

THE EFFECT OF KNOWLEDGE MANAGEMENT AND ORGANIZATIONAL LEARNING ON THE ORGANIZATIONAL PERFORMANCE

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Abstract: *The current study has the basic purpose of finding out the impact of knowledge creation, knowledge transfer, knowledge sharing, storage of knowledge and organizational learning on the organizational performance of oil and gas sector of UAE. The data for this purpose was collected by administering the questionnaires as distributed among different managers and employees of the ADNOC, UAE. However, only 374 useable responses were obtained by the researcher for analysis purpose. The researcher has applied various techniques and tools on the collected data for various purposes such as to find out response rate, non-response bias, common method variance, goodness of measurement tests such as composite reliability, convergent and discriminant validity. In addition, the most important test used is structural equation modeling through PLS to find the direct relationships. The results have indicated that the direct impact of knowledge creation, knowledge transfer, knowledge sharing, organizational learning and organizational innovation is significant on the organizational performance. In this way all the results have been interpreted in accordance with the acceptance and rejection of the hypotheses of the study. The researcher has identified various theoretical, practical and policy making implications of the study. In the last, different limitations and future research indications have also been discussed.*

Keywords: *Knowledge Creation, Knowledge Organizational Learning, Organizational Performance, ADNOC, UAE*

Introduction

The UAE or United Arab Emirates encapsulates seven states: Abu Dhabi, Dubai, Sharjah, Ajman, Umm al Quwain, Ras Al Khaimah and Fujairah (Govt. of UAE, 2022). UAE is a premier member of the Organization of Petroleum Exporting Countries (OPEC) and also holds a significant position in the Gas Exporting Countries Forum (GECF) (Almazrouei et al., 2019). This country has been for long been an important member and constituent of the international oil and gas market. It is considered to be the seventh largest oil reserve holder of the world. It holds a large reserve of oil amounting to 97.8 billion barrels (Al-Ali et al., 2018). A total of 96 percent of these reserves are situated in the State of Abu Dhabi, while two percent of the proven reserves amounting to two billion barrels are situated in the state of Dubai. The remaining two percent are split and spread across the states of Ajman, Sharjah, Fujairah, Ras Al-Khaimah and Umm Al-Quwain (Shqairat & Sundarakani, 2018).

In addition, the exploratory history of oil and petroleum reserves is rich in the UAE, an offshore oil field discovered in the year of 1963 (Upper Zakum oil field) is the second largest offshore oil reserves site in the world. Between the period of 2009 and 2016 there was a documented 28 percent increase in UAE's crude oil and liquid natural gas production capacity, the production capacity of petroleum and petroleum related products was about 3.7 million barrels per day and 2.97 million barrels per day of crude oil (Shqairat et al., 2018). In similarity to success in exporting, drilling and refining reserves of oil a similar success has been viewed by the Emirates on fruitful implementation of similar techniques in the natural gas department. Since 2015 UAE has been successful in exporting around 466 billion cubic feet of natural gas per annum (Al Hammadi & Bernard, 2016).

The concept of knowledge management (KM) is referred to as the procedure of generating, storing, sharing and utilizing information (Di Vaio et al., 2021). The procedures and processes as involved in KM are being utilized to enhance organizational performance and create a significant competitive edge (Gunjal, 2019). The effects of KM and organizational learning on the performance of organizations are manifold (Sumbal et al., 2018). The KM construct is divided into four concepts: knowledge generation, knowledge sharing, knowledge storage and knowledge utilization. (Abudaqa et al., 2021) Knowledge generation is defined as the process of obtaining or procuring knowledge in an organization and developing it further, so it meets and fulfills the requirements of the present scenario and also acts as a source of input for future workers (Antonelli & Colombelli, 2018). Generally knowledge is generated within the minds of intellectuals but in performance-oriented organizations it is documented to be shared with other individuals. Knowledge generation (KGE) is the most complicated facet of the knowledge management process where the concerned procedures and technologies used in the oil and gas sectors are cultivated for utilization in the company or across companies (Grigoriou & Rothaermel, 2017). The impact of KGE on organizational performance is significant (Dayan et al., 2017).

