Impact of Availability of Knowledge Management Infrastructure on Improving the Performance of The Education Sector Staff in Libya: Organizational Loyalty as a Mediating Variable

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Abstract

Knowledge management has become a contemporary development and requirement in modern management thought and practice, and most appropriate for the rapid developments in this world which became the processes of knowledge production and the generation and dissemination of knowledge and employment and utilization management moreover, it is one of the most important indicators by which we can measure the progress of societies and their ability to contribute effectively to knowledge production which is turn leads to raise the efficiency of staff. The world these days depends on the knowledge economy as Edward said, possessed knowledge possessed power, how can this be done without the knowledge management infrastructure essentially provided by educational institutions through appropriate knowledge management needs, therefore, knowledge management institutions must have a knowledge management infrastructure to enhance knowledge management efficiency which contributes to the development of the performance of education sector employees, which in turn reflects on the performance of the entire organization. The dimensions of the knowledge management infrastructure consist of technology, organizational culture, and organizational structure. In order to achieve generalizable results, the researcher used the descriptive analytical method, and the researcher used SPSS and PLS smart analysis tools. The sample of the study consisted of 612 employees in the education sector. Structural model assessment test and direct test of the study hypothesis were conducted. Also, it confirmed the existence of validity of the assumptions a direct positive impact and positive impact and indirect confirmation of the hypothesis: The first hypothesis was confirmed that there is a positive direct statistical significance between the availability of the knowledge management infrastructure and raising the efficiency of the performance of the education sector staff in Libya. The second hypothesis has a positive direct statistical significance between the availability of knowledge management infrastructure and organizational loyalty in the education sector in Libya, the third hypothesis has a positive direct statistical significance between organizational loyalty and improving the efficiency of the performance of the education sector staff in Libya. The fourth hypothesis is that there is an indirect statistical significance between the availability of knowledge management infrastructure and raising the efficiency of the performance of the education sector employees in Libya through organizational loyalty.

*Keywords**: Knowledge management infrastructure; organizational loyalty; performance.*

1. Introduction

Knowledge management will not work in any organization if its responsibilities are limited to a particular category of employees, Rather, knowledge management must be part of everyone's work, and the fact that knowledge management efforts have not worked well in the past is due to the lack of a dedicated body responsible for knowledge management. The lack of a strong knowledge management infrastructure is evident through which the leading role of knowledge management is highlighted in how it manages educational institutions. In addition, knowledge management is one of the latest concepts in management science, which is one of the most vital features of activities that affect the quality and quality of work, where it occupied a prestigious and vital place in various academic, administrative, technical and commercial fields, this is because it is considered a contemporary intellectual development By the early 1980s, the concept of knowledge management appeared explicitly and gradually and not a coincidence, where the idea was to develop innovative ways to invest in the knowledge that you get organized and processed. (Al-Batana & Al-Mashaqbeh, 2012) Academic and practical interest in the concept of knowledge management has begun in recent years, especially after the adoption of the application of knowledge management by many local and international organizations. Where he was the first to devise the concept of knowledge management, (Karl Wiig, 1986) at a symposium of the International Labor Organization of the United Nations. Many researchers have since contributed to the development of the concept of knowledge management.

2. Literature Review
2.1 Availability of knowledge management infrastructure

One of the most important studies that I have relied on in setting the same metrics for this variable is the availability of a knowledge management technology infrastructure, availability of knowledge management infrastructure organizational culture, availability of knowledge management infrastructure for organizational structure, the study of (Al- Jaradat, 2013) as well as a study (Makkawi, 2017), a study (Al- Zawabah, 2014) and a study (Susan, 2014) all focused on the task of studying the importance of knowledge management infrastructure as well as a study (Al- Anzi, 2014; Al-Mulla, Asma; Ameen, Ali; Isaac, Osama; Nusari, Mohammed; Hamoud Al-Shibami, 2019; Al Junaii et al., 2019; Albreki et al., 2019). Who addressed in the study of the obstacles of knowledge management and who recommended the provision of a strong infrastructure which is very important for the success of knowledge management, it is one of the most important Arab studies according to the researcher's knowledge that dealt with the impact of knowledge management infrastructure on performance, in an Arab environment close to Libya, it concluded that the provision of knowledge management infrastructure was the solid foundation upon which knowledge was built. In another study, Alavi (2006) proposes knowledge management requirements, namely technological, cultural, and structured infrastructures.

