

# MODERATING ROLE OF ORGANIZATIONAL INNOVATION AND OPENNESS ON THE RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT, ORGANIZATIONAL LEARNING, AND PERFORMANCE OUTLOOK: ADNOC, UAE

Ahmed Alyammahi <sup>1</sup>, Mohd Faiz Hilmi <sup>2\*</sup>, Anas Abudaqa <sup>3</sup>, Hasan Almujaaini<sup>4</sup>

<sup>1, 2, 3, 4</sup> School of Distance Education, Universiti Sains Malaysia-Penang (Malaysia)

\* Corresponding Author: Faiz@usm.my

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**Abstract:** *Organizational performance is the process of analyzing and identifying the operations of the company against its goals and objectives. It is a significant process of determining the output as well as input level under a specified time period. In other words, the organizational performance also comprises the actual results or outputs as compared to intended outputs. Knowledge management is an important concept in terms of organizational knowledge and information; it offers various processes in order to attain the crucial objectives of an organization. This research aims to examine both direct and indirect association between the variables of interest. For this reason, Moderating role of Organizational innovation and Openness on the relationship between knowledge management, organizational learning, and Performance Outlook has been tested for oil and gas industry in UAE. Primary data has been collected through questionnaire approach. A valid sample of 374 respondents have been tested through a range of statistical analysis specifically the two-step approach. The study results show that there is a significant impact of key dimensions of knowledge management on organizational performance except knowledge storage. Additionally, organizational learning also helps in promoting the performance outlook in the oil and gas industry of UAE. Moreover, there is a significant moderating effect of organizational innovation on the relationship between knowledge storage and performance, knowledge transfer and performance. On the other side, organizational openness also helps in moderating the relationship between knowledge storage and performance. Besides, a range of limitations have also been discussed to provide some useful future directions.*

**Keywords:** *Knowledge Management, Organizational Learning, Performance, Innovation, Openness, UAE.*

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## Introduction

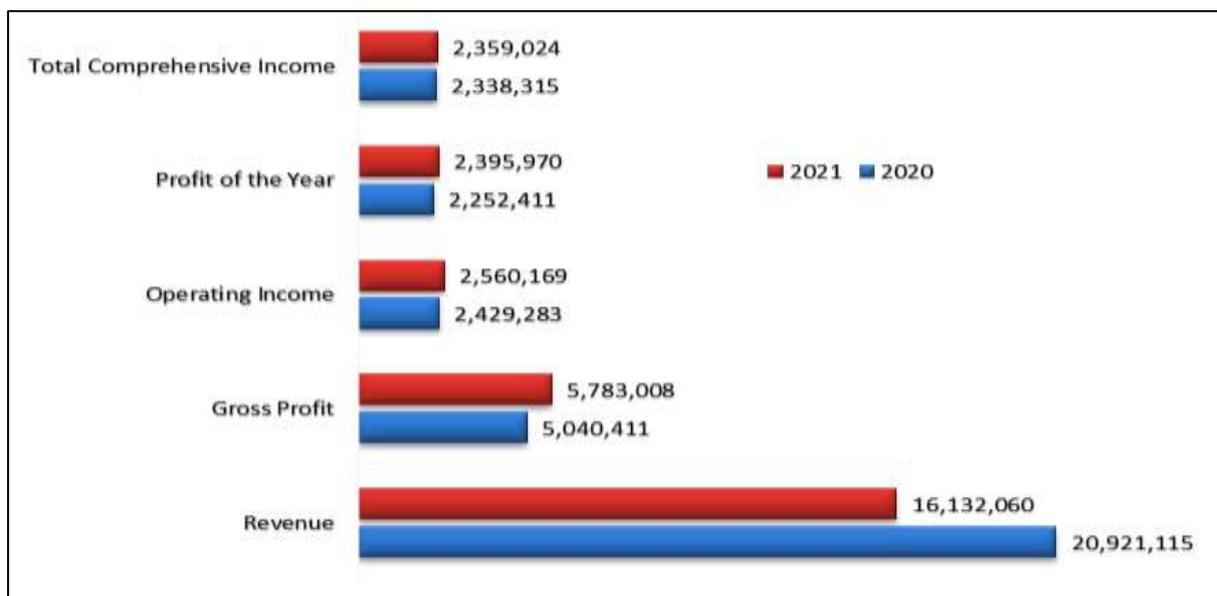
The portfolio of oil and gas companies present in UAE is impressive, which includes successful local players as well as international companies. The domestic portfolio includes Abu Dhabi National Oil Company (ADNOC), which is the world's second largest oil and gas producer, Dubai National Oil Company, Sharjah National Oil Company (SNOC), Emirates national oil company (ENOC) and RAK Gas located in Ras Al-Khaimah (GulfTalent, 2022). A number of renowned and successful international oil companies are also operating in UAE, Exxon Mobil, BP, Eni, Royal Dutch Shell, Chevron, China National Petroleum Corporation, Occidental Petroleum, China Zhen Hua Oil Company and India oil and gas exploration among others (Ali et al., 2019). The Oil and Gas industry is of a technical nature, where errors are reduced through a learning behavior and the technical procedures of exploring, refining, storing and exporting are updated and innovated with the passage of time as workers learn new techniques and document them so that the future technologist and workers can learn from their work behaviors (Ismail et al., 2012). This process whereby information resources are handled and documented in an efficient manner is known as knowledge management (Liebowitz, 2019). Organizations of the 21<sup>st</sup> century contain and possess resources of a varied nature but the presence of knowledge and knowledge-based resources within an organization amount for its strategic and creative success. Knowledge has been recognized as an essential strategic resource for the augmentation and a precursor for the development of innovation and improved firm performance (Patel et al., 2019). The resource advantage theory by Hunt and Lambe (2000) considers knowledge to be an indispensable and tactical asset of an organization. Meanwhile, knowledge and its creation tendencies are viewed as a unique, immobile and heterogeneous process. Thus the ability to generate, apply and integrate these resources within and across companies mounts for organizations to develop and improve their competencies, market and economic position and performance and encapsulate competitive advantages (Atapattu & Huybers, 2021; Ndlela & Du Toit, 2001). In the context of oil and gas companies, the above stated concepts hold true as former experienced technical incumbents of the organizations of this sector are careful in creating documents and updating relevant information to inform the new generation or incoming employees about the way of performing and the potholes and mistakes to be avoided (Sumbal et al., 2017).