Organizations are transforming into knowledge-intensive facilities through adaptive, hierarchical and generative learning direction (Herremans & Isaac, 2005). Sharing important and vital information among and across the organization/s accounts for the development and success of the company and industry as a whole. Variables like OL also utilizes knowledge resources and management systems and inculcate them in a way that organizational performance is ensured (Camisón et al., 2017). Ideally theoretical and empirical testing would confirm that there is a direct relation between associated learning outcomes and KM exercises with the overall performance of industries driven by technological and infrastructural

dynamism (Alfaki & Ahmed, 2017). Other important constituents and affecters of this relationship include OL practices and orientation and acceptance of external information sources. Organizational learning (OL) is the formalized process of knowledge creation, retention and transference between individuals, teams, executives of an organization (Baporikar, 2020). From the learning behavior undertaken by an organization, the tendency to commit errors and mistakes diminishes over the passage of time and impactful knowledge resources are created. These reserves encompass the varied domains of the organization and facilitate employees of every level in learning new competencies and attaining low levels of errors (Darwish et al., 2018). This research is going to examine the impact of knowledge management and organizational learning on organizational performance from the context of ADNOC, UAE.

Literature Review

A study by Cerchione and Esposito (2017) explained that there are many dimensions of KM. However, some important and significant types are entitled as knowledge developing, knowledge sharing, knowledge storage, and knowledge utilization. The first important type of KM is knowledge generation or development. Knowledge generation is the process of creating and acquiring the information in a company and generating it within the boundaries of an organization (Ellemers, 2021). Knowledge generation is an important type that plays a crucial role in the development of effective knowledge which is beneficial for the organization and its business operations (Asrar-ul-Haq & Anwar, 2016). Knowledge generation (KGE) is the first step in developing effective knowledge that can occur effectively mainly through the research and experimental development in organizations. KGE occurs in organizations during the activities and the interactions in the workplace. KGE indicators mainly focus on the properties of an individual's capital inputs and connected outputs (Audretsch & Feldman, 2004). In an organizational setup, knowledge can be generated by knowing, learning and enhancing process. Knowledge can be generated mainly through practice, cooperation, and interaction between the staff (Hahn et al., 2006). A knowledge creation process also plays a significant role in the generation of knowledge such as it mainly includes; the impact of new information on organizations innovation, the role of individual or organization environment, knowledge generation through the application, integration of internal and external information (Hwang et al., 2018).

The organizational learning process can be beneficial for many organizations in many perspectives. For example, it is useful in an effective learning organization process that can enhance the environment of the organization in terms of positivity (Aranda et al., 2017). An effective learning process helps an organization to increase the personal capacity building of its employees and also helps in encouraging the personal goals as well as the organizational goals. The organizational learning process also enhances the performance of working teams that are working on the same project in order to achieve common goals. Some significant outcomes of learning culture in an organization are enhance productivity, efficiency gains, also enhance the profit of the company, continuous improvement, and minimize the rate of employee turnover (Aranda et al., 2017). Learning culture in organizations plays a significant role in the development of organizations and it also helps in generating a positive working environment in the company (Hanaysha, 2016). The organizational learning process can create leaders at all levels of the company that helps in achieving the targeted goals of the company. This process provides some effective tips and suggestions for developing a sustainable organizational environment (Abudaqa et al., 2020).

Organizational performance is a broad term in management and financial area. In the early 1990s, it is defined that organizational performance (OP) is the process of analyzing and identifying the operations of the company against its goals and objectives (Oyemomi et al., 2016). It means that the organizational performance is a significant process of determining the output and input level under a specified time period. In other words, the OP also comprises the actual results or outputs as compared to intended outputs. A study by (Sarea et al., 2019), has defined that the organizational output or performance basically consists of major components such as shareholders' value, financial performance as well as market performance. When an organization has a significant market value in the market, it means there is positive OP. It cannot be denied that the performance of an organization has great importance. Many types of professionals, including strategic planners, majorly focus on OP.

Research Methods

Population in any study consists of group of individuals, things, or objects in which a researcher or a statistical practitioner is interested (Sharma, 2013). In other words, population covers entire group on which research will be conducted. In the present study analysis, the research has been conducted on the oil and gas industry of UAE known as ADNOC and for this reason, all employees who are currently working in ADNOC are known as population under present study. As per the latest information available on the web, currently there are more than 55,000 employees which are associated with ADNOC and working at various positions both in terms of permanent and contractual basis. Therefore, the population under present study consists of all the 55,000 employees who are linked with ADNOC. In the current study, Random sampling is used to select sample of the study because the purpose of the current study decided the sample of this study. In addition, after determining the study population, next step is dealing with the sample. Researchers believes that sample is a part of population from which the data will be collected as some later time duration whereas sampling is the selection of a subset of individuals from the population for estimating the characteristics of the complete population. Based on the key suggestions of Krejcie and Morgan (1970), the sample size based on the stated population is 382. Meanwhile, for the purpose of data collection, questionnaire has been designed based on the existing literature, where the items have been extracted from existing literature. More specifically, for knowledge management, titles like knowledge generation, knowledge sharing, knowledge utilization, and knowledge storage have been considered.

