2003; Nonaka, 1994). The primary goal of KM is not simplest to assist the origination of latest know-how however additionally to help the employer to enforce it correctly for its advantage (Büchel & Probst, 2000).

KP interpretation that it's miles security-orientated KM manner “Intended to guard the know-how inside a corporation from beside the point use or unlawful hobby or robbery” (Gold et al., 2001). In the modern-day business environment, employees use diverse applications to talk and share expertise, along with e-mail, telephones, immediate messengers and computers. In this medium, where personnel practice various devices over various environments, it's miles mainly hard to secure expertise (Ahmad, 2014). Furthermore, for the reason that financial system has grown to be complicated and globalized, it is crucial to support with several industrial accomplice to fulfil complex patron needs. Companies need to no longer only guard their very own information sources, but also ensure that their commercial companions have appropriate security tactics in area (Ahmad, 2014).

### 3. RESEARCH METHODOLOGY

Study of research categories into descriptive, explanatory or exploratory. In this research we concerned a descriptive design. In the descriptive research we discuss the notable object. This research is based on an empirical analysis, which indicates creating observations to well comprehend the phenomenon of the research which permits to build satisfactory theories or explanations. The research methodology used in this study is qualitative and quantitative research in order to gather relevant sufficient data.

In the qualitative research interview is conducted with companies A and B from Turkey and Companies C and D from Pakistan, questions cover in the interview (1) What do you know about KM? (2) How KM can be implemented? (3) Why the KM is essential for organization? (4) What can be the effect of KM on organizational performance? (5) How KM protection ensured in organization?

With the help of these question we get the information about the understanding about the KM, its implementation and organizational performance and provide the competitive advantage for the organization. In the method of quantitative research, a well-structured questionnaire is designed which are distributed to 200 employees to answers the questions with respect to the KM then are converted into SPSS, the questions permit them to share their opinion about the KM that is implemented in their organization which have the direct impact on organizational performance.

As the data was spontaneously presented by the respondents, so it was directly transferred to SPSS and analyzed, the benefit of this is that minimize the possibility of errors. After completion all the replies were reviewed and checked. The examination of the data was constructed on the hypothesis build at the planned model. Both used parametric and non-parametric tests are used. In some cases, correlations between the variables was also checked and verified with respect to this means are also compared. In order to authenticate the research hypotheses several tests were used such as frequencies, descriptive statistics, inductive statistics such as Pearson correlation. Normal Dissemination was also checked as it was bell shaped graph and indicate that data is normally distributed, we check it by using SPSS. In this research we have independent variables which are knowledge conversion, knowledge acquisition, knowledge application and knowledge protection and these have the direct impact on the depend variable that is organizational performance.

### 4. FINDINGS AND RESULTS

The question was asked from the employees’ in dairy industry from Turkey and Pakistan that they have understanding the KM process in company and in the response of that question 100% respondents said Yes, which indicates that all the employees have knowledge about KM and how they have understanding about the system within the organization.

#### 4.1 New Knowledge from external sources

The question was asked from the employees in Turkey and Pakistan that they obtain a good extent of new knowledge from external sources (e.g. through seminars, conferences, educational courses, subscription journals, expert networks) because new knowledge brings the advancement for employees which have direct impact on organizational performance. In the response of that question 44.5% respondents said strongly agree, 41.5% respondents said to agree, 9% respondents said neither agree nor disagree, 5% respondents said disagree. This indicates that new knowledge obtained from the external source is the most widely used use in the organization and how knowledge is acquired.