Knowledge sharing (KSA) is recognized as an organizational activity where the generated or created knowledge is shared across the organization so that a valuable intangible asset can be created, that serves as a mode of bringing competitive advantage to the organization (Hahn & Subramani, 2000). whereas knowledge storage (KST) is the method or process whereby knowledge is converted from an implicit (internal) and tacit form to an explicit and physical form, where it is store in the form of databases, reports, documents etc. in any way that can be utilized in future (Al-Mulla et al., 2019). Knowledge utilization refers to the process of using accumulated knowledge and information sources to develop solutions to problems and devise strategies to reach organizational goals of efficiency and performance. However the ability of handling or sharing, storing and utilizing knowledge can't be cultivated over a day, knowledge management activities and processes are inculcated in employees by making the believe that they are helping the organization in achieving goals and performance outputs (Ameen et al., 2018).

Organizational learning (OL) is a hierarchical process and emulates in a potential knowledge resource over the passage of time, in some studies it has been coined as the process of passing down instructions or information by experienced organizational members to the new ones. In a developed sector like Oil and Gas, there is a significant monopoly of local players (ADNOC,

SNOOC, etc.), thus there is also a considerable proportion of trained and experienced individuals who are capable of guiding the incoming employees into the correct direction. If these leaders interact positively with the new employees, they can motivate and inspire them in becoming seasoned professionals (Al-Ameri et al., 2019). As the dimension of OL is quite helpful in improving the organizational performance specifically over long run, therefore, its consideration is quite important. Meanwhile, OL helps in enhancing employees' skills and learning capabilities along with getting positive and constructive ideas. Such practices at workplace would help in generating constructive KM practices which in return positively linked with higher performance outlook. For this reason, current study has also considered OL as a second determinant of OP specifically in the oil and gas industry of UAE.

The dynamic nature of the economy and competition prevailing in a market like that of UAE calls for introduction of innovative incremental approaches to doing business and managing the workforce so that competitive advantage can be achieved (Busaibe et al., 2017). The oil and gas sector are the most profitable and biggest revenue generator for the Emirates. With the growth and transference of technology and management approaches globally, the contest for innovation seems to evolve radically (Abudaqa et al., 2021). This presents an environment in which high training is endorsed, in the current scenario gender differences are neglected and female engineers and managers are also being recognized for their innovative competencies. The oil and gas industry presents suitable environment for the development of organizational innovation (Busaibe et al., 2017). More specifically, Figure 1 provides the performance outlook for one of the biggest oil and gas role player in the region of UAE, named as ADNOC. The trends in performance outlook reflect that during the financial durations of last two years, revenue was 16,132,060 which was found to be lower than the figure of 20,921,115 during 2020. It means that performance in the form of earning for the oil and gas industry was more in 2020 comparatively to 2021. Additionally, the operating income was found to be slightly greater in 2021, comparatively to 2020. The stated findings infer that the performance (in terms of total revenue) in the ADNOC is to be lower in the recent year of 2021 which needs some immediate attention from the management as well as other key representees in the oil and gas industry.



**Figure 1: Performance Outlook for ADNOC**

Source: Annual Report (2021)

This research has examined the role of organizational innovation and openness as a moderator on the relationship between KM factors, organizational learning and performance specifically from the context of ADNOC, UAE. Therefore, following research objectives have been determined.

1. To examine the role of knowledge management practices on organizational performance in the oil and gas industry of UAE.
2. To investigate the role of organizational learning on organizational performance in the oil and gas industry of UAE.
3. To determine the moderating role of organizational innovation and organizational openness between KM and organizational performance in the oil and gas industry of UAE.
4. To test the moderating role of organizational innovation and organizational openness between organizational learning and organizational performance in the oil and gas industry of UAE.

### Literature Review

Based in UAE, the various companies and organizations focus on improving efficiency as well as effectiveness. A study by Wood (2018) has determined that there are three major types of OP such as market-based performance, financial accounting performance and lastly the operational performance. Since the accounting standards issued by the accounting standard board, it becomes necessary for all organizations to measure the market-based performance as well. Basically, the market-based value of a company helps in identifying the current value of the company in the market (Payne et al., 2017). It significantly helps to determine the market value added to the particular company as well as annual returns. The higher is the annual return, the more significant will be reputation or goodwill of the company is and more effective will be the performance of the overall organization. The market-based performance of an organization also includes the market value-added and return to shareholders' value. The market value-added basically shows and identifies the difference between the market value and capital which is contributed by the investors and shareholders (Khan, 2016). The more is the market value-added of an organization, the higher is the performance and vice versa.

