

## **On the Development of a Model to Increase Innovative Capabilities by Using Knowledge Management in the Educational Field within Majmaah University: An Applied Study**

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### **Abstract**

This study aims to focus on knowledge management, its processes and its role in increasing innovative capabilities, which will develop and modernize institutions and maintain their presence in a competitive environment. So the main objective of this study is to examine the relation between the use of knowledge management processes, and hence the high level of competitive services provided by the university; namely, teaching activities, scientific research, community service. The research sample consisted of some academic members of the faculties of the universities of Majmaah University, as well as some administrative members in the faculties of the University of Majmaah, The researcher depended on the method of a stratified random sample to determine the size of the research sample, the researcher adopted the questionnaire as the main tool for collecting the study data, he prepared the survey lists, one of which was addressed to the academic members in the faculties of Majmaah University, and the second to the administrative members in the same University. The researcher used the associative descriptive approach, an analytical descriptive approach and inductive approach, the study data were analyzed using SPSS; a number of statistical methods were used in the analysis of data: frequencies, percentages, arithmetic averages, standard deviation, alpha-Cronbach regression coefficient test, multiple regression analysis, and path analysis. A final output of the current study, the researcher developing a proposed model for the role of knowledge management in increasing innovative capabilities and its impact on the performance of the Majmaah University for its educational services.

**Key Words:** *Innovative Capabilities, Knowledge Management, Majmaah University.*

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### **1. Introduction**

Knowledge is a renewed field, which has been of interest for thousands of years. Nowadays, modern organizations view knowledge as an effective basis for innovation processes, and organizations strive to achieve efficiency and effectiveness in achieving outstanding performance, and to add value and maintain it (Lisa ,2015), and this drives them to continue to work on the development of their objectives and strategies and products and the use of effective methods and processes, and to achieve this, organizations are strongly seeking to acquire renewable knowledge of the sciences and knowledge that are used and developed continuously (Elshafie, 2011), with the information and communication technology revolution that led to a knowledge explosion, so knowledge has become wealth for nations and organizations alike (McCall, 2016), this resulted in that information revolution which constitutes economies based on knowledge, that transformation which occurred on scientific grounds and business culture in human societies has led to an interest in intangible intellectual assets in modern institutions (Seleimetal, 2014).

Intellectual capital is considered something intangible, because it is a concept embodied in knowledge, information, experience and intellectual property, Knowledge management is a relatively new field which is continuously developed, the application of the knowledge management approach in institutions provides them with new possibilities, capabilities and competitive positions, and achieve a high performance in light of the sharp competition in the modern digital age, and knowledge as one of the assets and assets of the institution(Sharabat et al,2016;Soo et al ,2016).

Innovation is one of the most important factors in ensuring survival and sustainability and competition in light of changes and accelerated needs, where current methods and means are no longer able to keep pace with developments in various fields (Basu, 2016),so organizations need to innovate, that is an urgent and important requirement especially for educational institutions that seek to excel in performance in a highly competitive environment (Birkinshaw et al, 2017) , where they are forced to adopt and create policies and strategies adapted to these challenges, which required them to provide opportunities and an environment conducive to innovation, creativity, change and modernization in the methods of work, which in turn requires the creation and adoption of an innovative and creative environment appropriate (Beshkoochet al, 2013).

Innovation in the environment of educational institutions is divided into two types, the first of which is technical innovation that is the process of creating and developing new services or make changes in the techniques used by the institution, and the introduction of technical technology at work (Drucker, 2016),the second type is administrative innovation, which is the process of making changes in the organizational structure, and business design and functions, operations, policies, strategies, regulatory systems and core activities(King, 2017).

All of the above of innovative knowledge and environment are reflected in the final outputs of educational institutions which is represented on the performance of those institutions in modern times, it is not possible to know the importance and value of knowledge, innovation and creativity in institutions, unless this is reflected in the output of institutions - in its performance and measure it - where "what can be measured can be managed, and if you want to manage anything you should measure it"(Rooset al, 2017; Linet al, 2016;Varis&Littunen, ,2015).

