Knowledge Management as an Enabler of Change Management and Maturity of Organizational Excellence

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Abstract— Change management is a structured approach to shifting or transitioning individuals, teams, and organizations from a current state to a desired future state. On the other hand, knowledge management (KM) comprises a range of strategies and practices used in an organization to identify, create, represent, distribute, and enable adoption of insights and experiences. The present study investigates the relationship between change and knowledge management in private sector of East-Azerbaijan in Iran. Likewise, this paper intends to present a new method about organizational excellence by considering change and knowledge management. The study used survey research, and the researchers have used reliable methods for data collecting that are interviewing, standardized questionnaires, using recent published books, papers, and researches about change and knowledge management. The community of present study consists of organizations of public and private sectors, which have used knowledge and change management during the past several years for their organizational excellence. Pearson correlation coefficient, stepwise regression and structural and factor analysis were used to analyze the data. The results of present study illustrated that there is the significant correlation between the mean scores of change management and knowledge management and their constituent elements ($p<0.01$). Also, the result of Enter Regression was indicated that predictor variables significantly (Knowledge management) have determined near to 60 percent of the variance of change management together. Likewise, the consequences of this study have presented a method for increasing and improving organizational excellence for organizations, which tend to use knowledge and change management.

Index Terms— **:** Knowledge Sharing, Organizational Changes, Organizational Excellence Maturity, Fuzzy Approach, Neural Network, Factor Analysis

1 Introduction

Knowledge management (KM) comprises a range of strategies and practices used in an organization to identify, create, represent, distribute, and enable adoption of insights and experiences. Such insights and experiences comprise knowledge, either embodied in individuals or embedded in organizations as processes or practices.

An established discipline since 1991 (Nonaka 1991), KM includes courses taught in the fields of business administration, information systems, management, and library and information sciences(Alavi & Leidner 1999). More recently, other fields have started contributing to KM research; these include information and media, computer science, public health, and public policy.

Many large companies and non-profit organizations have resources dedicated to internal KM efforts, often as a part of their business strategy, information technology, or human resource management departments (Addicott, McGivern & Ferlie 2006). Several consulting companies also exist that provide strategy and advice regarding KM to these organizations.

Knowledge management efforts typically focus on organizational objectives such as improved performance, competitive advantage, innovation, the sharing of lessons learned, integration and continuous improvement of the organization. KM efforts overlap with organizational learning, and may be distinguished from that by a greater focus on the management of knowledge as a strategic asset and a focus on encouraging the sharing of knowledge.

2 Knowledge Management (KM)

2.1 Knowledge Management

Knowledge Management is based on the idea that an organization's most valuable resource is the knowledge of its people" (National Electronic Library for Health, 2008). There are a number of definitions of knowledge management. For the purposes of this paper, a straightforward definition has been selected: "Knowledge management is the systematic process by which knowledge needed for an organization to succeed is

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created, captured, shared and leveraged" (Clemmons Rumizen, 2002).

Two definitions are helpful to increase our understanding of the term, the first is defined that KM promotes an integrated approach to identifying, capturing, retrieving, sharing and evaluating all enterprises information assets. These information assets may include databases, documents, policies, procedures, as well as the uncaptured tacit expertise and experience stored in individual's heads (Malhotra, Y. & Galletta, D., 2005).

The next is defined that KM is a process used by organizations and communities to improve how business is conducted by leveraging data and information that are gathered, organized, managed, and shared. By using both explicit and tacit knowledge, knowledge management helps an organization deliver the right information to the right place and the right person at the right time. Organizations can use knowledge management approaches to more fully leverage their information assets. Knowledge management contributes to the integration of systems, tools and processes, fosters the transfer of competence among individuals, and improves individual competence by promoting more efficient use of available information (Association of State and Territorial Health Officials, 2005).