Additionally, operational performance is another primary dimension of OP. When the firms measure their performance then operational performance is also important. A study by Biswas (2018) identifies that the operational performance overall includes the market effectiveness which is based on shares value and goodwill. In addition, the operational performance of an organization includes the satisfaction level of the customers, quality of the products/services, new product innovation, as well as market share. It is important to discuss that the higher is the market share of an organization within the market, the more significant is the operational performance if an organization.

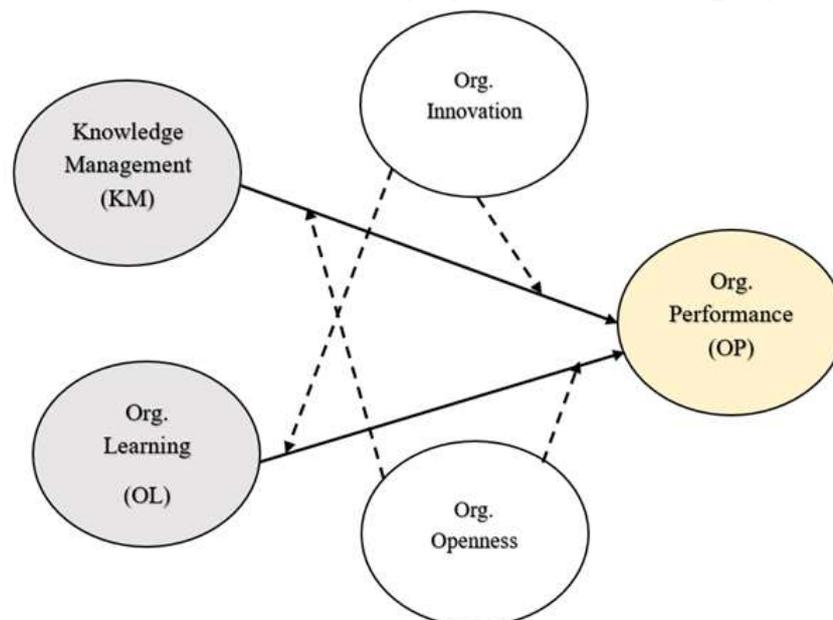
In addition, A study by Santoro et al. (2018) demonstrates that KM is an important concept in terms of organizational knowledge and information. More specifically, KM offers various processes in order to attain the crucial objectives of an organization. KM is an important term that was first used in the early 1980s by the knowledge expert Peter Drucker. In 1998, the concept of personal KM was used, and it used to refer to the management of information and knowledge at the single person level. KM has been a significant term and concept since the late 1980s and it is accepted as a mechanism of capturing, generating, localizing and significantly using the organizational information or knowledge (Barley et al., 2018). KM also refers to the approach that is used to attain the objectives of the organization by making the effective use of

knowledge and information. It is the most important concept that is crucial for the performance of any particular business and organization (Latilla et al., 2018) because it plays a significant role in generating organizational processes and business operations. Knowledge management is the significant method of allowing flow to increase the shared understanding, knowledge, learning, and the process of decision making. Knowledge flow is referring to the process of transferring and movement of information within and between different organizations. KM is a necessary step in order to enhance the performance of an organization and its business operations. The main objective of KM is to develop a shared understanding mainly with the help of cooperation of individuals, mechanisms, and important tools within the organizational culture (Gunjal, 2019). Therefore, KM can be defined as the method of generating, transforming, using and implementing the knowledge and data of a company. KM is mainly used to achieve the important objectives of an organization that is crucial for the financial performance of an organization (Setyorini et al., 2019).

According to Bakari and Mabrouki (2017), it is well known that openness has a great role in every sector such as in education, financial sector, manufacturing, gas and oil companies. It broadly helps to create innovative ideas and innovations. There are significant dimensions of the openness within the organization such as organization culture, values, innovation, and generation of ideas, team orientation and stability. As, one of the primary and well-defined components or dimensions of the openness in the organization is organizational culture (Dobusch et al., 2019). The organizational culture is the shared descriptive perception of the members in order to share the values. The more an organization focuses on organizational culture and values, the more an organization focuses on openness. However, in different organizations of the UAE, the role of openness is very fundamental. The strategic process of openness also helps to create teams within the organization that further set out the ideas and innovation. The team working and collaboration is one of the fundamental dimensions or ways to increase openness within the organization. The team working helps to share the ideas within the organization among other team members (Dixon, 2017). As a result, efficiency, as well as the effectiveness of the organizations has been improved.

A study by Azar and Ciabuschi (2017) state that Innovation and organizational innovation is a complex concept which sometimes overlaps with few other similar concepts such as creativity, change, and technology. Studies on the concept of innovation span various sectors of inquiry including the public administration, business, international business, and economic. Many researchers have studied the concept of innovation at various levels of determination. For example, individual, group, firm, economy and many other sectors. The term organizational innovation is overly broad and important which is mainly refers to the studies and research of the innovation process in public companies and businesses. A study by Camisón et al. (2017) defined the concept of organizational innovation that mainly involves the effective steps and processes which bring positive changes in the existing systems and products or services. Organizational innovation involves the execution of brand-new methods for sharing the responsibilities and the decision making between employees. OP can also be defined and explained as the execution of new organizational processes in the workplace organization and external relations. Organizational innovation is the process of introducing new methods and processes in the existing business operation of an organization (Armbruster et al., 2008). The introduction of new methods and processes is crucial for any OP as it increases the financial and profit level of the firm. Organizational innovation can also be defined as the new ways that are introduced in the organizational existing processes.