H1: There is a positive direct statistical significance between the availability of the knowledge management infrastructure and raising the efficiency of the performance of the education sector staff in Libya.

H2: There is a positive direct statistical significance between the availability of knowledge management infrastructure and organizational loyalty in the education sector in Libya.

2.2 Organizational Loyalty

All studies (Bu Al- Ala, 2009), (Al- Rashid, 2004), (Al- Saggaf, 2010), (Al- Saadi, 2008) proved a positive relationship between loyalty and staff performance, this was confirmed by (Abo Smorh, 2014) that the organizational loyalty increases the efficiency of global performance, noting the importance of culture in increasing loyalty to the Organization and thus encouraging a double effort that reaches satisfaction, the knowledge gained contributes to the development of workers and a sense of loyalty to the institution. in this study, loyalty was used as a median factor, based on the Stears model and hence the following hypothesis was proposed:

H3: there is a direct positive statistical significance between organizational loyalty and raise the efficiency of the education sector employees in Libya's performance.

2.3 Organizational Loyalty

Heinz noted in performance management the importance of developing motivation methods for employees, as well as the study of (Ashour, 2010; Al- Omrat, 2010;Aprico, 2018;(Al-Mulla, Asma; Ameen, Ali; Isaac, Osama; Nusari, Mohammed; Hamoud Al-Shibami, 2019; Majed; Alameri et al., 2019; Alhefiti et al., 2019a, 2019b; Alneyadi et al., 2019; Alshamsi et al., 2019; Mona Saeed Mohamed et al., 2018) which they came to the conclusion that the success of the institutions is linked to the efficiency of employees in them. it is also evidenced by the study of both (Al- Jaradat, 2013) and (Makkawi 2017) the existence of a relationship between the variables of performance and availability of infrastructure for knowledge management and rate performance, moreover ,study of (Al- Saggaf, 2015) and (Al- Zenani, 2013) which reached a positive relationship between loyalty and employee performance. Therefore, researchers are interested in the subject of performance because of its great importance for individuals and organizations alike, in fact, institutions are always seeking to improve the performance of their employees and reach the targets set in advance. According to the performance criteria, a complex model of direct and indirect relationships was proposed, according to Barron and Kenny, 1986, to determine the existence of impact(Mohammed Alameri et al., 2019; Albreiki et al., 2019; Alhefiti et al., 2019a; Alkatheeri et al., 2020; Alshamsi et al., 2019; Haddad et al., 2020).

H4: There is an indirect statistical significance between the availability of knowledge management infrastructure and raising the efficiency of the performance of the education sector employees in Libya through organizational loyalty.