Response Rate

As discussed in the previous section, it has been estimated that 573 questionnaires were distributed among the managers and employees of ADNOC, UAE for the purpose of data collection about the variables used in the current study. The statistics presented in Table 1 indicate that in oil sector, Total 286 questionnaires were distributed and similarly, 287 questionnaires were distributed in gas sector of UAE. When the researcher collected back the questionnaires, it was found out that only 190 responses have been collected from oil sector while only 184 responses have been collected from gas sector. In this way, the total of 374 responses was obtained, the data from which has been used to analyze and interpret the results. In this way, a response rate of 62%% was obtained in the current study.

Table 1: Response Rate

Sector	Distributed Questionnaires	Returned Questionnaires
Oil	286	190
Gas	287	184
Total	573	374

Multicollinearity

The researcher has observed that if there is some extent of multicollinearity in the constructs of the study, it might provide some error in the regression coefficients too. Therefore, the regression coefficients and other statistical techniques might also suffer because of the multicollinearity in the data (Tabachnick & Fidell, 2007). In this regard, multicollinearity results have been presented in Table 2, in which the VIF values regarding the dependent variable (organizational performance) have been given based on the key suggestions of (Hair et al., 2006). According to the Table, the VIF value is 2.107 for knowledge creation, 1.656 for knowledge sharing, 2.69 for knowledge transfer, 2.086 for organizational learning, 1.462 for and 1.86 for storage of knowledge. As all the VIF values are less than 5 (Sharma, 2012), it indicates that there is no multicollinearity in the collected data.

Table 2: Multicollinearity

Constructs	VIF
Knowledge Creation	2.107
Knowledge Sharing	1.656
Knowledge Transfer	2.69
Organizational Learning	2.086
Store Knowledge	1.86

Assessment of Reflective Measurement Model

The composite reliability values for all the measurement items were determined so that the reliability as well as the internal consistency of these items can effectively be evaluated (Henseler et al., 2014). It must be noted that for an item to be internally consistent and reliable, the factor loading must be greater than 0.50. In the current study, the results of composite reliability have been presented in the Table 3, where the factor loadings as linked with each measurement item has been given. It shows that the factor loading values of all the items of the study are greater than 0.5, which was the actual requirement. There were items that were having the factor loading values less than 0.5. Therefore, these items have been removed from the study in order to make sure that internal consistency of the items remains intact. However, it is also a fact that in case of the reflective scale, the items that have been deleted by the researcher are not actually supposed to have impact on the actual meaning of variable only if it has appropriate internal consistency. This is because of the reason than the direction of casualty is from the variables towards the measurement items. In addition, Table 3 report that for composite reliability, the values are greater than 0.7. This would reflect that there is a presence of adequate and necessary internal consistency as required in the study.

Table 3: Convergent Validity

Constructs	Items	Loadings	Alpha	CR	AVE
Knowledge Creation	KC1	0.895	0.873	0.916	0.735
	KC2	0.659			
	KC3	0.915			
	KC4	0.933			
Knowledge Sharing	KS1	0.856	0.773	0.869	0.69
	KS2	0.863			
	KS3	0.769			
Knowledge Transfer	KT1	0.887	0.854	0.911	0.774
	KT3	0.873			

	KT4	0.88			
Storage of Knowledge	SK1	0.871	0.889	0.931	0.819
	SK3	0.926			
	SK4	0.917			
Organizational Learning	OL1	0.848	0.906	0.934	0.781
	OL2	0.917			
	OL3	0.896			
	OL4	0.873			
Organizational Performance	Org.P1	0.742	0.798	0.868	0.623
	Org.P2	0.76			
	Org.P3	0.833			
	Org.P4	0.818			

The researcher has used two types of tests in order to assess the discriminant validity of the constructs. These tests include cross-loadings and Fornell-Larcker criterion. When the cross loadings of the constructs were found out, it was observed that the values for most of the indicators are greater than 0.7. In the same way, the cross-loading values for all the indicators of the study are found to be greater than 0.5 as required by discriminant validity. If there is an item that is having the cross-loading lesser than 0.5, it must be removed and should not be used in the study. On the other hand, if Fornell-Larcker criterion is considered, the basic observation is that the variable of the study must show a greater degree of variance for its own measurement items as compared with the other variables of the study. In this regard, it is the requirement of discriminant validity that the square root of AVE must be greater as compared to the correlation calculated for each variable. The results of Fornell-Larcker criterion have been presented in Table 4, while the cross-loading results have been given in Table . These results have clearly indicated that square root of AVE is greater as compared to the correlation calculated for each of the study variable. Therefore, it can be stated that all the variables are unrelated to each other and represent distinctive features. Therefore the discriminant validity of the variables is in good condition.

