KM Maturity Factors Affecting High Performance in Universities "Case study on Al-Quds Open University in Gaza-Strip"

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ABSTRACT

This paper aims to measure Knowledge Management Maturity (KMM) in the universities to determine the impact of knowledge management on high performance. This study was applied on Al-Quds Open University in Gaza strip, Palestine. Asian productivity organization model was applied to measure KMM. Second dimension which assess high performance was developed by the authors. The controlled sample was (306). Several statistical tools were used for data analysis and hypotheses testing, including reliability Correlation using Cronbach's alpha, "ANOVA", Simple Linear Regression and Step Wise Regression.The overall findings of the current study suggest that KMM is suitable for measuring high performance. KMM assessment shows that maturity level is in level three. Findings also support the main hypothesis and it is sub- hypotheses. The most important factors effecting high performance are: Processes, KM leadership, People, KM Outcomes and Learning and Innovation. Furthermore the current study is unique by the virtue of its nature, scope and way of implied investigation, as it is the first comparative study in the universities of Palestine explores the status of KMM using the Asian productivity Model.

Keywords: *Knowledge Management, KM Maturity, High performance, Universities, Asian* Productivity Model.

1. INTRODUCTION

Knowledge management in universities is the main aim of those organizations, where they produce and manage knowledge through human activities and technical practices to link individuals from various administrative levels and sections.

This process is establishing working groups and trust relationships which produce share and exchange of knowledge they own, support individual and collective learning processes, and then improve and develop individual and organizational performance.

Measuring knowledge management maturity is an important process and the purpose of the measurement should be obvious and within right criteria based on successful experiences with the capability to recognize knowledge gaps that must be remedied in order to take full advantage of the knowledge [26, 41].

The objective of this study is to measure knowledge management maturity in the universities. Also the study aims to define KMM level in the universities to encourage them moving to a higher level.

The literature review shows that although this subject has got much attention, in general, the studies concentrate on KM implementation. Many diverse attempts to regulate a common model have been done, but knowledge management maturity still a concept requires a standard framework to use in the universities.

In view of the literature review, the study raises the question of:

Q1. What are the most influential factors on the University performance resulting from knowledge management maturity?

Q2. How to link knowledge management maturity with performance and benefit from it for future performance improvements?

As for originality, the current study is unique by the virtue of its nature, scope and way of implied investigation, as it is explore the status of KMM using the Asian productivity model.

2. LITERATURE REVIEW

2.1 Knowledge Management in Universities

Universities are cognitive intensity institutions where the primary function is based on knowledge, production of knowledge, documentation and publishing. There is a growing belief that knowledge management in educational institutions help build the future of a dynamic learning environment, development and improvement of the efficiency activities of knowledge sharing and improve the overall performance of the organization [1, 2, 24, 49].

Ramachandran et al. defined KM in universities as "Systematic attempt to develop and implement knowledge practices in universities with the support of major strategic assistance factors "[40]. Also defined by Petrides and Nodine as" A frame or a way for individuals working in the educational institution to develop a set of practices to gather information and share what they know, which resulting in behaviors or actions that will improve the level of services and products offered by the educational institution"[34].

Laal defined it as "the process of converting information and intellectual assets to a continuing value that connect individuals with the knowledge they need to take action when they need it"[25].

According to previous definitions, KM in universities is similar knowledge management in industrial organizations or services, in terms of operations and activities, with a focus on the link between individuals and management to enhance the quality of outputs and achieve a competitive advantage in performance and outputs. Universities offer their services primarily to the community, and represents members of the community the main beneficiaries of Universities. Researchers identified the most reasons why universities environment is the most suitable to adopt KM: The existence of technology infrastructure, confidence and knowledge sharing is normal in universities and students enroll in a college to access to knowledge [1, 12, 14, 22, 28, 44, 57-59, 61-65].