3. Research Method

The study model was created based on previous relevant studies such as (Al- Saggaf, 2015) (Al- Jaradat, 2013) and (Makkawi, 2017) The model was designed and consisted of three variables: Independent variable: availability of knowledge management infrastructure, this is done by measuring the dimension (Availability of technological knowledge management infrastructure, availability of cultural knowledge management infrastructure, and availability of structural knowledge management infrastructure).Variables were measured using a Likert Scale which recommended in the previous studies (Isaac, Aldholay, Abdullah, & Ramayah, 2019; Isaac, Abdullah, Ramayah, & Mutahar, 2018). Based on Barron and Ken 1986, which is status of median variable: represented in organizational loyalty. A dependent variable: This variable represented in the performance of employees as shown in the following by:
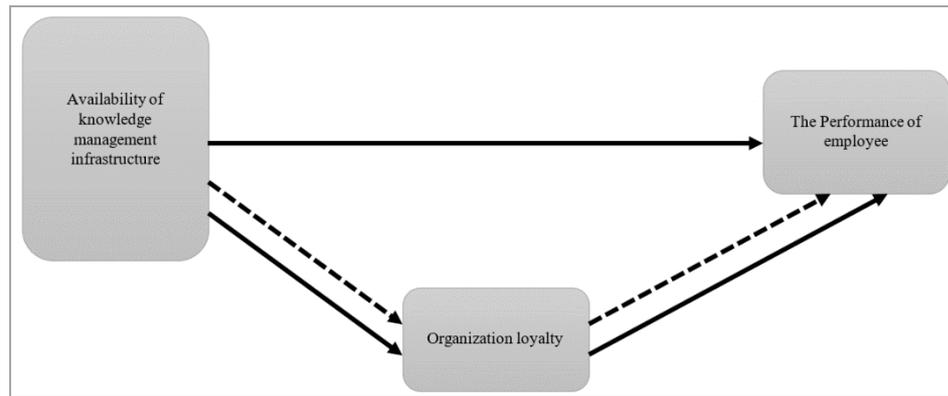
Figure 3: The proposed conceptual framework

4. Data Analysis and Results

The main reasons for choosing SEM as a statistical method for this study is that SEM offers a simultaneous analysis which leads to more accurate estimates (Isaac, Abdullah, Aldholay, & Ameen, 2019; Isaac, Abdullah, Ramayah, & Mutahar, 2017; Mutahar, Daud, Thurasamy, Isaac, & Abdulsalam, 2018).

4.1 Evaluation of the structural model

The structural equation model is the second step of analyzing the structural equation modeling, once the measurement model has been established, the process of constructing the structural model begins by defining the relationships between the themes of the study: Where the structural model provides the most important details on the links between variables and the structural model is evaluated by looking at the values of the beta coefficient (β), the selection coefficient box (R2) Correlation value (t) by conducting bootstrapping of the sample. This is in addition to calculating the magnitude of the effect (f2) and the related prediction (Q2). (Hair et al., 2010; Ho, 2006). This is in addition to taking into account that the moral value of p determines whether or not the impact, but does not reveal the magnitude of the impact (Sullivan & Feinn, 2012; (Alkhateri, Asma S; Abuelhassan, Abuelhassan E; Khalifa, Gamal S A; Nusari, Mohammed; Ameen, 2018; Ameen et al., 2018; Ameen and Ahmad, 2012, 2011). The following figure shows the results of the PLS bootstrapping analysis, which was drawn using PLS 3.0.
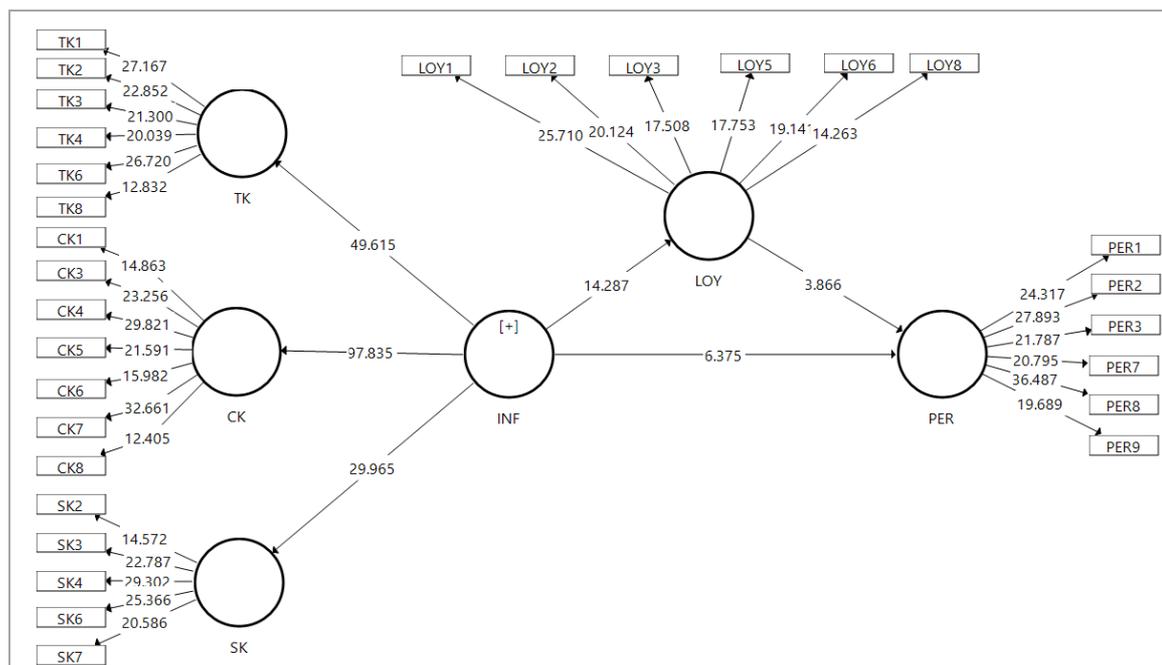
Note: (TK): technological knowledge, (CK): cultural knowledge, (SK): structural knowledge, (LOY): organizational loyalty, (PER): efficient staff performance, (INF): infrastructure