Table 4: Fornell Larcker Criterion

	KC	KS	KT	Org.P	OL	SK
KC	0.857					
KS	0.532	0.83				
KT	0.512	0.5	0.88			
Org.P	0.706	0.685	0.614	0.789		
OL	0.625	0.497	0.543	0.641	0.884	
SK	0.318	0.339	0.631	0.429	0.496	0.905

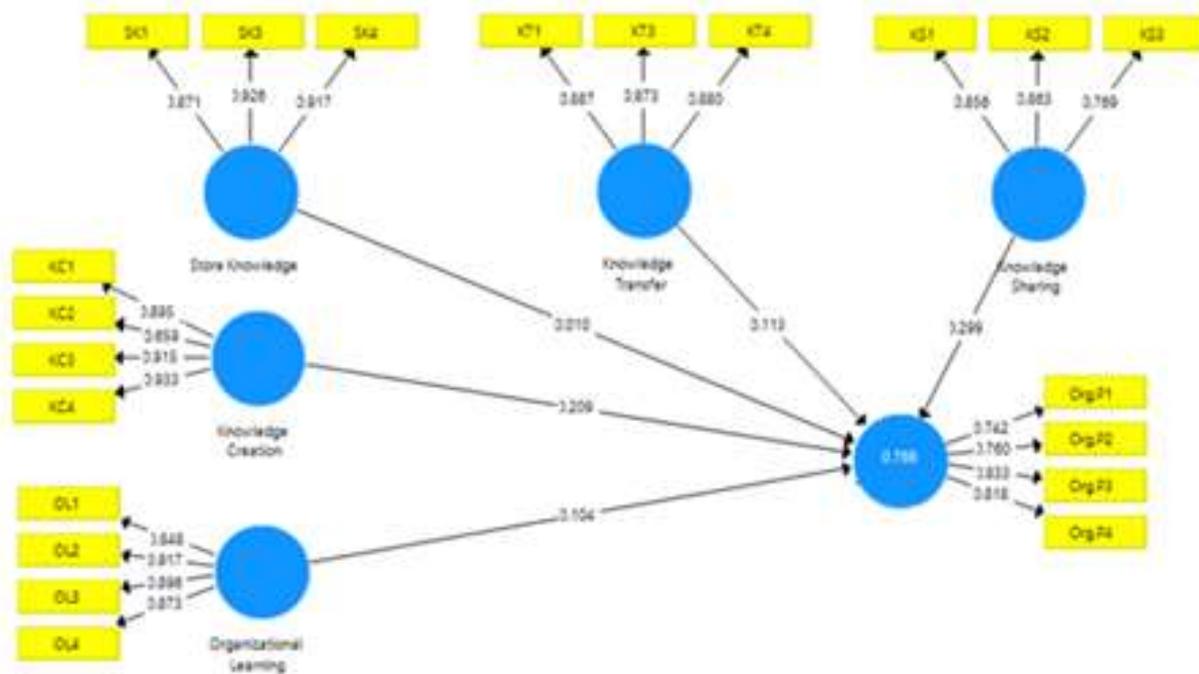


Figure 1: Measurement Model Output

SEM Path Analysis

The acceptance or rejection of the hypotheses of the study has been discussed in this section. The results of relationship path analysis have been presented in Table 5, respectively. The Table 5 represents the direct effects of the independent variables over the dependent variable. All the hypotheses along with their results of acceptance and rejection have been discussed in this section:

Hypothesis 1: Knowledge creation has significant impact on organizational performance

As per the results obtained by the researcher, this hypothesis has been accepted as the impact of knowledge creation has been found as significant and positive on the organizational performance. As the beta value of this impact is 0.215, it can be stated that with the increase in one percentage of knowledge creation, there will be 21.5% increase in the organizational performance in an organization. This it can be concluded that the results of the study support this hypothesis.