There are many determinants and factors that affect the process of organizational learning and also affect the performance of the organization. A study by Louis and Murphy (2017) defined some factors. More specifically, the most crucial factors are given; general influence factors, human resources factors, follower influence factors, time influence factors and the group influence factor and the last one is the board of directors' influence factors. In general influence factors that affect the organizational learning process are categorized into three factors such as context, survival, and history. The concept of context factor is linked to socially developed elements. The second factor of general influence is the history, the suggestions of past scholars and attempts at development or learning will also affect the long-term plan of learning overall within that firm or company. Survival is the last factor of general influence factors in organizational learning, and survival is the initial premise for becoming a learning company. Survival is an important and significant factor and object for the process of learning (Imran et al., 2016). Survival is the most critical factor that directly affects the process of organizational learning. The survival factor and concept are basic to the nature of human. An organization's learning process must be consistent over time so it can enhance the process of organizational learning. Human resource factors also play a crucial role in the organization's learning process. The organizational learning process can increase the ability and capacity for the employees and the teams to embrace and adapt to development. A study by Imran et al. (2016) illustrates that the significance of the organizational learning process is explained by the different advantages that may occur in firms that generate a learning culture in their organization. The organization learning process can help in enhancing the employee job satisfaction level, it also minimizes the employee turnover rate, and increase the adaptability throughout the firm or company. An effective organizational learning process can enable an organization to learn from its failures and take positive steps in the future (Basten & Haamann, 2018). Learning and knowledge culture is very essential for any type of organization because it directly impacts on the development process and also makes the company's best issue solving experiences re-usable.



**Figure 2: Framework of the Study**

## Research Methodology

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 (Abudaqa et al., 2020). 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. More specifically with the help of team members, data has been collected through questionnaire approach, A valid sample of 374 questionnaire have been received which was analyzed in terms of descriptive statistics, demographic analyses, and both measurement model and structural model, respectively.

## Results and Discussion

### Profile of Respondents

The demographic characteristics of the respondents from the ADNOC, UAE have been presented in the Table 1. As per the table, the characteristics have been divided into five categories. These categories include gender, age, and educational qualification, nature of job and finally, the length of service in the sector. As far as gender of the respondents is concerned, it has been estimated that among 374 respondents, 207 or 55.3% were males and remaining 167 or 44.7% of the respondents were females. In context of age, the researcher has devised four categories. These include up to 25 years, 26 to 45 years, 46 to 55 years and finally more than 56 years. In this regard, it has been estimated that the respondents having age up to 25 years are 93 in number which makes the 24.9% of the total. In the same way, the respondents having age from 26 to 45 years are 251 in number and 67.1% in percentage. The respondents having age from 46 to 55 years are 30 in number. The last category i.e. more than 55 years contains no respondents. It shows that most of the respondents belong to the age group of 26 to 45 years old.

Now, if the educational qualification is considered, again there are four categories named as bachelors, masters, PhD. and other qualifications. As per the table, 279 or 74.6% respondents are having the Bachelor's Degree, 80 or 21.4% respondents are having Master's Degree, only 6 or 1.6% respondents are PhD. qualified. In the last, 9 respondents are having other educational qualifications. This indicates that the highest number of respondents is having bachelors' educational qualification. As far as the type or nature of employment is concerned, there are three types in this regard. These include contractual, permanent and internees.

The demographics indicate that 150 respondents are the contractual employees of oil and gas sector of UAE. On the other hand, 212 employees are having permanent jobs in the same sector. In the last, there are 12 internees that are included in the respondents too. This suggests that the number of respondents having permanent jobs is highest. The last category of demographic

characteristics is length of service in the sector. Again there are four categories devised by the researcher. These include up to 1 year, 2 to 5 years, 5 to 10 years and more than 10 years. It has been estimated that seventy-nine respondents are having the minimum experience i.e. up to 1 year in the sector. However, 179 respondents that make up the 47.9% of total are having the length of service 2 to 5 years. Seventy-two respondents are working in the sector for 5 to 10 years and finally only 44 respondents are having the work experience of more than 10 years in the oil and gas sector of UAE. These results indicate that most of the respondents of the study are having the job experience of 2 to 5 years. The detailed demographics can be viewed in table 1, given as follows.

**Table 1: Demographics**

Demographic Variables	Categories	Frequency	Percentage
Gender	Male	207	55.3
	Female	167	44.7
Age	Up to 25	93	24.9
	26-45	251	67.1
	46-55	30	8.0
	56+	0	0
	Qualification	Bachelor's	279
	Master's	80	21.4
	PhD	6	1.6
	Others	9	2.4
Nature of Employment	Contractual	150	40.1
	Permanent	212	56.7
	Internee	12	3.2
Length of Service	Up to 1 Year	79	21.1
	2-5 Years	179	47.9
	5-10 Years	72	19.3
	10+ Years	44	11.8

### Descriptive Statistics

The results for descriptive statistics have been covered in Table 2. This table provides the basic and necessary information about the statistics of the data such as mean, standard deviation, skewness and kurtosis. As far as the mean value is considered, it can be observed that the mean values of all the constructs of the study is greater than 3 and almost approaching 4. This indicates that most of the responses to the statements in questionnaire were 'agree' on Likert scale. The standard deviation values indicate dispersion from the mean value. The skewness values indicate that they are lying within the threshold range i.e. -1 and +1. The presence of skewness values in the stated range indicates that the collected data is normally distributed as discussed earlier.