4.2 Direct Examination of Study Hypothesis

It is clear from the figure and table above the evaluation of the structural model where the results indicate that the availability of knowledge management infrastructure (INF) it has a significant effect on both staff performance efficiency (PER) and organizational loyalty (LOY) and accordingly the first hypothesis and the second hypothesis are accepted respectively (β= 0.534, t= 6.375, p< 0.001) (β= 0.664, t= 14.287, p< 0.001).

Similarly, organizational loyalty has a significant effect on the efficiency of staff performance and accordingly the third hypothesis is accepted (β= 0.337, t= 3.866, p< 0.001). Noting that the standard path coefficient indicates that the relationship between the independent variables and variables of strength, accordingly, the direct impact of variable infrastructure for knowledge management on employee performance efficiency more powerful than the direct impact of organizational loyalty on the efficiency of staff performance.

Table 1: Structural path analysis results

The Hypothesis	β (Std Beta)	Standard error (Std Error)	(t Value)	Significance level p-value	The decision
The first	0.534	0.084	6.375	0.000	Accept the hypothesis
The second	0.664	0.046	14.287	0.000	Accept the hypothesis
The third	0.337	0.087	3.866	0.000	Accept the hypothesis

Note: INF = Knowledge Management Infrastructure, LOY = Organizational Loyalty, PER = Staff Performance Efficiency

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4.3 Coefficient of determination R^2

The parameters of R2 define the amount of variance of dependent variables interpreted by independent variables. It is therefore important that the value of the coefficient of analysis is high enough for the model to obtain the minimum level of explanatory power of the model.

(Urbach & Ahlemann, 2010) Falk and Miller, 1992 recommend that the values of the coefficient of determination be equal to or greater than 0.10 for the possibility of interpreting variance of dependent variables, while Cohen suggested, 1988 the determination coefficient is good when it is equal to or greater than 0.26 in the case of an acceptable exponential force greater than 0.02 and based on Chen, 1998. The value of the coefficient of determination must be greater than 0.65 in the case of a force greater than the acceptable Exponential 0:19. Conversely, Hare et al., 2013 recommended that the value of the coefficient of determination be greater than 0.75 so that it could be considered a value of intrinsic value with an acceptable exponential force greater than 0.25. Table below shows the results of the determination coefficient for the structural model.

Table 2: The results of the R^2 coefficient

Independent variables	Dependent variables	Selection coefficient R^2	Cohen (1988b)	Chin (1998)	Hair et al., (2013)
LOY & INF	PER	0.64	Low	moderate	moderate
INF	LOY	0.44	low	moderate	moderate

Where: INF = Knowledge Management Infrastructure, LOY = Organizational Loyalty, PER = Staff Performance Efficiency.