This simple criterion is lacking in many educational institutions, in this age, it faces many challenges, these institutions have the ability to improve their performance that does not come only through the development of tools and systems to ensure that in particular, the tools to measure its performance because the process of performance evaluation and measurement is essential in the processes practiced by institutions, where the performance measure is one of the most important elements of the success and development of these modern educational institutions (Matthiasa & Andrea ,2017;Nayir& Vzuncarsall,2017;Mavodza& Ngulube,2012).

The close link between knowledge management and innovation in higher education institutions is evident through the impressive performance results of these institutions; because the basis of knowledge is not to store them as much as they apply which is achieved through innovations in various fields and continuous creativity, this is reflected in the outstanding performance, efficiency of these institutions, innovation in higher education institutions, therefore, an urgent requirement for many universities - especially emerging universities - in an environment characterized by conflict for growth and survival, and the pressures and threats, which enables them to respond and adapt, innovate in the services they provide, which are represented in teaching activities, scientific research, community service, under changing environmental requirements(Orth et al ,2016;Plessis,2016; Qianget et al, 2015).

It is recognized that innovation opens the way for universities to improve and develop their basic services, so that it can achieve job satisfaction for the members of the academic faculty of the colleges of the universities, and employees working in university faculties, as well as to achieve the competitive advantage that distinguishes it from other universities, in the competitive environment in which these universities operate which necessitates the use of different processes of knowledge management (Silvia & Stefania ,2016; Simon& Tovar, 2014).

In light of the above, the researcher finds that the institutions of higher education in general and the University of Majmaah in particular, they must use the knowledge approach to optimize their resources, thus building innovative capabilities that enable them to deliver a product of education at the highest level of efficiency, in a rapidly changing competitive labor market environment within Saudi Arabia, or outside it, as well as enable it to keep up with the rapid technological and information development, in a highly competitive environment, Majmaah University is one of the most modern universities in Saudi Arabia, and Saudi society expects a lot from it, this university offers its service to a large geographical area, in order to do its role, the level of organizational and functional performance must be upgraded to walk this university in the lap of development and progress , and so to be a scientific beacon advanced with its innovative capabilities to enable it to compete local and global.

In this study, the researcher focus on knowledge management, its processes, and its role in increasing innovative capabilities, which will develop and modernize institutions and maintain their presence in a competitive environment.

## 2. Research Problem

The Arab Knowledge Report 2016 concluded that although the Arab countries are striving to keep up with the knowledge society, the reality and related indicators are worrying. The World Bank's knowledge and economic indicators show a modest development in Arab performance and the continued gap between the Arab region and other regions of the world in the knowledge and knowledge economy indices between 2000 and 2015. The Innovation Index for 2014 shows a sharp gap in Indicators of innovation and knowledge appear in the value, ranking and evolution of global innovation indicators in the Arab region compared to other regions of the world (UNDP, 2016), on the other side considered the interest of developments and skills upgrading and development Knowledge discovery, storage, participation, application and promotion of innovations of the goals that higher education institutions must adopt especially in our time, which notes the tremendous speed in technological developments, where contains a lot of successive changes.

The problem of the current study is determined in examining the relationship between the use of knowledge management processes, and increasing innovative capabilities within the University of Majmaah and hence the competitive level of services provided by the university; Teaching activities, scientific research and community service.

Hence, the problem of the study can be formulated through the following questions:

- 1) What is the extent to which the academic body and the administrative body of Majmaah University Colleges are aware of the importance of knowledge management and its processes?
- 2) How do knowledge management processes (knowledge acquisition, knowledge storage and retrieval, knowledge distribution and transfer, application of knowledge) influence innovation (technical-administrative) processes at Majmaah University and its services (teaching activities, scientific research, community service)?
- 3) What is the extent to which the knowledge and experience available to achieve the objectives of the University and improve the performance of the university?

- 4) What is the importance of knowledge management and innovation in improving the level of services provided by the University of the community, represented in (teaching activities - scientific research - community service)?
- 5) What are the obstacles facing both the academic body as well as the administrative body of the Majmaah University to benefit from both knowledge management and innovation processes?
- 6) What is the model that enhances innovative capabilities through the implementation of knowledge management processes at the Majmaah University?