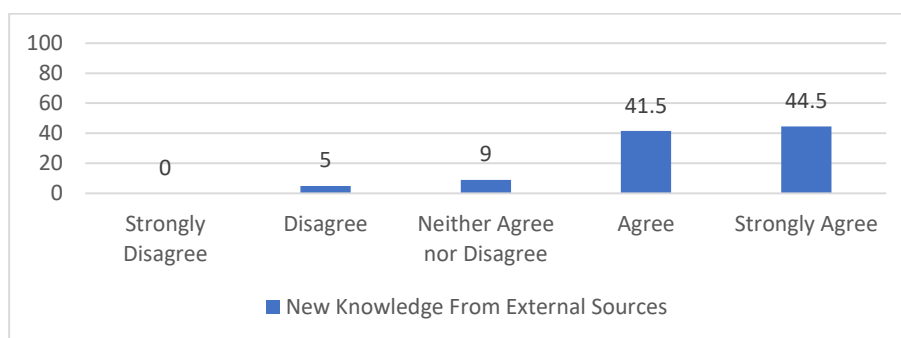


Figure 1: New Knowledge from external sources

#### 4.2 Effective Application of Knowledge

The question was asked from the employees in Turkey and Pakistan that in organization have IT infrastructure and it is fully implemented within the organization for effective application of knowledge also employees have understanding about the IT system that how to use to get the accurate data or information. as in the response of that question 49% respondents said strongly agree, 42% respondents said to agree, 4% respondents said neither agree nor disagree, 4% respondents said disagree. This indicates that through IT infrastructure, effective application of knowledge is applied in the organization.

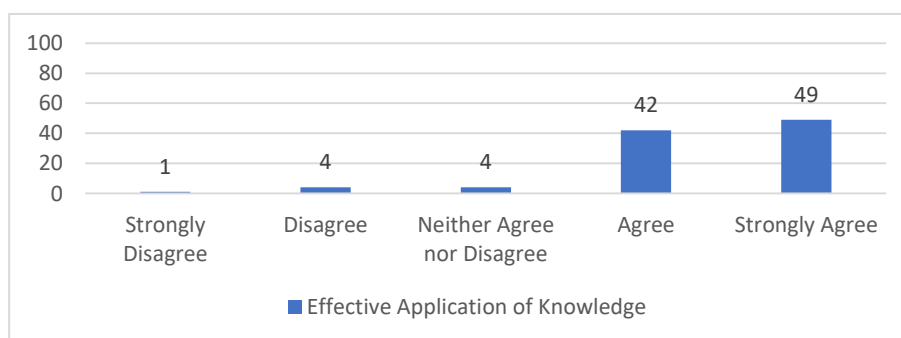
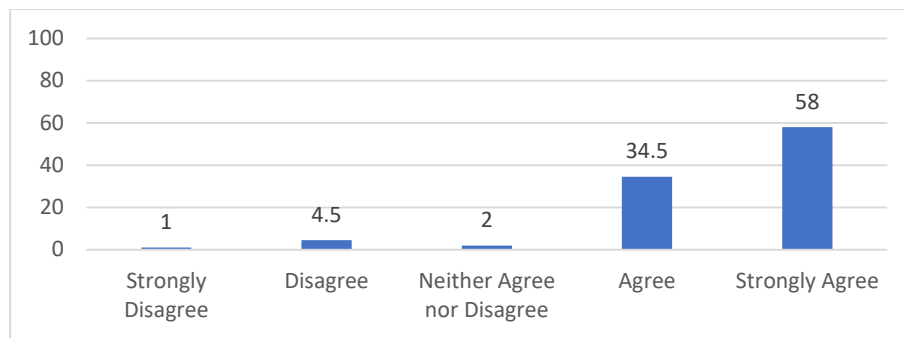


Figure 2: Effective Application of Knowledge

#### 4.3 Organizational Knowledge

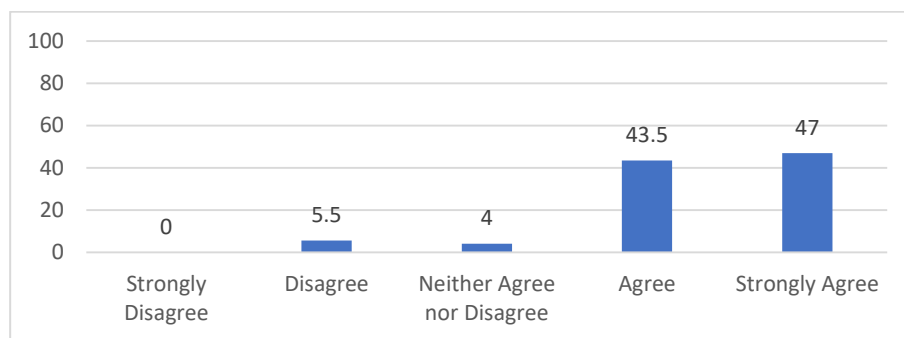
The question was asked from the employees in Turkey and Pakistan that conversion of personal knowledge into organizational knowledge within organization if employees switch the company or current role so the descendent can able to get the previous knowledge and utilize it without wasting time by this, it will impact on organizational performance. As in the response of that question 58% respondents said strongly agree, 34.5% respondents said to agree, 2% respondents said neither agree nor disagree, 4.5% respondents said disagree. This indicates that employees think that personal knowledge into organizational knowledge conversion is processing within the organization.