2.2 Critical factors for KM in Universities:

The most critical variables that has an effect on sharing knowledge in universities are benefits and rewards [48]. While the research about this still few, Hislop suggests that the issues that concern to the staff regarding to assessment of advantages and disadvantages of sharing knowledge [16]. Benefits can be real rewards which improve the organization's performance and stability. It will be a big mistake when participation "is likely to" lead to abandonment of a source of strength and experience to others. While Rahman et al. and Bock et al. pointed that social sharing benefits cannot be estimated quantitatively, instead it is a personal commitment, trust and gratitude [7, 39].

Leadership style is an additional important factor which play a essential role in endorsement and development of knowledge exchange behavior, by contributing in experiential learning for staff, providing opportunities for supervising operations, development information technology systems, rewards and opportunities and interaction systems [41, 42, 43, 48, and 53].

The role of the leader can be completely different in the educational institutions where there are two types of leadership. First type is academic leadership which is interested in highlighting the knowledge, professional cognition, experience, personal qualities and teams. The second type is hierarchical management leadership with features such as: work, responsibilities, control and give power to position rather than ability. Significant tensions can exist when people with administrative capacity control the academic environment [11].

There is a immense dispute about the role of culture in educational institutions in the field of knowledge management and exchange [10, 26, 30, 41, 43, and 48]. For example, (Cronin) talked about contrast between the existence of companies cultures such as HP Computer Inc. "The HP Way" and the lack of any global culture like this in an universities [11]. Also (Lee) pointed that academic departments are complex and cultures may be different among departments in different disciplines [10]. The fact that remains dominant here is that the academic community have a culture of participation more than other forms of organizations and that cooperation is the essence of knowledge management [37].

One more important factor is organizational structure [10, 26, 41]. The structure of educational institutions diverge significantly from the other organizations. This structure might be a major difficulty for the exchange of knowledge, as the physical and psychological issue may be other obstacles which can guide to individualism. For that reason, organizational structure should be flexibly designed to persuade participation and cross-border cooperation inside the organization. The combination between formal organizational structure and non- hierarchical structure enhance knowledge generating and sharing [9, 41, 48, 56,60].

2.3 High Performance in Universities:

The educational institutions are service organizations providing education and knowledge to students and conducting scientific research. They are also responsible for providing the society with qualified people for jobs, so they deliberately to achieve high performance in their activities by teaching process. Teaching process represents the intellectual capital for a variety of activities characterized by mental and intellectual nature and a host of other traditional activities.

This performance measured by many excellence models such as BSC, Malcolm Baldrige American model, European model and Canadian model [3]. Those models depend on several criteria, leadership, strategic planning, customer orientation, KM, human resource, operations Management and the outcomes.

Also the scales might be financial or non-financial. Lee and Teseng pointed that financial scales connected directly with long term objectives, measuring the success of strategic plans and the ability to adapt with changes in external environment. Financial scales consist of ROI, sales growth, income before taxes, net profit, ROA,.etc [27].

While operational scales provide a hidden image for performance such as new products, product quality, market share, innovation, customer retention, social responsibility[8,38].

Al-hady defined high performance in universities "The performance that helps in achieving strategic objectives and effectiveness according to quality scales". KM can improve this performance in high rates [34, 47]. Rani, Sania, AL-Hayaly and Alnajjar added that KM positively affects organizational outcomes of company innovation, product improvement and employee improvement[54, 55].

These researchers [1, 5, 14, 29] mention the main fields of high performance in universities:

- **Reduce costs and increase profits**: Educational institutions seeking to cut costs by reducing the costs of services provided to students and the level of operational and administrative costs of operations, leading to an increase in profits.
- **Improve Quality**: The overall quality management approach depends on the joint efforts by which the participation of all individuals on an ongoing basis to improve the institution's performance.
- **Scientific research**: Scientific research in educational institutions is the key element of high performance, which helps in the advancement of professional practice and gain the confidence of the industry, and demonstrates the intellectual contributions of the faculty member.
- **Community Service**: It is an essential element in evaluation process of high performance that clarifies the role of the institution in civil society service and its contribution to solving its problems.

2.4 Knowledge Management Maturity:

Knowledge management maturity determines the level of organization existing capacity affecting on knowledge management processes, where every organization particular track a special sequence of maturity.