Hypothesis 2: Knowledge sharing has significant impact on organizational performance

According to the results obtained for the study, this hypothesis has been accepted as the impact of knowledge sharing has been found as significant and positive on the organizational performance. As per the table, the beta value of this impact is 0.296, it can be said that with increase in one percentage of knowledge sharing, there will be 29.6% increase in the organizational performance in an organization. This it can be stated that the results of the study support this hypothesis.

Hypothesis 3: Knowledge transfer has significant impact on organizational performance

As far as the impact of knowledge transfer on organizational performance is concerned, it can be evaluated from the results that knowledge transfer has significant and positive impact on organizational performance. In other words, with one percent increase in knowledge transfer, there will be 11.4% increase in the organizational performance. As the aforementioned impact

has been found as significant, therefore it can be concluded that this hypothesis has been accepted.

Hypothesis 4: Storage of knowledge creation has significant impact on organizational performance

The impact of storage of knowledge has been found as insignificant on organizational performance based on the reason that the p-value in this case is greater than 0.05. In addition, this insignificant impact is found as negative in the results. It can also be put in this way that with increase of one percentage in storage of knowledge by an organization, the organizational performance is supposed to decrease by 0.6%. As the impact is insignificant in the study, therefore this hypothesis is considered to be unsupported by the results.

Hypothesis 5: Organizational learning has significant impact on organizational performance

In accordance with the impact of organizational learning on organizational performance, the results state that organizational learning has significant and positive impact on organizational performance. In other words, it can be stated that with one percent increase in organizational learning, there will be 7.7% increase in the organizational performance. As this impact is found as significant, therefore, it can be concluded that this hypothesis has been supported as per the results of the study.

Table 5: Results of Direct Relationship

Hypotheses	Directions	Beta	SE	T	P	Decision
H1	Knowledge Creation -> Org. Performance	0.215	0.046	4.651	0.001	Supported
H2	Knowledge Sharing -> Org. Performance	0.296	0.042	7.066	0.001	Supported
H3	Knowledge Transfer -> Org. Performance	0.114	0.048	2.384	0.009	Supported
H4	Store Knowledge -> Org. Performance	-0.006	0.034	0.173	0.431	Not Supported
H5	Organizational Learning -> Org. Performance	0.077	0.039	1.992	0.023	Supported

Conclusion and Key Findings

UAE is an important member of the oil and gas market in the world and is the seventh largest oil reserve in the world. This sector is a driver of economic growth in this region. The work patterns in this industry have been taken over by knowledge management initiatives, innovation, and openness. In this research the researcher has conducted an in-depth statistical analysis for the purpose of finding out how knowledge management and organizational learning environment can improve the performance of the organizations in the ADNOC, in UAE. The dimensions of knowledge management and organizational learning have been taken as a source of organizational performance. These procedures have found to be the generators of competitive advantage in the market for the organization. The researcher formulated 5 hypotheses in this research by analyzing the theoretical framework of this study and then conducted a questionnaire survey to find out how this variable impact on each other in the scope of ADNOC, UAE. The empirical findings cover that there is a significant impact of knowledge creation, knowledge sharing, and knowledge transfer on organizational performance. However, knowledge storage has no significant impact on the performance of ADNOC, UAE. Additionally, organizational learning is also reflecting its direct role in determining the performance of ADNOC. Based on the current study, the prior literature in the area of knowledge management, organizational learning, organizational performance, has been examined in-depth. Knowledge management and organizational learning literature has been

examined in terms of the effects of these variables on organizational performance. Most of the previous research has focused on single dimension analysis while the current dissertation is focused on extending literature in this area by discussing the multidimensional aspects of knowledge management.

Like any other study, this research is also linked with a range of limitations. These limitations arise from the choices that are made by the researcher regarding the scope, method, and orientations. In addition to having limitations, there are probable future directions that can be adapted from each research limitation. Details are as follows:

- Firstly, current research is based on the quantitative research approach for which data has been collected only through questionnaire approach. This would claim that there is no consideration for the qualitative methods like survey interview or mixed method in this research.
- Secondly, current study has only considered two of the independent variables named as knowledge management and organizational learning for which there is a big limitation regarding no consideration of other exogenous constructs in the model.
- Thirdly, the main dependent variable is entitled as organizational performance. However, there is no consideration for the key dimensions entitled as financial performance, non-financial performance, customer satisfaction, employee satisfaction, and other measures to reflect the performance title.

Fourthly, this research has been conducted on one of the largest oil and gas producer in the region of UAE, named as ADNOC. However, the rest of the firms are not under consideration in this study.

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