**Table 2: Descriptive Statistics**

Constructs	Mean	SD	Skewness	Kurtosis
Knowledge Sharing	3.6402	.67378	-.452	.459
Knowledge Transfer	3.8433	.75821	-.764	.341
Knowledge Creation	3.7106	.70668	-.524	-.065
Storage of Knowledge	3.9650	1.05754	-.841	-.179

Organizational Openness	4.0293	.74678	-.601	-.048
Organizational Innovation	3.7658	.67173	-.704	.035
Organizational Learning	3.9097	.85050	-.757	.525
Organizational Performance	3.5636	.53038	-.493	-.197

### Measurement Model

For measurement model assessment, Table 3 covers the findings. It shows that relative loadings for the stated items are above 0.50, whereas the value of alpha is also above 0.70. Similarly, the scores in terms of composite reliability are also reflecting the values as above 0.70. Finally, AVE scores are also in acceptable ranges.

**Table 3: Reliability and 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 Openness	OP1	0.839	0.847	0.898	0.689
	OP2	0.721			
	OP3	0.861			
	OP4	0.89			
Organizational Innovation	OI1	0.895	0.645	0.788	0.571
	OI3	0.571			
	OI4	0.635			
	OI5	0.656			
Organizational Performance	Org.P1	0.742	0.798	0.868	0.623
	Org.P2	0.76			
	Org.P3	0.833			
	Org.P4	0.818			

In addition, the discriminant validity is presented through loading and cross loadings in Table 4. It is confirmed that the relative loadings are more than the cross loadings, hence there exists discriminant validity in the study items. Similarly, the HTMT ratio of the latent constructs also confirm the existence of discriminant validity.