Knowledge management maturity models describes the steps of growth, which is expected to be up to the organization to develop their knowledge management and organizational performance [23,57]. Also it determines the stages of institutional knowledge maturity, which is expected to pass by any institution on its way to improve their practices and competitive advantages, those institutions that rely mainly on innovation and dissemination of knowledge like universities and thus improve the overall performance of the institution [46]. The maturity models describe the nature of things with the passage of time, such as development of knowledge management, what is necessary to move from a given level to another and stability at a certain level [20, 51].

O'Brien, Hoss and Schussed determined the importance of KM measurement as follow [18, 32]:

- Helps measure the institution to identify knowledge gaps they have.
- Determine the impact of knowledge gaps on the performance, growth and development of the institution.
- Helps to manage knowledge possessed by the organization more efficiently.
- Provides the enterprise with analytical tools works to promote knowledge and address gaps.
- Identify strategies and activities to fill those gaps in knowledge.

Asian productivity organization developed a model to measure KMM, designed after a study lasted for five months. This model have been adopted by the Asian Organization of Production (APO) to develop tools and knowledge management techniques. Working team consist of experts in knowledge management from Japan, Singapore, India, China, Malaysia, Thailand, Vietnam and the Philippines [51]. This model consist of a general framework for knowledge management, knowledge management tool and measuring tool to measure the maturity of knowledge management as shown in figure 1.
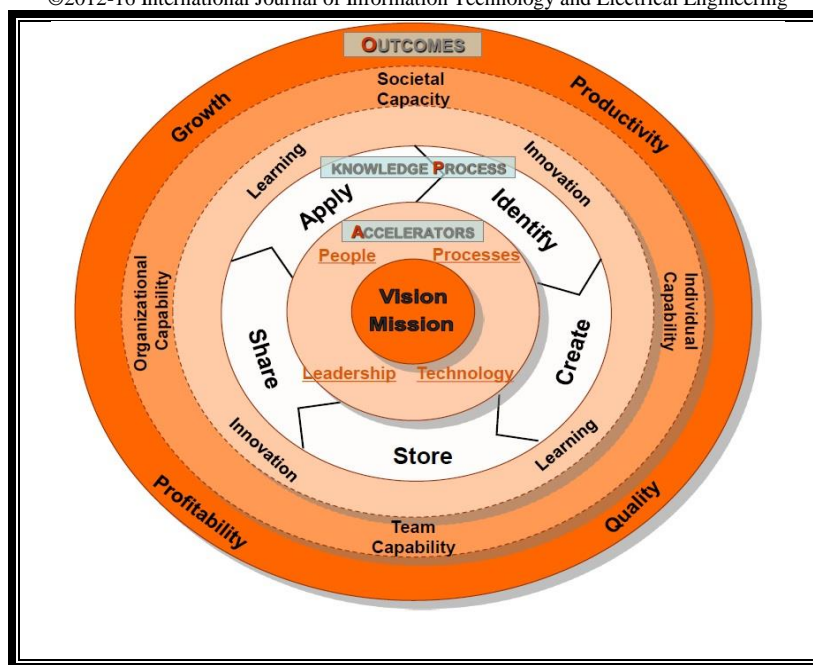
Figure 1. KM framework

This framework consists of a row of enablers for knowledge management, starting from the organization's mission and vision in the middle of the circle, which sets strategy and organization capabilities.

Then we move on to the second frame, which includes knowledge management processes and the factors that accelerate the processes of knowledge management like leadership, individuals, processes and technology. In the last phase, the results of using knowledge management represented by quality, productivity, profitability and growth of the organization.

The model defined seven fields to measure KM: KM Leadership, process, people, technology, knowledge process, learning and innovation and KM outcomes.