### **3. Objective of Research**

The main objective of this study is to examine the relation between the use of knowledge management processes, and the increase of innovative capabilities within the Majmaah University, and hence the increase competitive level of the University's services; Teaching, scientific research and community service. In order to achieve this, the study aims to achieve a number of the following sub-objectives:

- 1) Identification of the availability of knowledge management processes (knowledge acquisition - storing and retrieving knowledge - distribution and transfer of knowledge - application of knowledge) at the university through the views of the academic body, as well as the administrative body of the colleges of the Majmaah University.
- 2) Identify the concept and reality of knowledge management, innovation processes in its different dimensions (technical innovation, administrative innovation), and its importance at the Majmaah University.
- 3) Presenting the extent of the divergence of views of the academic body of the colleges of the Majmaah University, as well as the administrative body about innovation processes.
4. Examining the nature of the relation between each knowledge management process (knowledge acquisition, knowledge storage and retrieval, knowledge distribution and transfer, application of knowledge), and innovation processes.
- 5) Develop and build a model that contributes to increasing the innovative capabilities of Majmaah University through the implementation of knowledge management processes in supporting and improving the services of the Majmaah University (teaching activities - scientific research - community service).

### **4. Importance of Research**

#### **4.1 First -Scientific importance**

- 1) The current study is one of the most recent studies in this field in Saudi Arabia where, according to the researcher, a study on this subject has not been conducted in terms of developing a model to increase the innovative capacity through the application of knowledge management in the educational field within Majmaah University.
- 2) The importance of the study is that it is an applied study in the higher education sector in Saudi Arabia, where the number of students in the university education in Saudi is about nine hundred thousand students (Ministry of Higher Education, University Statistics Center, 2016) which emphasizes the need to direct research efforts in this sector.
- 3) Increasing competition among universities, which necessitates the adoption of modern management strategies and approaches to enable them to keep abreast of the dynamic environment and rapidly changing of competition.

- 4) The study focuses on the identification and interpretation of knowledge management variables and thus contributes to bridging the research gap in this field. This topic has been partially addressed in many previous studies.
- 5) This study contributes to the importance of knowledge and innovation management in improving the level of services offered by Majmaah University (Teaching Activities - Scientific Research - Community Service).
- 6) This study is a scientific and practical addition to the knowledge of the role of knowledge management in activating innovation in the administrative and technical aspects and its impact on improving the level of services provided by the Majmaah University in Saudi higher education sector.

#### **4.2 Second -Practical importance**

The practical importance of this study is demonstrated by the fact that it is specialized in the management of knowledge and innovation in one of the sectors of Saudi Higher Education-Majmaah University- which is one of the most important pillars in Saudi. The results of this study can be used as follows:

- 1) Activate and raise the level of performance in the Saudi Higher Education Sector, applying to Majmaah University.
- 2) Assisting in identifying the main obstacles that may lead to the low level of services provided by higher education institutions by applying to one of its institutions -Majmaah University- (teaching activities - scientific research - community service), which negatively affects the future of the education sector in Saudi, and on the entire Saudi society because the impact of education affects all sectors of society.
- 3) Increase the ability to provide the required information accurately and quickly, which contributes to the process of supporting decision-making, as well as creating a scientific method to identify the role of knowledge management in increasing the efficiency of innovation and its impact on the level of services provided by institutions of higher education, applying to Majmaah University.
- 4) Providing practical solutions to Majmaah University enables it to implement the knowledge management approach, increase its innovative capabilities, identify the constraints and elements of implementing the knowledge management approach to increase the innovative capacity.

#### **4.3 Research Hypotheses**

- 1) There is no statistically significant effect at the level of significance ( $0.05 \geq \alpha$ ) for knowledge management processes (knowledge acquisition, knowledge storage, knowledge dissemination, application of knowledge) on innovation processes within Majmaah University.
- 2) There is no statistically significant effect at the level of significance ( $0.05 \geq \alpha$ ) for knowledge management processes (knowledge acquisition, knowledge storage, knowledge dissemination, application of knowledge) at the level of performance of the Majmaah University for its services.
- 3) There is no statistically significant effect at the level of significance ( $0.05 \geq \alpha$ ) for knowledge management processes at the level of the performance of the Majmaah University services due to innovation.