Different frameworks for distinguishing between different 'types of' knowledge exist. One proposed framework for categorizing the dimensions of knowledge distinguishes between tacit knowledge and explicit knowledge. Tacit knowledge represents internalized knowledge that an individual may not be consciously aware of, such as how he or she accomplishes particular tasks. At the opposite end of the spectrum, explicit knowledge represents knowledge that the individual holds consciously in mental focus, in a form that can easily be communicated to others.[9] (Alavi & Leidner 2001). Similarly, Hayes and Walsham (2003) describe content and relational perspectives of knowledge and knowledge management as two fundamentally different epistemological perspectives. The content perspective suggest that knowledge is easily stored because it may be codified, while the relational perspective recognizes the contextual and relational aspects of knowledge which can make knowledge difficult to share outside of the specific location where the knowledge is developed.[10]

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Wong & Aspinwall (2004) suggested that KM models fall into three categories:

1) **Knowledge Cycle Processes of Knowledge** Management: the most commonly cited model and the one often credited as a foundational model for KM was developed by Nonaka & Takeuchi in 1995 to describe the interaction between tacit and explicit knowledge. The so-called SECI model focuses on four different areas of knowledge conversion: socialization, externalization, combination and internalization (Hussi, 2004).
2) **Measurement Models**: models that measure the effectiveness of KM may provide a reference to facilitate the structuring, analysis and evaluation of the KM initiatives undertaken in various companies (Wong & Aspinwall, 2004). Apostolou and Mentzas (1998) and Lai & Chu (2002) developed models to measure KM performance.
3) **Implementation Models**: implementation models for KM recommend a series of steps an organization can follow during the implementation of KM. These models provide a structure or set of guiding principles which is depicted in such a way as to provide guidance and direction on how to carry out KM in an organization (Wong & Aspinwall, 2004), and can help determine future plans of action.

One of the major tasks in knowledge management is the evaluation of knowledge. The significance of this evaluation comes specifically from the fact that it brings about knowledge improvement and expansion. However, the first step in "evaluation of knowledge" is the possibility of measuring the level of knowledge (Probst et. al., 2000). Glaser stresses that whatever cannot be measured does not exist at all (Glaser, 1998). There is another statement in this regard that "whatever cannot be measured cannot be managed either." This statement has been approved by different sources (Moore, 1999; Probst et al., 2000; Davenpart and Prusak, 1998). In fact, in the case organizations cannot measure their level of knowledge and cannot evaluate

the methods of changing their level of knowledge, the cycle of knowledge management will be incomplete. That is because no feedback will be received to be applied to make any improvements in various factors of knowledge management (Probst, Raub, and Romhardt, 2000).

Actually, the model of knowledge management used in this study according to the literature review is expressed as follows:

1) **Knowledge Creating**: The first stage of managing organizational knowledge requires entering the knowledge kitchen. In other words, exploring knowledge creating stage where can be processed in organization leads us to focus which individual, group, and department on. Because if knowledge cannot be created in organization; neither sharing nor auditing knowledge can be carried out.

There are too many knowledge creators in knowledge kitchen due to the fact that organization cannot create collective knowledge by itself. Thus, organizational participants create knowledge through their intuition, ability, skills, behaviors, and work experiments (Nonaka, 1995:14).

2) **Knowledge Sharing**: The second important stage of knowledge management life cycle is knowledge sharing. Capar and Eksioglu (2006) emphasize the ways and tools for effective knowledge sharing as follows:

- Formal social communication network,
- Informal social communication network,
- Teamwork,
- Communities of practices,
- Organizational learning,
- Rumors and,
- Formal structured technological communication networks (e-mail, mobile communications, teleconferences, videoconferences, etc.).

3) **Knowledge Structuring**: After constructing a perfect infrastructure system for knowledge sharing; data, information and knowledge should be structured in order to store in organization's database for the future needs. Structuring knowledge is based on sorting, organizing, codifying, analyzing, and reporting information that provides information retrieval what organization needs in the future (Awad and Ghaziri: 2004: 334-38).

4) **Knowledge Using**: Organizations use knowledge for three reasons: 1) Knowledge can be used for determining organization's work processes and making strategies for sustainable competitive advantage. 2) Knowledge can be used for designing and marketing product. 3) Knowledge plays a critical role of organization's services quality (Nonaka, 1995).

Also, Alavi emphasized that knowledge can be used through three basic mechanisms: **Directives** that refers to specific set of rules, standards, procedures, and instructions developed through the conversions of the specialist's tacit knowledge to explicit and integrated knowledge for efficient communication to non-specialist. **Organizational routines** refer to the development of task performance and coordination patterns, interaction protocols and process specifications that allow individuals to apply and integrate their specialized knowledge without the need to articulate and communicate what they know to others. **Self-contained task teams** refer to task uncertainty and complexity prevent the specification of directives and organizational routines, teams of individuals with prerequisite knowledge and specialty are formed for problem solving (Alavi, 2001:122).

5) **Knowledge Auditing**: Knowledge auditing means what amount of knowledge can be used in organization's products, services and processes. This knowledge management life cycle stage refers to the capacity of information processing in organizations.