After measuring KM, the results showed on a radar chart identifying the areas that have strength and the areas that need improvement and the organization has an opportunity to improve them.
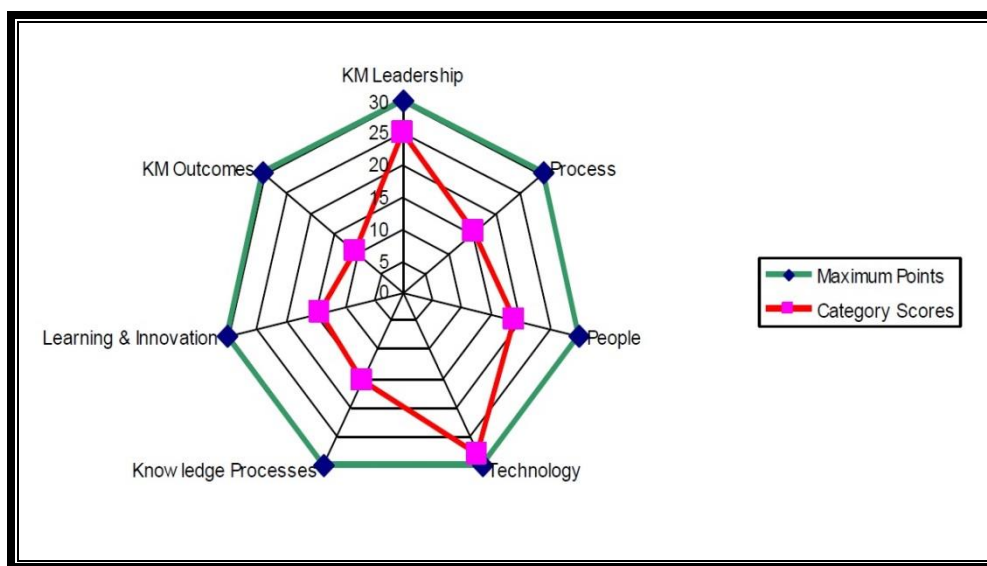

Figure 2: Radar Chart

The next step is to determine the level of maturity of knowledge management in the organization and comparing it with the maturity levels model.
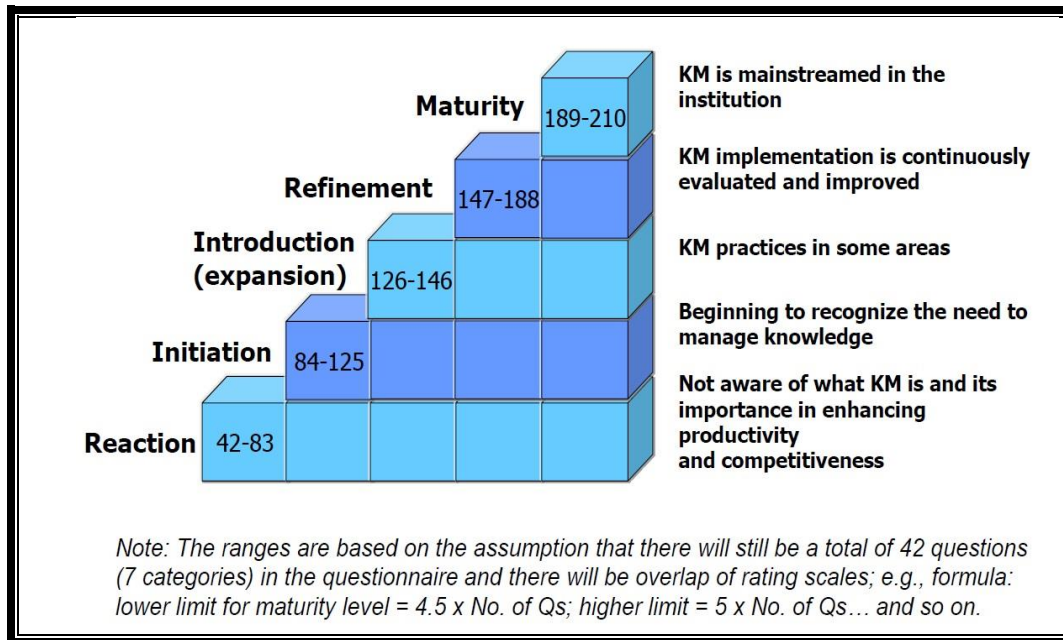