## **5. Research Methodology**

### **5.1 Study Design**

This research is mixed-method research , researcher used the associative descriptive approach because it suits the objectives of the present study, which is to examine and determine the role of knowledge management processes in increasing the efficiency of innovation and its reflection on the level of services offered by the Majmaah University (teaching activities, scientific research, community service), the researcher also used the an analytical descriptive approach and the inductive approach.

### **5.2 Study Sample**

The researcher used the stratified random sample method because the study population is not homogenous, where it consisted of some academic members of the faculties of the universities of Majmaah University, as well as some administrative members in the faculties of the University of Majmaah. A sample of (50) questionnaires was distributed to test the internal consistency and stability of the questionnaire. After verifying the validity of the questionnaire, (274) questionnaires were distributed to the academic members of the faculties of the universities of Majmaah University, and (346) questionnaires were distributed to administrative members in the faculties of the University of Majmaah, The researcher relied on Statistical tables to determine the size of samples suitable for the study community (Sekaran. U, 2013, pp268-269).

### **5.3 Study Tools (Sources of data collection)**

#### **5.3.1 First -Primary Data**

In order to address the analytical side of the study, the researcher conducted interviews with officials in the surveyed sector represented by the members of the academic faculty within Majmaah University, as well as members of the administrative body in the colleges of Majmaah University, the researcher also designed a survey list - because the questionnaire is the main tool in the study - one of them was addressed to members of the academic faculty within Majmaah University, it consisted of (55) items, and the second to members of the administrative body within Majmaah University, it consisted of (35) items, they are answered according to the Fifth Likert Scale, The survey lists were made up of four main sections:

1. The first section included knowledge management variables; acquiring knowledge, storing knowledge, spreading knowledge, and applying knowledge.
2. The second section covered the variables of innovation; technical innovation and administrative innovation.
3. The third section included the variables of the performance of the university in the provision of services (teaching activities - scientific research - community service).
4. The fourth section included on the demographic variables of the respondents are: job title, experience, and specialization of the college).

#### **5.3.2 Second -Secondary Data**

The theoretical framework of the study was addressed from secondary data sources represented in Arabic and foreign books and references, scientific papers, articles, reports, studies, specialized scientific journals and various Internet sites, as well as statistical reports and publications, issued from the authorities related to the subject and field of study; especially in terms of knowledge management, innovation, and models for enhancing

innovative capabilities through the applied of knowledge management in different academic environments. This helped the researcher to describe the problem of the study, its objectives, variables, hypotheses and theoretical framework.

#### 5.4 Statistical Analysis Methods

The researcher analyzed the data collected using SPSS ver22.0, the following statistical methods were used to analyze the data:

- 1) Frequency and percentages in order to determine the measurement indicators adopted in the study and analyze the characteristics of the study sample demographically.
- 2) The arithmetic mean to determine the level of response of the sample members about study variables, and the importance level.
- 3) The standard deviation for measuring the degree of divergence of responses of sample members from their arithmetic mean.
- 4) Cronbach's Alpha to measure strength correlation between the items of the questionnaire.
- 5) Multiple Linear Regressions to verify the effect of a set of independent variables on a dependent variable.
- 6) Path Analysis to measure the effect of a variable independent on a dependent variant with an intermediate variable.

### 6. Results

#### 6.1 Results of the study hypotheses

Table (1) shows the analysis of the results of the field study on the validity of the study hypotheses.