2.2 Change Management (CM)

Change Management is a structured approach to shifting/transitioning individuals, teams, and organizations from a current state to a desired future state. It is an organizational process aimed at helping employees to accept and embrace changes in their current business environment. In project management, change management refers to a project management process where changes to a project are formally introduced and approved.[1]

Kotter [2] defines change management as the utilization of basic structures and tools to control any organizational change effort. Change management's goals is to minimize the change impacts on workers and avoid distractions.

Linda Ackerman Anderson [3], co-author of Beyond Change Management, described how in the late 1980s and early 1990s top leaders were growing dissatisfied with the failures of creating and implementing changes in a top-down fashion. They created the role of the change leader to take responsibility for the people side of the change. February of 1994 is the unofficial beginning of the Change Management Industry, with the publication of the first "State of the Change Management Industry" report in the Consulting News [4].

McKinsey consultant Julien Phillips first published a change management model in 1982 in the journal Human Resource Management; though it took a decade for his change management peers to catch up with him.[5].

Marshak[6] credits the big 6 accounting firms and management consulting firms with creating the change management industry when they branded their reengineering services groups as change management services in the late 1980s.

Lippitt, Watson, and Westley (1958) extend Lewin's Three-Step Change Theory. Lippitt, Watson, and Westley

created a seven-step theory that focuses more on the role and responsibility of the change agent than on the evolution of the change itself. Information is continuously exchanged throughout the process. The seven steps are:

1) Diagnose the problem.

2) Assess the motivation and capacity for change.

3) Assess the resources and motivation of the change agent. This includes the change agent's commitment to change, power, and stamina.

4) Choose progressive change objects. In this step, action plans are developed and strategies are established.

5) The role of the change agents should be selected and clearly understood by all parties so that expectations are clear. Examples of roles are: cheerleader, facilitator, and expert.

6) Maintain the change. Communication, feedback, and group coordination are essential elements in this step of the change process.

7) Gradually terminate from the helping relationship. The change agent should gradually withdraw from their role over time. This will occur when the change becomes part of the organizational culture (Lippitt, Watson and Westley 58-59).

Lippitt, Watson, and Westley point out that changes are more likely to be stable if they spread to neighboring systems or to subparts of the system immediately affected. Changes are better rooted. Two examples are: the individual meets other problems in a similar way, several businesses adopt the same innovation, or the problem spreads to other departments of the same business. The more widespread imitation becomes, the more the behavior is regarded as normal (Lippitt, Watson and Westley 58-59).

2.3 Organizational Excellent (OE)

Organizational Excellent is the index activities in organization with using of organizational results, focus on customer, leadership and agreement, management basis on processes and facts and employees participation, continuous improvement and innovation, common profit among of stakeholders and social responsibility (Mir bagheri, 2002; Najmi & Hosseini, 2006). the other definition of organizational excellent is included: Outstanding performance in manage organization and achieve results based on fundamental conceptions is included: result oriented, customer oriented, leadership and target stabilization, processes and facts, employees participation, continuous improvement and innovation, of course, partnerships is acceptable which is profitability for both sides and social responsibility (EFQM, 2005

The EFQM model definite superior management and excellent organization, and beforehand this way are said that moving toward this path is very difficult even in the best situations (Najmi & Hosseini, 2006). Also, in the global competition situation, technological changes, continuous changes in economic, social conditions and environment of customer can be said that moving on this way may be more difficult. With recognizing these challenges created European Foundation of Quality Management (Najmi & Hosseini, 2006; Mirbagherri, 2002; Amiri & Ssokaki, 2005).

The most important organizational excellence patterns: self-assessment is the new concept that nowadays use to problems identity and performance assessment (Pouyan & Kariman poor, 2007). CEOs believe assessment systems that existing in the world as performance excellence model of "Balrdige", "Dominik" and "EFQM" models are strong tools to assessment that help to recognize strong and threat points of organization in the work areas and reviewing whether organization is in the right way and to move right or not (Arora, 1998).

Many European organizations have positive imagine from quality. European organizations increasingly have accepted quality management as major strategy for increasing and developing their situation in the market and obtaining financial results. In 1998, some of them had felt in the quality management specially needed to begin a European move, created an institution and called it "European Foundation of Quality Management" (Delghavi, 2007).