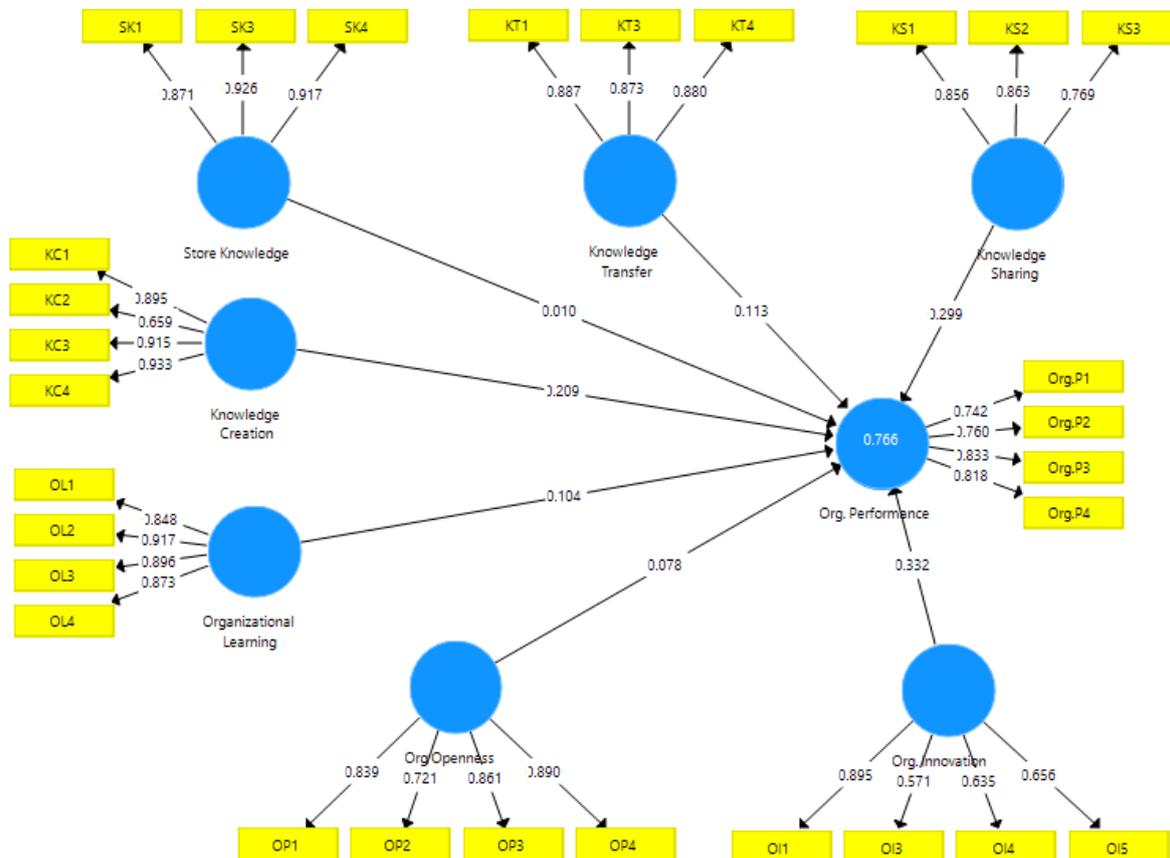
**Table 4: Cross-Loadings**

Items	Knowledge Creation	Knowledge Sharing	Knowledge Transfer	Org Openness	Org. Innovation	Org. Performance	Organizational Learning	Store Knowledge
KC1	<b>0.895</b>	0.415	0.383	0.413	0.488	0.615	0.498	0.231
KC2	<b>0.659</b>	0.533	0.536	0.536	0.3	0.535	0.71	0.383
KC3	<b>0.915</b>	0.445	0.437	0.388	0.496	0.627	0.471	0.248
KC4	<b>0.933</b>	0.442	0.414	0.413	0.471	0.635	0.489	0.244
KS1	0.452	<b>0.856</b>	0.398	0.423	0.334	0.601	0.448	0.259
KS2	0.356	<b>0.863</b>	0.393	0.449	0.27	0.544	0.333	0.257
KS3	0.514	<b>0.769</b>	0.454	0.449	0.302	0.557	0.453	0.329
KT1	0.447	0.461	<b>0.887</b>	0.629	0.326	0.562	0.497	0.604
KT3	0.45	0.424	<b>0.873</b>	0.654	0.372	0.537	0.444	0.484
KT4	0.455	0.434	<b>0.88</b>	0.635	0.292	0.522	0.492	0.575
OI1	0.541	0.36	0.408	0.429	<b>0.895</b>	0.685	0.42	0.299
OI3	0.23	0.225	0.174	0.219	<b>0.571</b>	0.35	0.23	0.1
OI4	0.236	0.178	0.166	0.258	<b>0.635</b>	0.361	0.234	0.08
OI5	0.347	0.217	0.223	0.222	<b>0.656</b>	0.394	0.331	0.148
OL1	0.504	0.368	0.469	0.472	0.376	0.489	<b>0.848</b>	0.431
OL2	0.566	0.448	0.464	0.447	0.422	0.578	<b>0.917</b>	0.466
OL3	0.539	0.424	0.475	0.438	0.393	0.605	<b>0.896</b>	0.443
OL4	0.595	0.509	0.511	0.53	0.392	0.582	<b>0.873</b>	0.414
OP1	0.362	0.408	0.57	<b>0.839</b>	0.325	0.474	0.433	0.452
OP2	0.475	0.406	0.779	<b>0.721</b>	0.293	0.47	0.484	0.527
OP3	0.38	0.413	0.518	<b>0.861</b>	0.402	0.559	0.411	0.43
OP4	0.466	0.525	0.573	<b>0.89</b>	0.377	0.566	0.451	0.486
Org.P1	0.527	0.605	0.468	0.422	0.338	<b>0.742</b>	0.581	0.343
Org.P2	0.467	0.721	0.485	0.463	0.323	<b>0.76</b>	0.556	0.368
Org.P3	0.636	0.452	0.517	0.534	0.692	<b>0.833</b>	0.444	0.338
Org.P4	0.589	0.417	0.47	0.549	0.731	<b>0.818</b>	0.461	0.311
SK1	0.257	0.287	0.547	0.467	0.219	0.387	0.413	<b>0.871</b>
SK3	0.318	0.323	0.602	0.54	0.235	0.397	0.47	<b>0.926</b>
SK4	0.287	0.31	0.562	0.533	0.229	0.379	0.463	<b>0.917</b>

**Table 5: HTMT Ratio**

	Knowledge Creation	Knowledge Sharing	Knowledge Transfer	Org Openness	Org. Innovation	Org. Performance	Organizational Learning	Store Knowledge
Knowledge Creation								
Knowledge Sharing	0.656							
Knowledge Transfer	0.603	0.615						
Org Openness	0.6	0.654	0.866					
Org. Innovation	0.647	0.497	0.47	0.545				
Org. Performance	0.846	0.884	0.744	0.756	0.878			
Organizational Learning	0.715	0.589	0.617	0.614	0.571	0.757		
Store Knowledge	0.369	0.409	0.723	0.659	0.298	0.511	0.553	

According to Henseler et al. (2015), Fornell-Larcker criterion is to be considered as an appropriate way for the purpose of estimation of discriminant validity. There is another criterion that is also widely used for the same purpose named as, Heterotrait-Monotrait Ratio (HTMT). Thus criterion is used for the evaluation of discriminant validity. Although, Fornell-Larcker criterion and cross-loadings methods are the major methods for discriminant validity detection, but it has been found out that in some cases, these methods fail to detect the presence of discriminant validity, which is the reason an additional and more accurate technique has been introduced i.e. HTMT ratio. According to Henseler et al. (2015), the background concept of this technique is based on multitrait-multimethod matrix for the evaluation of discriminant validity. Even in the method of HTMT, there are further two ways through which the discriminant validity can be assessed. The first way is to look for the value of HTMT ratio. In this regard, if this ratio has the value less than 0.9 or even 0.8, this will be the indication that there is discriminant validity in the collected data (Clark & Watson, 1995; Kline, 2011). However, higher values than 0.9 will suggest that there are issues regarding the data. The second way of evaluation through HTMT ratio is the testing of null and alternative hypotheses. The rejection of null hypothesis indicates the discriminant validity in the data. However, in the current study, the researcher has used the first method of HTMT ratio. The results are compiled in Table 5.