**Table (1) summarize the results of the study hypotheses**

| Hypotheses  | Results  |
|---|--|
| There is no statistically significant effect at the level of significance ( $0.05 \geq \alpha$ ) for knowledge management processes (knowledge acquisition, knowledge storage, knowledge dissemination, application of knowledge) on innovation processes within Majmaah University.                      | <ol style="list-style-type: none"> <li>a) The hypothesis has been proved incorrect for the following variables: (acquisition of knowledge, dissemination of knowledge, application of knowledge).</li> <li>b) The hypothesis has been proved true for the variable (knowledge storage).</li> </ol> |
| There is no statistically significant effect at the level of significance ( $0.05 \geq \alpha$ ) for knowledge management processes (knowledge acquisition, knowledge storage, knowledge dissemination, application of knowledge) at the level of performance of the Majmaah University for its services. | <ol style="list-style-type: none"> <li>a) The hypothesis has been proved incorrect for the following variables: (acquisition of knowledge, dissemination of knowledge, application of knowledge).</li> <li>b) The hypothesis has been proved true for the variable (knowledge storage).</li> </ol> |
| There is no statistically significant effect at the level of significance ( $0.05 \geq \alpha$ ) for knowledge management processes at the level of the performance of the Majmaah University services due to innovation.   | <ol style="list-style-type: none"> <li>a) The hypothesis has been proved incorrect for the following variables: (scientific research - teaching activities).</li> <li>b) The hypothesis has been proved true for the variable (community service).</li> </ol>                                      |

## 6.2 Results of achieving the objectives of the study

Table (2) shows the results of achieving the objectives of the study, and how to achieve them.

**Table (2) Results of achieving the objectives of the study, and how to achieve them**

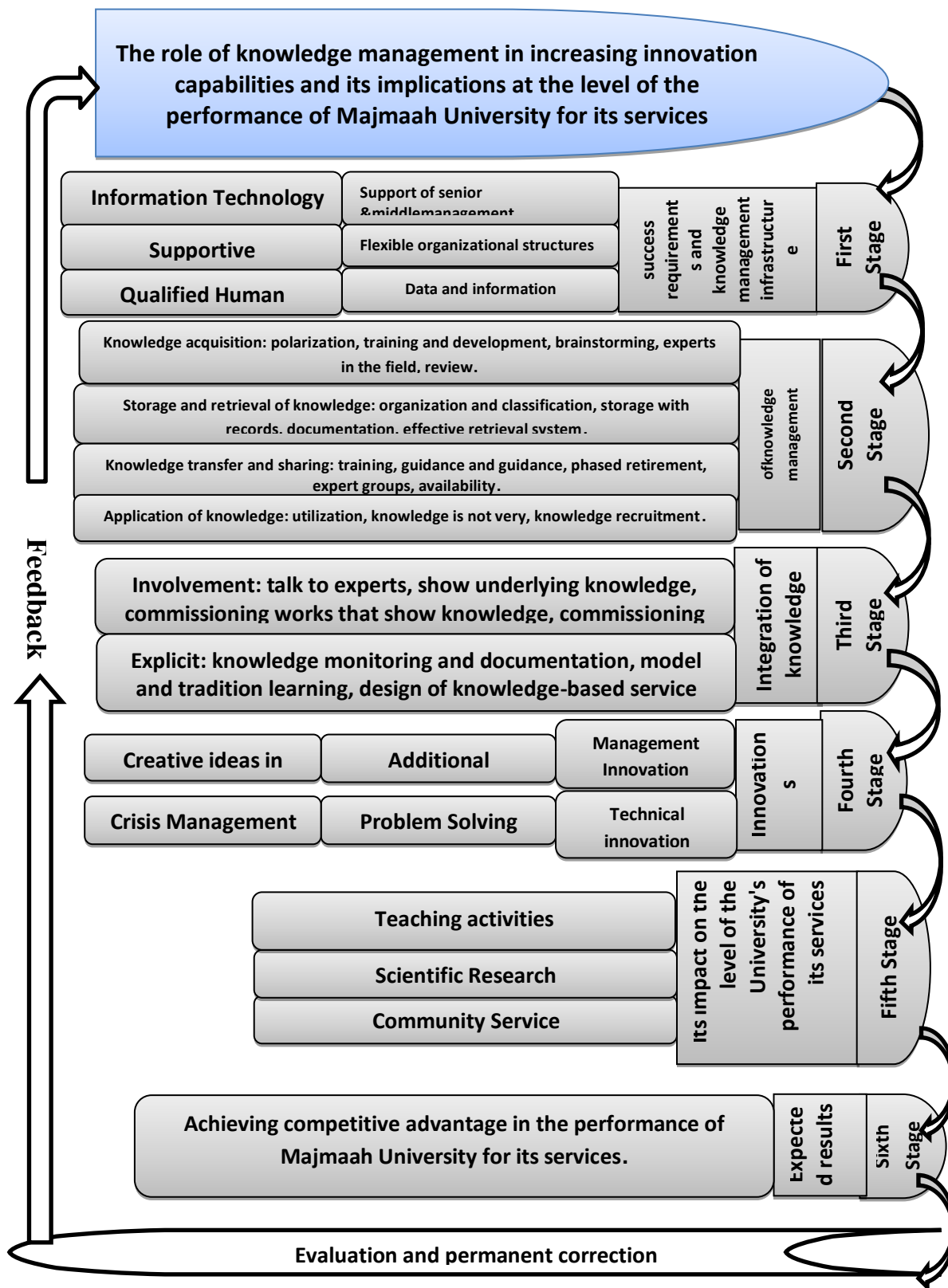
| Objective   | How to achieve it  | Result               |
|---|--|----------------------|
| Identification of the availability of knowledge management processes (knowledge acquisition - storing and retrieving knowledge - distribution and transfer of knowledge - application of knowledge) at the university through the views of the academic body, as well as the administrative body of the colleges of the Majmaah University. | (Previous studies - The theoretical framework of the study- Questions 1 and 3 in the survey lists - Results of field study).                                     | It has been achieved |
| Identify the concept and reality of knowledge management, innovation processes in its different dimensions (technical innovation, administrative innovation), and its importance at the Majmaah University.   | (Results of field study- Hypothesis testing results- Questions 1, 2 and 4 in the survey lists).  | It has been achieved |
| Presenting the extent of the divergence of views of the academic body of the colleges of the Majmaah University, as well as the administrative body about innovation processes.   | (Results of statistical analysis- Results of field study - Hypothesis testing results - Questions 5 and 6 in the survey lists).                                  | It has been achieved |
| Examining the nature of the relation between each knowledge management process (knowledge acquisition, knowledge storage and retrieval, knowledge distribution and transfer, application of knowledge), and innovation processes.   | (Results of statistical analysis- Results of field study- Hypothesis testing results - Questions 5 and 6 in the survey lists).                                   | It has been achieved |
| Develop and build a model that contributes to increasing the innovative capabilities of Majmaah University through the implementation of knowledge management processes in supporting and improving the services of the Majmaah University (teaching activities - scientific research - community service).                                 | (Results of previous studies- Results of statistical analysis- Hypothesis testing results- Proposed model- Recommendations- Stages of application of the model). | It has been achieved |