Figure 3: Maturity levels model

Knowledge management maturity consist of five levels is composed as follow:

1- Reaction: The organization is not interested in knowledge management and focused on enhancing productivity and competitiveness.
2- Initiation level: The organization begin to realize the need for knowledge management or has already begun in a pilot project for knowledge management.
3- Expansion: Knowledge management is fully applied.
4- Refinement: Organization evaluates knowledge management on an ongoing basis.
5- Maturity level: Knowledge management exist primarily as a driver in every organization's process.

2.5 KMM and high performance:

Knowledge management is not the only factor affecting performance and output of the organization, but it is one of many factors. Factors enabling high performance are leadership style, strategic planning, measurement, analysis, knowledge management, customers oriented, human resource management and administrative processes [52].

In first or second level of maturity, KM operations are local and lead to focus on a particular section in the organization without a comprehensive strategy to support those efforts. Here we can say that the impact of KM processes is not dramatically evident on the organization's performance. Therefore we can say that the first and second level of knowledge management maturity levels represent normal performance [6].

When reaching level three and four, organization begin to integrate knowledge sharing and collaboration in its main operations and set resources for knowledge management. Employees in levels three and four using technology and standardized tools to capture, transfer, share and re-use of knowledge in the organization.

Finally, KMM at level five represent full integrated knowledge management operations and employees understand the role of knowledge sharing and cooperation in improving the performance for individuals and organization. Such behavior supports creative activities, leads to better competitive advantages and enhance the value chain to customers and suppliers [19, 20, and 23].
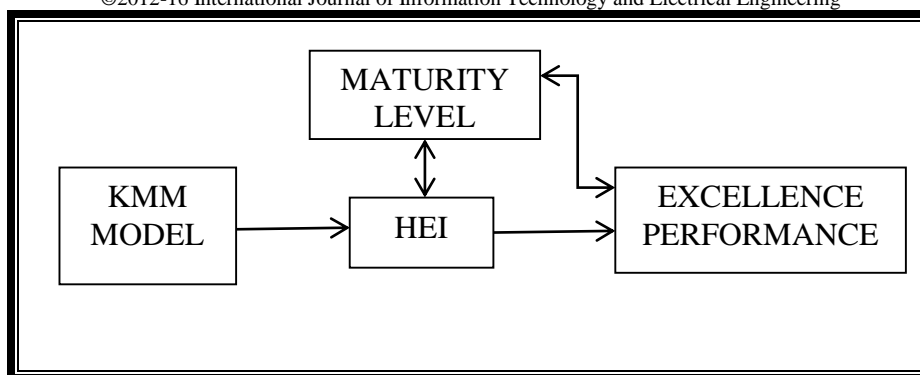
Figure 4: The conceptual framework

The relation between the model used in this study and high performance leads to the following main hypothesis in this study:

h1: There is a statistically significant effect for using the Asian knowledge model to measure universities high performance.

As the previous model suggest, leadership plays a critical role in the success of KM implementation. If there is a strong commitment at executive management level to change the organizational culture, then the organization will be able to create the values that lead to knowledge sharing[1,4]. To achieve that, organization needs a leadership style able to manage organization elements to achieve the best and maximum advantage of the existing knowledge in organization to improve performance. Also the leadership need to link the mission and the vision and the objectives of the organization with knowledge management strategies. This leads to the following first sub-hypothesis in this study:

h1-1: There is a statistically significant effect for KM leadership on universities high performance.

Operations are considered a complete knowledge inside organization. As value chain reflect how far can organization add value in each production step to achieve organizational efficiency and increase performance [23, 33]. This leads to the following second sub-hypothesis in this study:

h1-2: There is a statistically significant effect for operations on universities high performance.

Many KM research confirmed individual's impact on high performance. These authors [1, 23, 37, and 41] explained that individual's motivations and method of interpretation, transfer and implementation of knowledge management processes influence greatly in determining the shape and nature of knowledge and how to manage it. Therefore, individual is the most powerful element of an effective knowledge management implementation. This leads to the following third sub-hypothesis in this study:

h1-3: There is a statistically significant effect for people on universities high performance.