**Figure 3: Measurement Model Assessment**

### Effect Size

In the current study, there are more than one independent variable i.e. knowledge creation, knowledge sharing, knowledge transfer, organizational openness, organizational innovation and organizational learning, in front of one dependent variable i.e. organizational performance, therefore the researcher has found it crucial to explore the relative effect sizes or F square values of all the independent variables. The related findings are presented in Table 6. The basic criterion of the study is that if the F square value is 0.35, it will present large effect size, if it is 0.15 then it will depict medium effect size while the value of 0.02 represents the small size, respectively. As per the table 6, knowledge sharing, and organizational innovation are showing medium size effects on the organizational performance. In the equivalent manner, knowledge creation and knowledge transfer has presented small effect size on the organizational performance. However, the remaining two independent variables i.e. organizational openness and organizational learning have such smaller values for F square which claims that there is no effect of these variables on organizational performance. These results indicate that the model of the study is totally fitting with the collected data for research purpose.

**Table 6: Effect Size**

Directions	f <sup>2</sup>	Effect
Knowledge Creation -> Org. Performance	0.086	Small
Knowledge Sharing -> Org. Performance	0.232	Medium
Knowledge Transfer -> Org. Performance	0.02	Small
Org Openness -> Org. Performance	0.005	No Effect
Org. Innovation -> Org. Performance	0.286	Medium
Organizational Learning -> Org. Performance	0.013	No Effect

### Structural Model Results

The findings in Table 7 show the direct relationship between the variables. It shows that there is a significant and impact of knowledge creation, knowledge sharing and knowledge transfer on organizational performance. This means that more of these knowledge factors means more of the organizational performance and vice versa. However, knowledge storage is showing negatively insignificant results for organizational performance. Additionally, the results in Table 7 covers that organizational learning and organizational innovation are also a significant and positive determinant of organizational performance.

**Table 7: 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
H6	Org Openness -> Org. Performance	0.051	0.045	1.133	0.129	Not Supported
H7	Org. Innovation -> Org. Performance	0.35	0.04	8.72	0.001	Supported

The indirect relationship between the study variables have been explored in Table 8. The stated hypothesis (H8) is regarding the moderating impact of organizational innovation on the relationship between knowledge creation and organizational performance. The results are failed to reject the null hypothesis as the p-value in this case is greater than 0.05. Therefore, the moderation is found as positive but insignificant, therefore, H8 is not supported. Meanwhile, H9 reflects the moderating role of organizational openness on the relationship between knowledge creation and organizational performance is also examined. The results show that the beta coefficient is negatively insignificant which means that there is no moderating role of organizational openness on the relationship between knowledge creation and organizational performance. The hypothesis ten is related to the moderating impact of organizational innovation on the relationship between knowledge sharing and organizational performance. The results of the study have been failed to accept this hypothesis as the p-value in this case is greater than 0.05. However, the moderation is found as positive, but the study does not support this moderating role due to insignificant findings.

On the contrary, H11 covers the moderating effect of organizational openness on the relationship between knowledge creation and organizational performance has been evaluated. The results reflect that the coefficient for this moderating effect is 0.076. As p-value is significant at 5%, therefore, it is inferred that there is a significant moderating effect of

organizational openness on the relationship between knowledge sharing and organizational performance.

This hypothesis entitled as H12 is generated to depict the moderating impact of organizational innovation on the relationship between knowledge transfer and organizational performance. The results of the current study have clearly accepted this hypothesis in accordance with the significant but negative results obtained. In H13 hypothesis, the moderation of organizational openness is being considered on the relationship between knowledge transfer and organizational performance. This particular impact has been found as significant and positive as per the results obtained. Thus, it can be inferred that the current study supports H13 too. In addition, H14 indicates the moderating impact of organizational innovation between organizational learning and organizational performance. The results obtained by the researcher show that this moderating impact is insignificant and negative, as the p-value is greater than 0.05. On the basis of this result, it can be concluded that the results do not support this hypothesis. In this H15, the moderating impact of organizational openness is being studied for organizational learning and organizational performance. According to the results presented in table, this impact is found as significant but negative. Thus it can be stated that the current study supports this hypothesis. More specifically, the value of coefficient is 0.221 with the p-value of 0.000. Additionally, H16 is associated with the moderating impact of organizational innovation on the relationship between storage of knowledge and organizational performance. The results obtained show that this moderating impact is significant and positive as the p-value is lesser than 0.05. All these facts lead towards the conclusion that the results totally support this hypothesis. Lastly, H17 revolves around the moderating impact of organizational openness on the relationship between storage of knowledge and organizational performance. According to the results obtained, this impact is found as insignificant and negative. The p-value in this case is greater than 0.05. In this way, the researcher has considered that the results do not support this hypothesis based on its insignificant findings.