### 6.3 Overall Results

- There is a positive trend towards the availability of knowledge management processes at Majmaah University, as indicated by the results of statistical analysis and field study.
- There is a positive attitude towards innovation , and that it leads to raising the efficiency of the level of services provided by Majmaah University, where it has coincided with the results of the study of both (McCall,2016;Andrew, 2014).
- Knowledge management helps the university to play its role in serving the society and meet its needs, that is agrees with a study of(Marina,2016).
- Organizational culture is an important factor in supporting the adoption of knowledge management at MajmaahUniversity,that is indicated by the results of field study.
- Knowledge management contributes to the development of innovative new ideas and improving the University's various activities, that is agrees with a study of (McCal,2016).
- The main obstacles to the implementation of knowledge management are the lack of convincing of senior and middle management and workers in its effectiveness as indicated by the results of statistical analysis and field study.
- There is a lack of awareness of the importance of knowledge storage and its impact on innovation at Majmaah University, as indicated by the results of statistical analysis,hypothesis testing, and field study.
- Senior Management Training does not attach importance to acquiring new knowledges, and this is agreed with the results of a study (Matthiasa&Wicki, 2017).
- There is a positive impact of knowledge management processes, except the storage of knowledge on organizational innovation, both administrative and technical, and this is agreed with the results of a study(Mavodza&Ngulube ,2012).
- There is an impact of knowledge management on innovation, which is positively reflected in the level of services offered by the university, and this is agreed with the results of a study (Zhu, et.al,2014).

6.4 The Proposed Model



A proposed model for the role of knowledge management in increasing innovative capabilities and its impact on the level of performance of Majmaah University for its services.

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