From the table above, it is clear that all R2 coefficient values are acceptable enough for the explanatory forces of the structural model we note that the dependent variable of employee performance can be explained by the two independent variables of knowledge management infrastructure and organizational loyalty by 64%.

4.4 Effect Size F^2

The Effect Size F2 define is the determines whether the effect of the independent variable on the dependent variable is strong, medium, or weak (Gefen & Rigdon, 2011) Cohen, 1988 suggested a guide to measure the magnitude of impact as the value of 0.35 for the magnitude of the impact indicates the magnitude of

the impact also, a value of 0.15 indicates an average effect size, while a value of 0.02 indicates a small effect size. The following table shows the results of the impact size.

Table 3: The Effect Size F^2 results

Independent variables	*Dependent variables (PER)*
INF	0.439
LOY	0.176

Where: INF = Knowledge Management Infrastructure, LOY = Organizational Loyalty, PER = Staff Performance Efficiency.

4.5 Blindfolding Q^2

Using the Blindfolding procedure, the strength of the model proposed in this study can be tested, based on what was proposed by Haier et al., 2017. Also, The Blindfolding procedure is preferable to be used only with dependent variables. (Fornell, C, & Cha, 1994; Hair, Hult, et al., 2017) as following in table below:

Table 4: Blindfolding Q2 results

Dependent variables	*Q2*
PER	0.340
LOY	0.208

From the table above, it is clear that all Q^2 values are greater than 0, indicating that there is sufficient predictability for the proposed model.

4.6 Post-hoc Power Calculator

In this study the additional statistical power proposed by (Sober, 2016) was used to determine the power of R2 observation, in social studies, 80% was identified as the least acceptable force, if the observed statistical power is greater than 0.8, this indicates good strength (Gefen & Rigdon, 2011). Where the closest value to the correct one it means more power. Therefore, the results of the statistical force observed for this study were calculated using Daniel Sober calculator where the value was 0.96 which indicates a high statistical strength.

4.7 Evaluation of the median

Evaluating the direct and indirect relationship between independent variables and median variables is an important procedure for the hierarchical model. (Henseler, Ringle, & Sinkovics, 2009) In this part of the research, the importance of the intermediate variable of organizational loyalty in the relationship between knowledge management infrastructure and staff performance efficiency will be assessed.

The test of the effect of the median variable on the modeling of the SEM is a test between the independent variable and the dependent variable in their relationship with each other in the presence of the median variable. (Helm, Eggert, & Garnefeld, 2010)

According to Barron and Kenny, 1986, technically a variable act as an intermediate variable when the following conditions are met:

1. The predictor variable (independent) should predict the statistical significance of the output of the dependent variable without the presence of the median variable.
2. The predictor variable should predict the statistical significance of the output of the median variable.
3. The median variable should predict the statistical significance of the dependent variable.
4. The predictor variable must predict the output of the dependent variable with the least power when the median variable mediates their relationship.

But Hayes, 2009, criticized what Baron and Kenny said in his article, Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. In addition, he proposed a complete solution in his book [Hayes, 2013] to test the effect of the median variable by determining the indirect effect using the Bootstrapping method. Haier et al., 2017 suggested that when the effects of the median variable are tested, the researcher should follow a study (Preacher & Hayes, 2004; Preacher & Hayes, 2008). This method is used in simple or median models using Bootstrapping as it requires any form of variable distribution or sample distribution and can be used for small samples with confidence, in addition to providing higher levels of statistical strength compared to Sobel test.

In this study, to test the effect of the median variable, the multimodal parallel method proposed by Preacher & Hayes, 2004; Preacher & Hayes, 2008] by Bootstrapping by reshaping the sample. The main reason for choosing this technique is to reduce the probability of bias for a coefficient and to control the potential internal relationships between the averages in the model and table below will illustrate the results of this test.

Table 5: The median evaluation results

The Hypothesis	Relationship			β (Std Beta)	Standard error (Std Error)	(t Value)	Significance level p-value	The decision
The fourth	INF ⇨	LOY ⇨	PER	0. 664	0. 046	14.287	0.000	Accept the hypothesis

Note: INF = Knowledge Management Infrastructure, LOY = Organizational Loyalty, PER = Staff Performance Efficiency.