New technology plays a major role in performance improving by providing the right information at the right time and using them to rationalize decisions. Add to that technology needed to enhance sharing knowledge and learning inside organization. The integration between knowledge and organizational process enhance performance and competitive advantages [22, 23, and 35]. This leads to the following forth sub-hypothesis in this study:

h1-4: There is a statistically significant effect for technology on universities high performance.

Knowledge process like generation, storage, distribution and implementation facilitates work within the organization. The presence of a specialist team to capture knowledge and encourage workers to invest and participate it, with the existence of an effective leadership leading those operations to bring harmony between them reduce the total cost of work and increase financial returns for organization. This leads to achieve creativity, innovation and high productivity [5, 24, 50, and 53]. This leads to the following fifth sub-hypothesis in this study:

h1-5: There is a statistically significant effect for Knowledge process on universities high performance.

Hila and Sangjae discussed learning and creativity in organization. Modern organizations characterized with continuous learning and applying the gained experience in their daily routine. Organizations seeking to recruit the experience gained from learning process in continuous performance development [15, 43]. This leads to the following sixth sub-hypothesis in this study:

h1-6: There is a statistically significant effect for learning and innovation on universities high performance.

KM outcomes must reflex on effectiveness and efficiency inside the organization. This leads to high performance at individual level and organizational level [23, 24, and 41]. This leads to the following seventh sub-hypothesis in this study:

h1-7: There is a statistically significant effect for KM outcomes on universities high performance.

Other authors and KM experts added other variables and suggested new models which are more manifold. Those models included the pervious variables and variables like intellectual capital, agility, training and cultural capital [21, 36, 45]. As established earlier, the current study examine the validity of the Asian productivity model for measuring KMM in universities.

3. RESEARCH DESIGN

3.1 Study population and sampling:

This study conducted at Al-Quds Open University in Gaza Strip – Palestine. It is highly reputable one and established in 1991. The population are (306) employees, the control sample (244). The usable sample was (112), which makes the response rate (46%).

3.2 Research instrument:

The first dimension referring to the model used in the study, is a prepared in advance questionnaire by the Asian productivity organization (KM Assessment Tool). This tool contain seven audit criteria categories. The second dimension of the instrument which measure high performance in universities was developed by the current authors with the help of other research literature [1, 5, 29, and 50]. These statements were further revised and modified by experts in a subsequent stage before drafting the final version of the questionnaire.

A five-point Lekert scale of agreement was used for measurement, running from "Strongly Agree" to "Strongly Disagree", with a Neutral category for scale midpoint.

Table 1: Research instrument

Dimension 1: (Ind.V.) KM Assessment Tool	No. of statements	Dimension 2: (D.V.) High performance in HEI	No. of statements
Cat 1.0: KM Leadership	6		16
Cat 2.0: Processes	6		
Cat 3.0: People	6		
Cat 4.0: Technology	6		
Cat 5.0: Knowledge Processes	6		
Cat 6.0: Learning and Innovation	6		
Cat 7.0: KM Outcomes	6		

3.3 Validity and reliability assessment:

The study adopted Cronbach's α to measure the internal consistence reliability of the questionnaire. The results showed that Cronbach's α values for all dimensions were > (0.5). It indicated that the design of the questionnaire had a high internal consistency.

3.4 Statistical procedures:

Several statistical tools were used for data analysis and hypotheses testing, including reliability Correlation using Cronbach's alpha, "ANOVA", Simple Linear Regression, OLS- Ordinary Least Squares and Step Wise Regression.

3.5 Data analysis and discussion of results:

Simple linear regression and "ANOVA" tests were used to test hypotheses. Simple linear regression used to test whether there is an impact for one independent variable on a single dependent variable (High performance). The results are shown in Table 2.

The results of regression test indicate that sig. is less than (0.05) for all independent variables, which mean that there are significant statistically effect for independent variables on excellence performance.