The EFQM model has introduced as privative framework for assessment and development of organizations, this method was illustrated stable advantage that lots of organizations must obtain them (Hillman, 1994).organizational excellence model (EFQM) is a completion and comprehension way to provide confidence success in long-term. This method is recognition tool for self-assessment in the organization. The organizations can effectively create balance among of opportunity and resource allocated and real business plans. The findings were showed that this model is more successful in the private sectors than the public sectors (Asare, 2001).

Other studies in this field were identified that about 69 percent of European organizations use this model for self-assessment. Excellence model contain about 9 criteria that to divide to 2 sectors that are following:

1) Empowerment criteria:
- Leadership
- Policy and strategy
- Employee
- Participations and resource
- Process

2) Result criteria
- Customer results
- Employee results
- Social results
- Key performance results

According to above context about social capital and organizational entrepreneurship and its dimensions can present the conceptual framework of the present as following:

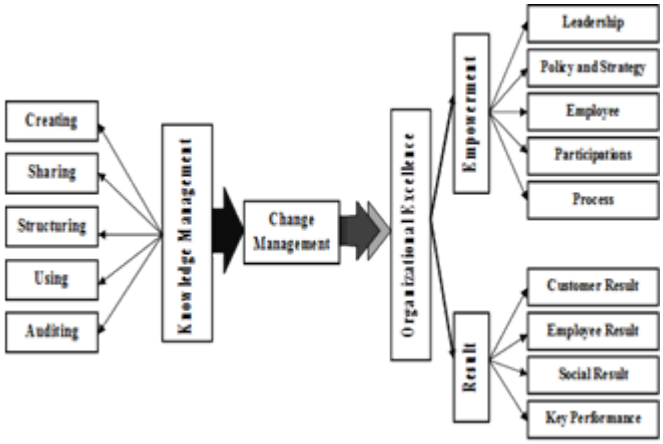

Fig (1): The Conceptual Framework of present study.

2.4 Questions of Present Study

Whereas, present study was going to review the relationship among KM, CM, and OE and how to promote the Organizational Excellence by using KM and CM, so according to above context and subject of this study, the questions of present study are as follows:

1) Is there the significant relationship between KM and its dimensions with Change?

2) Is there the significant relationship between Change management and Organizational Excellence and its dimensions?

3) Is the Regression Equation of Change management on dimensions of KM significant?

4) Is the relationship between KM and CM cause to increase and improve the rate of Organizational Excellence?

5) Is the model which used in the present study, considering to the data collected goodness of fit?

3 METHODOLOGY

This Study was survey research. The sample size of the present study is 227 that selected from an important private factory of East-Azerbaijan which is "Soozan Industry Group". "Soozan Industrial Group" was established in 1977 at Northwest of IRAN and started its activity with producing Rice Cookers. In 1985 manufactured different models of stove under the name of "Jahan-Afroz-Azar". In 1985 has been certified by Gas Standard in East-Azerbaijan for the first time and increased its production. In 1993 produced space heaters, water heaters and Coolers In different models and in 1994 has been awarded Standard for producing water heater without tank for the first time in IRAN. Nowadays, with 350 qualified employes, more than 400 after sales service stations and modern technology, it has become one of leading manufacturer of home appliances which export its products to all over the world.

KM questionnaire was designed by Joseph E. Haddad (2006) University of Florida. It contains 20 items and it has five dimensions namely: Creating, Sharing, Structuring, Using and Auditing. Its reliability was reported 0.911. Change Management was assessed by researcher according to the most important factors which have effect on Change Management with 27 items to measure Change Management in organization. Its reliability was reported 0.874. Likewise, Data for Organizational excellence was collected by the questionnaires of EFQM that contained 45 items. Its reliability was reported 0.89. All questionnaires are in 5 points LIKERT-type scale ranging from "I strongly disagree" to "I strongly agree". Data analysis was carried out by using the statistical program packages SPSS 17.0 and LISREL 8.54. Among the respondent, 74% was male and 26% female and most of the responders were bachelor and master degrees that were about more than 76%. For analyzing in this study, researchers were used Person Correlation, Liner Regression, Factors and Structural Equations, 3D and Transfer Plots.

4 RESULT

Table-1: Pearson correlation coefficient between KM and its dimensions and CM (n=227).

Correlations						
	Knowledge **C**reating	**K**nowledge **S**haring	**K**nowledge **S**tructuring	**K**nowledge **U**sing	**K**nowledge **A**uditing	**K**nowledge **M**anagement
Change **M**anagement	.608**	.600**	.649**	.559**	.672**	.703**
	.000	.000	.000	.000	.000	.000
**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).						