From the table above it is shown that the median variable Which is represented in organizational loyalty where it mediates the relationship between the knowledge management infrastructure as an independent change and the efficiency of staff performance as a dependent variable where the fourth hypothesis was accepted.
(β= 0.224, t= 3.407, p< 0.001).

4.8 Test results of hypothesis
The test results of the hypothesis for this study are summarized in Table below including direct and indirect relationships.

Table 6: The Summary of results

The Hypothesis		Results
H1	Knowledge management infrastructure has a positive impact on staff performance efficiency.	Supported
H2	The knowledge management infrastructure has a positive impact on organizational loyalty.	Supported
H3	Organizational loyalty has a positive impact on staff performance.	Supported
H4	Organizational loyalty mediates the relationship between knowledge management infrastructure and efficient staff performance.	Supported

5. Discussion
The questionnaire was used as a key measure to achieve the objectives of this study, and to answer its questions the study was conducted on 270 individuals formed the study sample. The study population was included the education sector employees in Libya. The study of descriptive variables of the study sample results showed that the number of males (140) and the proportion of 51.9% slightly more than the number of females (130) and their percentage 48.1% with regard to the age category the largest percentage of the age group was 31-41 years old, where the number of its members reached (122) with a total percentage of 45.2%. Followed by the age group 41 - 50 years, where the number of its members (93), a total of 34.4%. Then the age group 30 years and below where the number of its members (45) and a total of 16.7% the remaining two groups were relatively small. Where the number of members of the age group 51 - 60 years only (7) individuals with a total rate of 2.6%, while the last group of 61 years and more was the number of its members only (3) and by 1.1%. Regarding the educational qualification, the largest percentage was (46.7%) for holders of bachelor's degree (126) and holders of higher diploma (78) by 28.9%. Then the holders of the intermediate diploma (50) by 18.6%, while the masters had a relatively small number (8) by 3.0%, as well as the rest of the respondents (8) the same proportion 3.0% and are holders of other certificates otherwise.

As for the job title, the majority of the sample of employees (229) and a large percentage reached 84.8%. As for the job title (Head of Department), the number of individuals holding (21) was 7.8%. Then the directors (12) with a rate of 4.4%. And the last of those who hold other job titles (8) by 3.0%. As for the functional grade, the most functional grade among the respondents was the tenth grade and above, where the number reached 100 (37.0%). It was followed by holders of the eighth grade (65) by 24.1% and the ninth grade (61) by 22.6%. Then the seventh job grade (28) by 10.4% and then the sixth job grade (11) by 4.1%. Finally, the other job grades came in at 5% with a rate of 1.9%. Finally, with regard to the work experience it has narrowed somewhat categories that represent the practical experience of the study sample the number of those with practical experience was 6-10 years (73), 27.0%. Then work experience 11 - 15 years (65) by 24.1%. Then work experience 1 - 5 years (61) by 22.6%. Then work experience 16 - 20 years (44) by 16.3. Finally, work experience 21 years and above (27) by 10.0%, this has been published in the paper previously. (Salama, 2019)

The results of the study proved that the data are well suited to the proposed study model in relation to the study sample of the education sector employees in Libya, within the normal distribution values this is confirmed by the shape of a regular bell all values of SKEWNESS and KURTOSIS of the axes of knowledge as well as the stability of the ranks (compound stability and Cronbach's alpha) and the stability of the index and the validity of convergence. This is what was achieved and the validity of differentiation was published in a second research paper from the researcher in the name of the evaluation of the measurement model of the variables of the availability of infrastructure for knowledge management, organizational loyalty and staff performance, the proposed study model consists of several key independent variables: availability of knowledge management infrastructure (technological knowledge, cultural knowledge and structural knowledge), dependent variable, staff performance efficiency, and intermediate variable, organizational loyalty. To test the effect of the median variable, the parallel multi- median method proposed by the Bootstrapping method was used to reshape the sample. The purpose of discussing the results of the study is to refer to the objectives of the study and make sure to achieve them under the questions of the study and their hypothesis as the overall objective of this study This is to identify the impact of the availability of knowledge management infrastructure on improving the performance of education staff in Libya, through organizational loyalty in the education sector in Libya and to achieve this general goal, sub-goals were set according to the variables of the study. As well as questions of the study were identified to achieve these objectives, including the hypothesis that the study aims to verify the status of acceptance or rejection. The following table summarizes the questions, objectives and hypothesis of the study and its results.