Pearson coefficient and regression coefficient sign for all independent variables was positive. This result means whenever the value of independent variables increase, there will be increase in performance.

Changes in the independent variable is responsible for the interpretation of a rate (r2) of all the changes that occur in performance , and there is a rate (100 - r2) due to other factors specific to the other independent variables and other factors not mentioned in the model , in addition to the random error.

The table reveals that the findings of significance level are less than (0.05), which means that we can rely on the previous model and circulating the sample results on research community.

Therefore, the results of the analysis proved the existence of a relationship between the independent variable and the dependent variable, and each dimension in the independent variable effect individually on the dependent variable. Therefore, we accept the main hypothesis and it is sub-hypotheses.

Table 2: Simple Linear Regression and "ANOVA"

Variable	Sig.	Decision at α = 0.05	Regression coefficient	Pearson coefficient r	sign	R2
KM Leadership	0.0	Significant	0.201	0.396	+	15.68%
Processes	0.0	Significant	0.211	0.411	+	16.89%
People	0.0	Significant	0.291	0.502	+	25.2%
Technology	0.001	Significant	0.323	0.467	+	21.8%
Knowledge Processes	0.017	Significant	0.189	0.232	+	5.38%
Learning and Innovation	0.0	Significant	0.169	0.298	+	8.88%
KM Outcomes	0.0	Significant	0.264	0.274	+	7.5%

Further analysis, using Step wise regression conducted to arrange the effect of each variable in the knowledge management maturity model on the dependent variable and excluding of other insignificant variables. Table 3. Shows that five variables were effecting significantly (Processes, KM leadership, People, KM Outcomes,) and two were not effecting (Learning and Innovation, Technology, Learning and Innovation). The explanation for that is the effect for the four variables were very strong on high performance more than (Knowledge Processes, Learning and Innovation, Technology) from the point of view of the sample.

Table 3: Step Wise R

Rank	Variable	T	Sig.	Decision at α = 0.05
1	Processes	3.2	0.003	significant
2	KM Leadership	3.16	0.004	significant
3	People	2.69	0.011	significant
4	KM Outcomes	2.11	0.032	significant
5	Knowledge Processes	1.35	0. 68	insignificant
6	Learning and Innovation	1.52	0.035	significant
7	Technology	0.49	0.67	insignificant

According to the model, radar chart had been done by calculating the response of each paragraph in sub-domains rates as shown in Table 4. The total score was (126.94) which means that KMM is in level three (Expansion). University begin to integrate knowledge sharing and collaboration in its main operations and set resources for knowledge management. Employees in levels three using technology and standardized tools to capture, transfer, share and re-use of knowledge in the organization. In that level of maturity, university must expand here KM implementation to reach for level four where KM measuring is a continuous process. Also from table 4 we find that dimensions (5, 6, and 7) need to be improved.

Table 4: Radar Chart

No.	Sub-Domain	Al-Quds (5-30)
1	Leadership	22.16
2	Processes	24.13
3	People	20.13
4	Technology	17.92
5	Knowledge Processes	11.23
6	Learning and Innovation	14.36
7	KM Outcomes	16.56
Total (42-210)		126.49

4. CONCLUSION

The concept of KM implementation is already known in Palestinian universities. Many studies conducted on KM. The originality of study comes from being discussing KMM using a solid model. The overall findings of the current study suggest that KMM is leads to high performance. KMM assessment shows that the university maturity level is in level three where knowledge sharing and collaboration is common.

Findings also support the main hypothesis and it is sub-hypotheses. The most important factors effecting high performance are: Processes, KM leadership, People, KM Outcomes, Learning and Innovation. Furthermore, the model effect totally on high performance.

To have more accurate results (to generalize the model), another assessment must be done in periodical schedule (6 months for instant) after implementing the improved process. Authors recommend to adopt this model in universities in Palestine as a benchmark for knowledge management maturity and develop the model within specific criteria which suit with the MOHE requirements for high performance in higher educational Institutions.

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