**Figure 3: Organizational Knowledge**

#### 4.4 Advantage of IT Tools

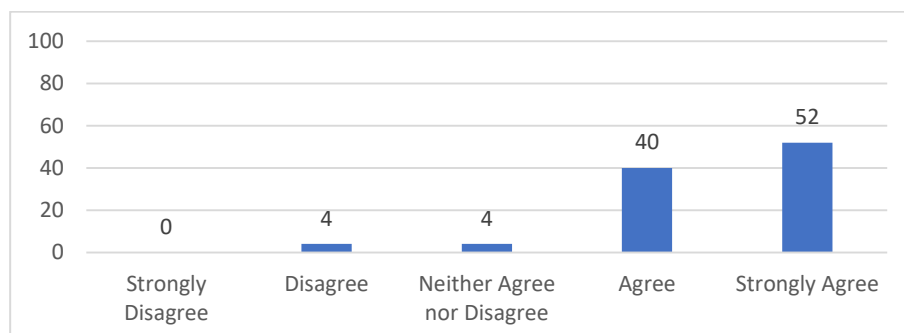
The question was asked from the employees in Turkey and Pakistan that the advantage of using IT tools in the fact that it prevents the loss of knowledge within organization so the previous knowledge can be stored and utilize at any time. As in the response of that question 47% respondents said strongly agree, 43.5% respondents said to agree, 4% respondents said neither agree nor disagree, 5.5% respondents said disagree. This indicates that the advantage of using IT tools in the fact that it prevents the loss of knowledge for organization.



**Figure 4: Advantage of IT Tools**

#### 4.5 Enhanced Productivity or Service Quality

The question was asked from the employees in Turkey and Pakistan that KM helps in enhanced productivity or service quality within organization as different factors are involved such as knowledge acquiring, knowledge sharing, knowledge conversion and protection so by utilizing these factors it can enhanced the productivity or service quality. As in the response of that question 52% respondents said strongly agree, 40% respondents said to agree, 4% respondents said neither agree nor disagree, 4% respondents said disagree. This indicates that KM helps in enhanced productivity or service quality within organization.

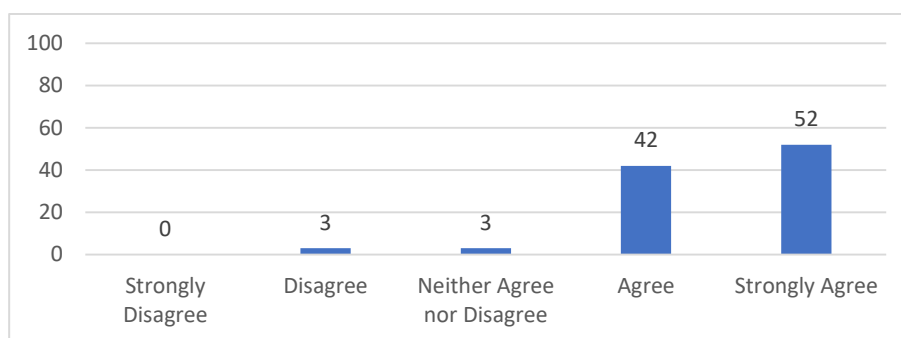


**Figure 5: Enhanced Productivity or Service Quality**



#### 4.6 Transformation of Learning

The question was asked from the employees in Turkey and Pakistan that KM helps in constant and continuous transformation of individual learning to organizational Learning within organization because individual learning has impact on organizational performance. As in the response of that question 47.5% respondents said strongly agree, 45% respondents said to agree, 2% respondents said neither agree nor disagree, 4.5% respondents said disagree. This indicates that KM helps in constant and continuous transformation of individual learning to organizational Learning and due to this process, it impacts on organizational performance.