One of the limitations of this study is that the data gathered was cross-sectional rather than longitudinal in nature. The longitudinal method might improve the understanding of the associations and the causality between variables (Isaac, Abdullah, Ramayah, Mutahar, & Alrajawy, 2017; Isaac, Abdullah, Ramayah, & Mutahar Ahmed, 2017). Future research should be conducted to investigate the relationship between variables by conducting cross-cultural studies as recommended by previous studies (Isaac, Abdullah, Ramayah, & Mutahar, 2017a; Isaac, Masoud, Samad, & Abdullah, 2016).

Table 7: The summary of the results of the questions, objectives and hypothesis of the study

No	Study objectives	Study questions	The study hypothesis	The results
1	Determine the impact of the availability of knowledge management infrastructure on improving the performance of education staff in Libya.	what extent the impact of the availability of technical knowledge management infrastructure on raising the efficiency of the performance of education personnel?	Availability of knowledge management infrastructure - improving the performance of education staff	Was accepted
2	Determine the impact of the availability of knowledge management infrastructure on organizational loyalty in improving the performance of education staff in Libya.	Does the availability of cultural knowledge management infrastructure affect the efficiency of education staff?	Availability of knowledge management infrastructure - organizational loyalty to education staff	Was accepted
3	Determine the impact of organizational loyalty on improving the performance of education staff in Libya.	What extent The impact of the availability of knowledge management infrastructure on improving the performance of education staff?	Organizational loyalty - raising the efficiency of staff performance.	Was accepted
4	Identify the impact of organizational loyalty as an intermediate variable in raising performance efficiency between the availability of knowledge management infrastructure and education staff in Libya.	What extent The impact of organizational loyalty as an intermediate variable in the relationship between the two variables of the availability of knowledge management infrastructure and the performance of education staff?	Availability of knowledge management infrastructure - organizational loyalty - raising the efficiency of staff performance.	Was accepted

6. Conclusion

All the hypothesizes were accepted based on the researcher's findings according to the results shown in the shown in the table above, the variable availability of knowledge management infrastructure has a strong direct positive impact on staff performance efficiency. As well as positively affects organizational loyalty, regarding the impact of organizational loyalty, the results also proved that it also positively affects the efficiency of staff performance in the education sector in Libya. Organizations should increase spending on research and development in order to increase the organizational effectiveness (Osama Isaac, Abdullah, Ramayah, Mutahar, & Alrajawy, 2018; Isaac, Abdullah, Ramayah, & Mutahar, 2017b).

From the above table, it is clear that the variable performance efficiency of employees is affected by 64.0% of both the availability of knowledge management infrastructure and organizational loyalty, while organizational loyalty by 44.0% is affected by the availability of knowledge management infrastructure.

Regarding to the results of the median analysis the results shown in the previous table showed that the organizational loyalty variable mediates statistically significant relationship between the availability of knowledge management infrastructure and the efficiency of staff performance in the education sector in Libya. This refers to the existence of an median variable, a direct and indirect relationship, based on what Kenny pointed out, which are complex relationships in the presence of the median, and the findings of the analysis of the existence of a relationship between the availability of the knowledge management infrastructure and raise the efficiency of performance, the relationship was a positive moral in a direct way and is more powerful than the impact of loyalty on performance based on the size of the impact 0.439, and organizational loyalty the size of the impact is less than 0.176 on performance.

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