**Table 8: Moderation Analysis**

Hypotheses	Directions	Beta	SE	T	P	Decision
H8	KC*OI -> Org. Performance	0.033	0.034	0.98	0.164	Not Supported
H9	KC*OP -> Org. Performance	-0.004	0.045	0.084	0.466	Not Supported
H10	KS*OI -> Org. Performance	0.043	0.038	1.146	0.126	Not Supported
H11	KS*OP -> Org. Performance	0.076	0.039	1.957	0.025	Supported
H12	KT*OI -> Org. Performance	-0.067	0.034	1.964	0.025	Supported
H13	KT*OP -> Org. Performance	0.096	0.045	2.123	0.017	Supported
H14	OL*OI -> Org. Performance	-0.031	0.037	0.836	0.202	Not Supported
H15	OL*OP -> Org. Performance	-0.221	0.04	5.535	0	Supported
H16	SK*OI -> Org. Performance	0.124	0.037	3.387	0	Supported
H17	SK*OP -> Org. Performance	-0.014	0.038	0.375	0.354	Not Supported

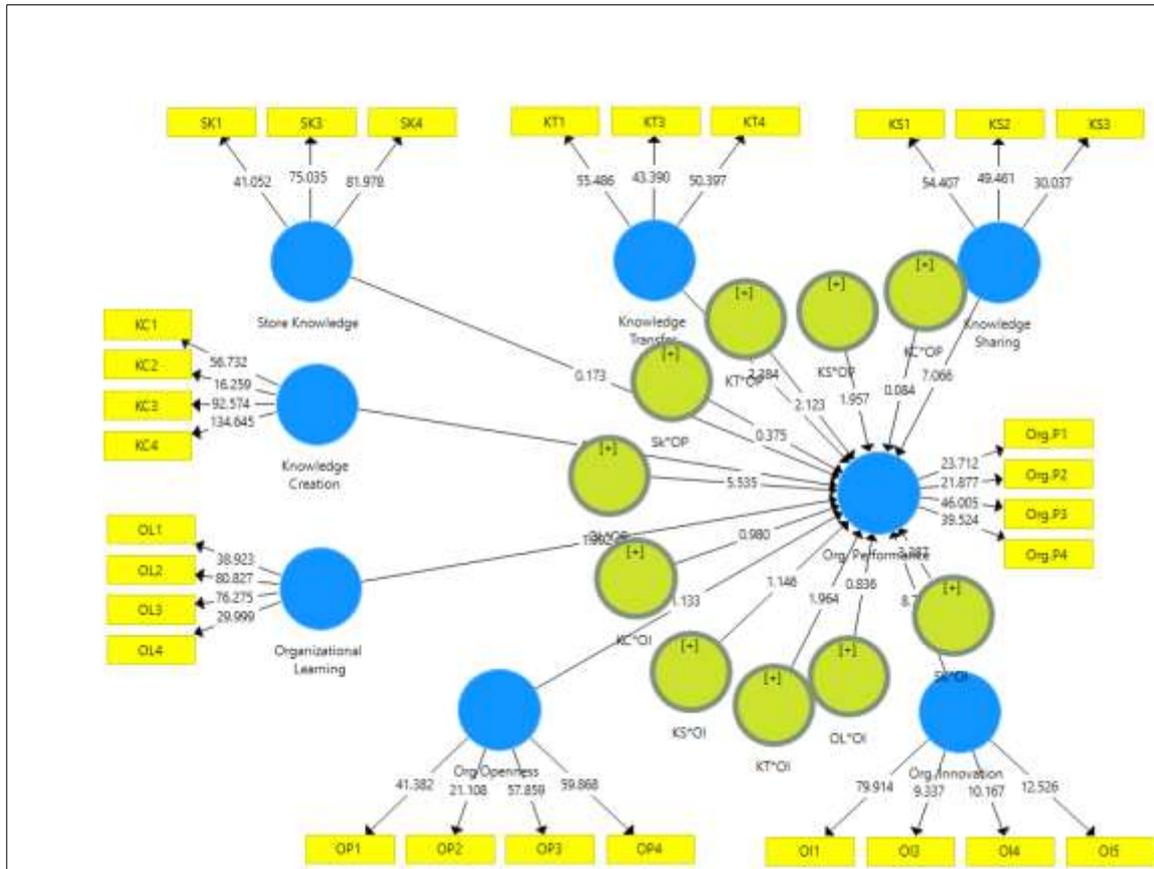


Figure 4: SEM output

## Conclusion

- For the purpose of judging the impact and relationship of various variables of this study the research has used the theory of organizational learning and the theory of dynamic capabilities. Organizational learning theory has been proved to manage the relationship between the variables of this study. Learning theories lead to improving the performance as it leads to learning from past mistakes and can help in improving overall output of the organization. The theory of dynamic capabilities can help in creation of linkage between innovativeness and openness with the organizational performance.
- Generation and creation of knowledge leads to improving the performance of organizations in the ADNOC, UAE. Knowledge creation allows of generation of an innovation-oriented body of knowledge based on experiences of other organizations and the organization itself. Using this body of knowledge can help in improving the organization performance. UAE's oil and gas sector are taking over the economy of the country and therefore, the creation of knowledge plays a significant role in controlling the performance outcomes.
- The capability of knowledge sharing has a significant impact on organizational performance in oil and gas sector of UAE. Sharing is related to sharing of focused or non-focused information among the individuals of an organization. This process enhances the learning from each other's held knowledge and experiences and therefore has the capacity of improving the employees' performance, leading to the overall performance gains for the organization.
- Similarly, the process of knowledge transfer is also significantly linked to organizational performance. The process of transferring knowledge in between different organizations or in between various parts or teams of the same organization lays the ground for creation of

creative environment that is charged by the impact of learning behaviors. This innovative environment can lead to creating a competitive advantage for the organization and provide it with positive performance outcomes.

- 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. 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. Besides, current study only applies deductive research approach in which existing theories have been assessed to support the theoretical framework of the study. Lastly, this research only focuses on the moderating role of organizational innovation and openness as key moderators on the relationship between independent and dependent variables. However, the investigation for any mediator is entirely missing in this research.

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