**Figure 6: Transformation of Learning**

#### Hypothesis:

**H<sub>A0</sub>:** The KM has not a positive significant impact on organizational performance

**H<sub>A1</sub>:** The KM has a positive significant impact on organizational performance

In this hypothesis we have one dependent variable that is KM and one dependent variable that is organizational performance. To check either there is a negative or positive significant impact of KM on organizational performance. According to the quantitative analysis H<sub>1</sub> hypothesis is accepted as the it shown in the results. While to show the data in numerical form and to make the hypothesis testing more accurate statistical analysis has been used by using SPSS which shows that the R square value is 0.409 and the significance vales  $p < .001$ , which indicates that the results are statistically significant. Hence we accepted the hypothesis that KM has a positive significant impact on organizational performance and the null hypothesis is rejected.

In order to test the relationship between the KA, KC, KAPP, KP and Organizational Performance the following hypothesis must be test.

**H<sub>B0</sub>:** KC has not a positive significant impact on organizational performance.

**H<sub>B1</sub>:** KC has a positive significant impact on organizational performance

To test this hypothesis correlation analysis has been used by using SPSS to make the accurate values. The results show that r value is (.454) which are less than 1 and significance value ( $p < .001$ ) which indicates that there is a positive correlation between the KC and organizational performance. We accepted the hypothesis that KC has a positive significant impact on organizational performance and rejected the null hypothesis.

**H<sub>C0</sub>:** KA has not a positive significant effect on organizational performance

**H<sub>C1</sub>:** KA has a positive significant effect on organizational performance

This hypothesis is tested by using correlation analysis through spss in order to give the accurate value. The results show that r value is (.239) which is less than 1 and the significance values ( $p < .001$ ). This result indicates that there is the positive correlation between KA and organizational performance. We accepted the hypothesis that KA has a positive significant impact on organizational performance and rejected the null hypothesis.

**H<sub>D0</sub>:** KAPP has not a significant effect on organizational performance

**H<sub>D1</sub>:** KAPP has a significant effect on organizational performance

This hypothesis is tested by using correlation analysis through spss in order to give the accurate value. The results show that r value is (.433) which is less than 1 and the significance values ( $p < .001$ ). This result indicates that there is the positive correlation between KAPP and organizational performance. We accepted the hypothesis that KAPP has a positive significant impact on organizational performance and rejected the null hypothesis.

**H<sub>E0</sub>:** KP has not a significant effect on organizational performance

**H<sub>E1</sub>:** KP has a significant effect on organizational performance

This hypothesis is tested by using correlation analysis through spss in order to give the accurate value. The results show that r value is (.553) which is less than 1 and the significance values ( $p < .001$ ). This result indicates that there is the positive correlation between KA and organizational performance. We accepted the hypothesis that KP has a positive significant impact on organizational performance and rejected the null hypothesis.