The Pearson correlation for the present study variables is

given in Table-1. KM and its dimensions were correlated with Change management. Dimensions of Km and itself were significantly related to Change Management. On the other hand, the results of table-1 are illustrating that the relationships among all items are significant at both 99 and 95 percent confidence level.

Table-2: Pearson correlation between CM and Organizational Excellence and its Criteria (n=227).

Correlations			
	Empower-ment **C**riteria	**R**esult **C**riteria	**O**rganization-al **E**xcellence
Change **M**anagement	.786**	.855**	.854**
	.000	.000	.000
**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).			

The Pearson correlation of Table-2 is given, are indicating Organizational Excellence and its Criteria were correlated with Change management. Criteria of OE and itself were significantly related to Change Management. On the other hand, the results of table-2 are showing the relationships among all items are significant at both 99 and 95 percent confidence level.

Table-3: Model summery of regression of KM and CM (n=227).

R	R Square	Adjusted R Square	Std. Error of the Estimate
.713[a]	.509	.499	.77666
a. Predictors: (Constant), Creating, Sharing, Structuring , Using, and Auditing			

As seen in Table-3, the significant predictor (Creating, Sharing, Structuring, Using, and Auditing) has determined 50.9% of the variance of Change Management, it was expected to predict creating depending on KM and its dimensions, P-variable regression was applied, Knowledge Management as predictor variable and Change Management as depended variable were analyzed. Data of table-4 is illustrated that KM and its dimensions predicts on the Change Management eventually, each increase or decrease in dimensions of KM reason same change in Change Management.

Table-4: ANOVA of KM and CM (n=179).

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	168.561	5	33.712	55.889	.000[a]
Residual	162.863	270	.603		
Total	331.424	275			
a. Predictors: (Constant), Creating, Sharing, Structuring , Using, and Auditing					
b. Dependent Variable: Change Management					

Table-5: Regression analysis to predict Internal Marketing and its dimension on the Service Quality (n=179).

Predictor Variable	**B**	**Std. Error**	**Beta**	**T**	**Sig.**	**Result**
(Constant)	.919	.177	-	5.184	.000	✓
Knowledge **C**reating	.172	.062	.191	2.755	.006	✓
Knowledge **S**haring	.006	.073	.006	.076	.939	×
Knowledge **S**tructuring	.162	.074	.183	2.201	.029	✓
Knowledge **U**sing	.066	.063	.069	1.049	.295	×
Knowledge **A**uditing	.292	.068	.356	4.299	.000	✓

As seen, Knowledge Auditing has satisfied the entrance criterion of the regression and entered as a first important predictor (Beta= 0.356). In second step Knowledge Creating has satisfied the entrance criterion of the regression and entered as a second important predictor (Beta= 0.191). In Third step Knowledge Structuring has satisfied the entrance criterion of the regression and entered as a Third important predictor (Beta= 0.183). However, other dimensions of KM namely: Knowledge Sharing and Knowledge Using could not satisfy the entrance criterion of the regression, and then regression equation of Change Management on KM and its dimensions is as fallow:

Change Management = 0.356 (Knowledge Auditing) + 0.191 (Knowledge Creating) + 0.183 (Knowledge Structuring).

In accordance with Byrne (1998), a ratio of X2 to DF of less than 3 was generally considered an indicator of good model fit, and a ratio of less than 5 was considered acceptable. An adjusted goodness-of-fit index (AGFI) of more than 0.90, a root-mean-square error of approximation (RMSEA) of less than 0.08, and Root Mean Square Residual (RMR) of less than 0.045 and a normal fit index (NFI), Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI) and Incremental Fit Index (IFI) of more than 0.90 were considered indicators of "good fit" Given their complementary features all four indexes were used to evaluate the path model. In this model, we use an abbreviation of both of criteria's dimensions (KM1 = Knowledge Creating, KM2 = Knowledge Sharing, KM3 = Knowledge Structuring, KM4 = Knowledge Using, KM5 = Knowledge Auditing, OE = Empowerment criteria, OE1 = Leadership, OE2 = Policy and strategy, OE3 = Employee, OE4 = Participations and resource, OE5 = Process, OEE = Result criteria, OEE1 = Customer results, OEE2 = Employee results, OEE3 = Social results, OEE4 = Key performance results, CH= Change Management, and CH1 through CH7 are seven steps of Change Management which are the researcher has argued in the literature review of present study).