## 5. CONCLUSION AND DISCUSSION

The KM has a positive significant impact on organizational performance as from the previous literature it has been concluded that the fundamental investment in knowledge management within organization that ultimately increase the performance of the organization (Bhirud, Rodrigues, & Desai, 2005). It is also confirmed from previous literature that the current organizations are most concerning to have capability to generate knowledge to improve the performance of organization (Gold et al., 2001). It is supported from previous literature and from our results that knowledge ability has the positive and significant effect on the organizational performance, however the evaluation is based on the uniqueness of individual organization, Henri Inkinen (2016). Whereas knowledge protection has a significant effect on organizational performance this recommends that investing in knowledge protection could enhance knowledge process capability and lead to enhanced organizational effectiveness. (Bhirud, Rodrigues & Desai, 2005; Gorelick & Tantawy-Monsou, 2005; Iftikhar, 2003). So, KM is very much an important need for the dairy industries because they are assumed to be the center of knowledge creation, knowledge dissemination, and knowledge sharing. Each organization has its own scope, size, and priorities, that balances both providing knowledge and research opportunities, while simultaneously operating as an efficient and effective business in a competitive market. KC' KA, KAPP and KP plays a significant role for betterment of organization and these are implemented, and employees recognize the KM and its process within the organization. Further, as the data was collected from different companies and from different countries so there is no difference among the companies' employees' response about KM that it has positive significant impact on organizational performance in dairy industries of Pakistan and Turkey. So, the hypothesis about the KM has positive impact on organizational performance in dairy industry of Pakistan and Turkey is accepted. This study has some limitations as the data was collected from one city of Turkey and Pakistan and there was a certain age limit too. The weakness of this study that should be taking into an account that during the data gathering we faced problem due to language barrier we don't have the specific tools while gathering data from different industries .Furthermore, future research can be conducted by seeing either there are any other factors that can affect the impact on knowledge management on organization performance other than Knowledge conversion, Knowledge acquisition, Knowledge protection and Knowledge application in dairy industries and also by taking the sample of developed countries to check the different effect by considering the culture of each country.

## REFERENCES

- [1] **Ahmad, A., Bosua, R., & Scheepers, R.** (2014). Protecting organizational competitive advantage: A knowledge leakage perspective. *Computers & Security*, 42, 27-39.
- [2] **Alavi, M., & Leidner, D. E.** (2001): KM system and KM; Conceptual foundations and research issues 107-136.
- [3] **Bhatt, G.D** (2001) 'KM in Organizations: Examining the interaction between techniques, technologies and people'; *Journal of KM*, Vol. 5 No. 1. pp. 68-75.
- [4] **Büchel, B., & Probst, G.,** (2000). From organizational learning to KM
- [5] **Bhirud, S., Rodrigues, L., & Desai, P.** (2005). Knowledge sharing practices in KM: A case study in Indian software subsidiary. *Journal of KM Practices*



- [6] **Davenport, T. H., & Prusak, L.** (2000). Working knowledge: how organizations manage what they know. Harvard Business School Press - Boston.
- [7] **Gold et al.**, 2001 A.H. Gold, A. Malhotra, A.H. Segars. KM: An Organizational Capabilities Perspective. Journal of Management IS 18:1, 185-214,
- [8] **Gorelick, C. & Tantawy-Monsou, B.** (2005), KM is the critical practice, performance through learning "For performance through learning, KM is the critical practice", The Learning Organization, Vol. 12 No. 2, pp. 125-139.
- [9] **Inkinen, H.** (2016). Review of empirical research on knowledge management practices and firm performance. Journal of knowledge management.
- [10] **Iftikhar, Z.** (2003) Developing an instrument for KM project evaluation. Journal of KM, 1(1), 55-62.
- [11] **Mason, Robert M.** "Culture-free or culture-bound? A boundary spanning perspective on learning in KM systems." Journal of Global Information Management (JGIM) 11.4 (2003): 20-36.
- [12] **Milton, N. R.** (2007). KA in practice. UK: Springer.
- [13] **Müller-Merbach, H.** (2004). Knowledge is more than information. KM Research & Practice, 2(1), 61-62.
- [14] **Nonaka, I.** (1994). A dynamic theory of organizational knowledge creation. Organization Science. 5(1), 14-37.
- [15] **Nonaka et al.** (2006) Nonaka, I., von Krogh, G. & Voelpel, S. Organizational Knowledge Creation Theory; Evolutionary Paths and Future Advances. Organization Studies, 27, 1179-1208
- [16] **Perez-Araos et al. (2007)** Perez-Araos, A., Barber, K. D., Munive-Hernandez, J. E., & Eldridge, S. (2007). Designing a knowledge management tool to support knowledge sharing networks. Journal of Manufacturing Technology Management.
- [17] **Ulewicz, R., & Blaskova, M.** (2018). Sustainable development and KM from the stakeholders' point of view. Polish Journal of Management Studies, 18.
- [18] **Vance, D. M.** (1997). Information, knowledge and wisdom: The epistemic hierarchy and computer-based information system.