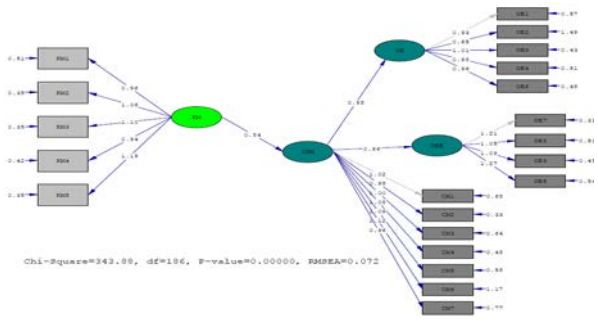

FIGURE (2): STRUCTURAL EQUATION MODELING (STANDARD SOLUTION).

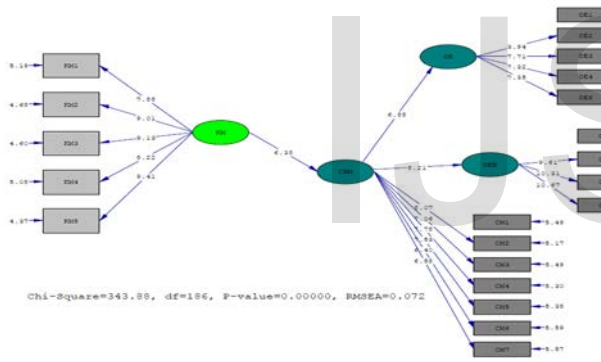

Figure (3): structural equation modeling (T-value).

Table-6: Model summary of Goodness of fit statistics (n=226)

Chi-square	DF	RMSEA	GFI	AGFI	NFI	NNFI	CFI	IFI	RMR
343.88	186	0.072	0.94	0.91	0.97	0.97	0.96	0.98	.037

The data of figure (2), (3) and table (6) are demonstrated that the exploratory model, including all hypothesized variables provided an adequate fit (X 2 = 343.88; DF = 186; P-Value = 0.0000; a ratio of X 2 to DF of less than 3; goodness of fit index [GFI] = 0.94; adjusted goodness-of-fit index [AGFI] = 0.91; root-mean-square error of approximation [RMSEA] = 0.072 and [RMR] = 0.037) for the data and indicated that the relationship between KM and Organizational Excellence by Change Management. According to date of these figures and Table (6) are respectively structural equation modeling (Estimate State and T-value) and the Model summary of Goodness of fit statistics. All data of upon are in conformity with Byrne's (1998) procedures.

5 CONCLUSION

According to the results of the present study about the relationship among knowledge management and change management and organizational excellence, can be argued that there are positive relationship between all selected factors. The findings of present study were illustrated that among the factors of KM; knowledge Auditing, had high correlation score than other factors of KM with change management, and on the other hand, the result criteria had highest relationship with change management. Considering to the correlation result can be explanted that Knowledge auditing and Result criteria are more important than other dimensions of for investigating and increasing the organizational excellence (in the employee's view). It means, in the workplace when these items is high, the workforces have satisfaction from environment of organization and increasing organizational commitment, participation and creativity in employees. So, totally there is positive and significant relationship between KM and Change management according to the results of table-1, table-2 that represents the first question of present study is acceptable. Also, according to the results of table-3 can be concluded that significant of predictor variables namely (Creating, Sharing, Structuring, Using, and Auditing) is 50.9 % variance of Change management. Also, according to results of table-3 can be discussed that significantly in the Auditing is more than others. This means that present organizations pay attention to other dimensions of Knowledge management such as Creating, Sharing, Structuring, Using items. Because, we will increase tha organizational excellence just noticing to all factors of KM and change management totally. So, the result of table-3, 4 which represents the third question of present study is acceptable. Likewise, according to table-4 and Data of figure (1), (2) were indicated that the relationship between KM and organizational excellence because of the strong direct effects of KM on change management. Also, can be said that present model for measuring all items is favorable. So, the result of table-6 and figures 2, 3 which represents the third question of present study is acceptable. The findings of all questions of present study are in conformity with other researchers who have done about KM, organizational excellence and change management. Therefore, all of organizations, both generally and specially, enhance the level of KM, because with higher it, organizational excellence and organizational productivity increases too. Thus, if the present organization and even other organizations want to achieve organizational excellence and high productivity and organizational performance (OP), should invest as acceptable KM and change management in their organizations.

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