Critical Success Factors of Knowledge Management
(A Case Study: Zahedan Electric Distribution Company)

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ABSTRACT

The purpose of present study is investigating the Critical Success Factors of Knowledge Management. In present research the sample size consists of 75 employees that were selected at random from 96 employees from Zahedan Electric Distribution company in Iran in 2012. Data analyses were carried out by using Factor Analysis, Structural Equation, and Freidman Mean Ranking Test. The results of present study were illustrated that there is significant relationship between factors together, and also considering to the Ranking Analyses can be said that the Architecture of knowledge management has high score and has effect on Success of Knowledge Management and on the other hand, Knowledge strategies has low score than other items. Also, according to findings of factor analysis all factors have more influence on KM for developing and improving organizational performance.

KEYWORDS: Critical Success Factors, Knowledge Management, Information Technology, Organizational infrastructure, and Organizational culture

INTRODUCTION

Knowledge management has been regarded as a significant contributing tool to enhance the performance of organizations. However, few studies have empirically tested and validated the theories, tools, and models of knowledge management[1].

KM creates a new working environment where knowledge and experience can easily be shared and also enables information and knowledge to emerge and flow to the right people at the right time so they can act more efficiently and effectively [2].

For a deeper understanding of the KM processes, an attempt to express the hidden meaning of data, information and knowledge is necessary. Data means a set of discrete and objective facts concerning events. Therefore, they can be construed as a structured record of transactions within an organization. Information is data with attributes of relevance and purpose, usually having the format of a document or visual and/or audible message.

"Knowledge" is information possessed in the mind of individuals: specifically personalized information (which may or may not be new, unique, useful, or accurate) related to facts, procedures, concepts, interpretations, ideas, observations, and judgments [3].

The importance of knowledge management in organizations is clear and it is seen as a competitive advantage. Organizational leaders are always looking for the reasons and main factors of success in devising a knowledge management system and to execute it in their organizations. This research plans to discuss and study about critical success factors in implementing knowledge management in Zahedan electrical distribution company.

LITERATURE REVIEW

Knowledge management (KM) is an integrated, systematic approach to identify, manage, and share all of the department's information assets, including databases, documents, policies and procedures, as well as previously unarticulated expertise and experience resident in individual officers [4].

KM is also known as a systematic, goal-oriented application of measures to steer and control the tangible and intangible knowledge assets of organizations, with the aim of using existing knowledge inside and outside of these organizations to enable the creation of new knowledge, and generate value, innovation and improvement [5]

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Mathi (2004) identifies that the key success factors of implementing KM [6,7,8] in organizations are culture, KM organization, strategy, systems and IT infrastructure, effective and systematic processes and measures.

A broad range of factors that can influence the success of KM implementation[9,10,11,12,13] has been mentioned in the literature. For example, much has been stated about culture, information technology (IT) and leadership as important considerations for its accomplishment. However, no systematic work exists on characterizing a collective set of CSFs for implementing KM in the SME sector. An appropriate set of CSFs which are relevant for SMEs will help them to keep in mind the important issues that should be dealt with when designing and implementing a KM initiative.

CSFs can be defined as "areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization" [14]. [15] viewed them as those critical areas of managerial planning and action that must be practiced in order to achieve effectiveness. In terms of KM, they can be viewed as those activities and practices that should be addressed in order to ensure its successful implementation. These practices would either need to be nurtured if they already existed or be developed if they were still not in place. Based on the above definition, CSFs in this study are treated as those internal factors which are controllable by an organization. External factors such as environmental influences are not taken into account since organizations have little control over them when implementing KM. Some of the pertinent studies on CSFs for KM will now be reviewed and their possible weaknesses highlighted.

Based on the insights gleaned from the study of practices and experiences of leading companies in the KM field, [16] highlighted seven key success factors. These include a strong link to a business imperative, a compelling vision and architecture, knowledge leadership, a knowledge creating and sharing culture, continuous learning, a well-developed technology infrastructure and systematic organizational knowledge processes. It was stated that not all of these factors would be important for small scale pilot projects. However, they would certainly need to be considered for those organizations that were formalizing KM or transforming themselves into true knowledge-based enterprises.

A study to investigate the factors which can influence the management of knowledge in organizations was carried out by [17]. First, they derived a set of factors from various literature sources. Then, they conducted a Delphi study, comprising an international panel of KM academics and practitioners to further explore and evaluate the factors that they had developed earlier. They proposed three major classes of influences (managerial, resource and environmental), with different factors in each. Managerial influences comprised four main factors, coordination, control, measurement and leadership; resource influences consisted of knowledge, human, material and financial resources; whereas environmental influences included factors such as competition, markets, time pressure, governmental and economic climates, etc.

Davenport [18,19,20] conducted an exploratory study on 31 KM projects in 24 companies, one of the aims being to determine the factors associated with their effectiveness. Before doing so, they evaluated the performance of the projects using indicators analogous to those for assessing the success of other business change initiatives. As a result, 18 projects were classified as successful, from which eight common success factors were identified. They were linking KM to economic performance or industry value, a clear purpose and language, a standard and flexible knowledge structure, multiple channels for knowledge transfer, a knowledge-friendly culture, a technical and organizational infrastructure, change in motivational practices, and senior management support. It was further stated that while the last four factors were the hardest to develop, they were also the ones that mattered most. However, since this was an exploratory study, it was agreed by Davenport .[21] that linking the identified factors to the success of KM should be viewed as hypothesized, not proven.

Chourides [22] identified various critical factors for successful KM implementation in five organizational functional areas: strategy, human resource management (HRM), IT, quality and marketing. Their work was built upon an earlier questionnaire survey of the financial times stock exchange (FTSE) 100 companies as well as a review of existing literature to identify key practices and factors for adopting KM. Subsequently, they conducted a longitudinal study in eight case organizations, which were at various stages of implementing KM programs to further compare and assess their critical factors. In particular, interviews with key staff of these organizations were conducted for this purpose. [23] proposed six key ingredients in order to make KM successful in organizations. He suggested the need for a KM strategy with support from senior leadership, a chief knowledge officer (CKO) or equivalent and a KM infrastructure, knowledge repositories, KM systems and tools, incentives to encourage knowledge sharing and a supportive culture. Specifically, important lessons learnt from firms who were early adopters of KM were used to support his propositions. In the first ingredient, he advocated the creation of a centre of expertise for every knowledge discipline or subject matter, as a KM strategy which could be undertaken by organizations. The resource requirement for such an activity could be tremendous and this reflects a focus towards those organizations that have the necessary expertise, human and financial resources.

According to [24], the success of a KM effort depends on many factors. He highlighted five categories of factors namely leadership, culture, structure, roles and responsibilities, IT infrastructures, and measurement. Likewise, the [25] included strategy and leadership, culture, technology and measurement in their framework as enablers which can support the operation of KM. Although these factors are eminently sensible, it is believed that the success of KM is dependent on more aspects.

Conceptual framework:

The Critical Success factors of KM that carried out of literature review are : Information Technology, Knowledge Management System, IT infrastructure, Information systems, Strategy, Knowledge strategies, Architecture, knowledge management, Organizational infrastructure, and Organizational culture.
illustrate these factors in following diagram.

(Diagram-1:Conceptual Framework CSF of KM)
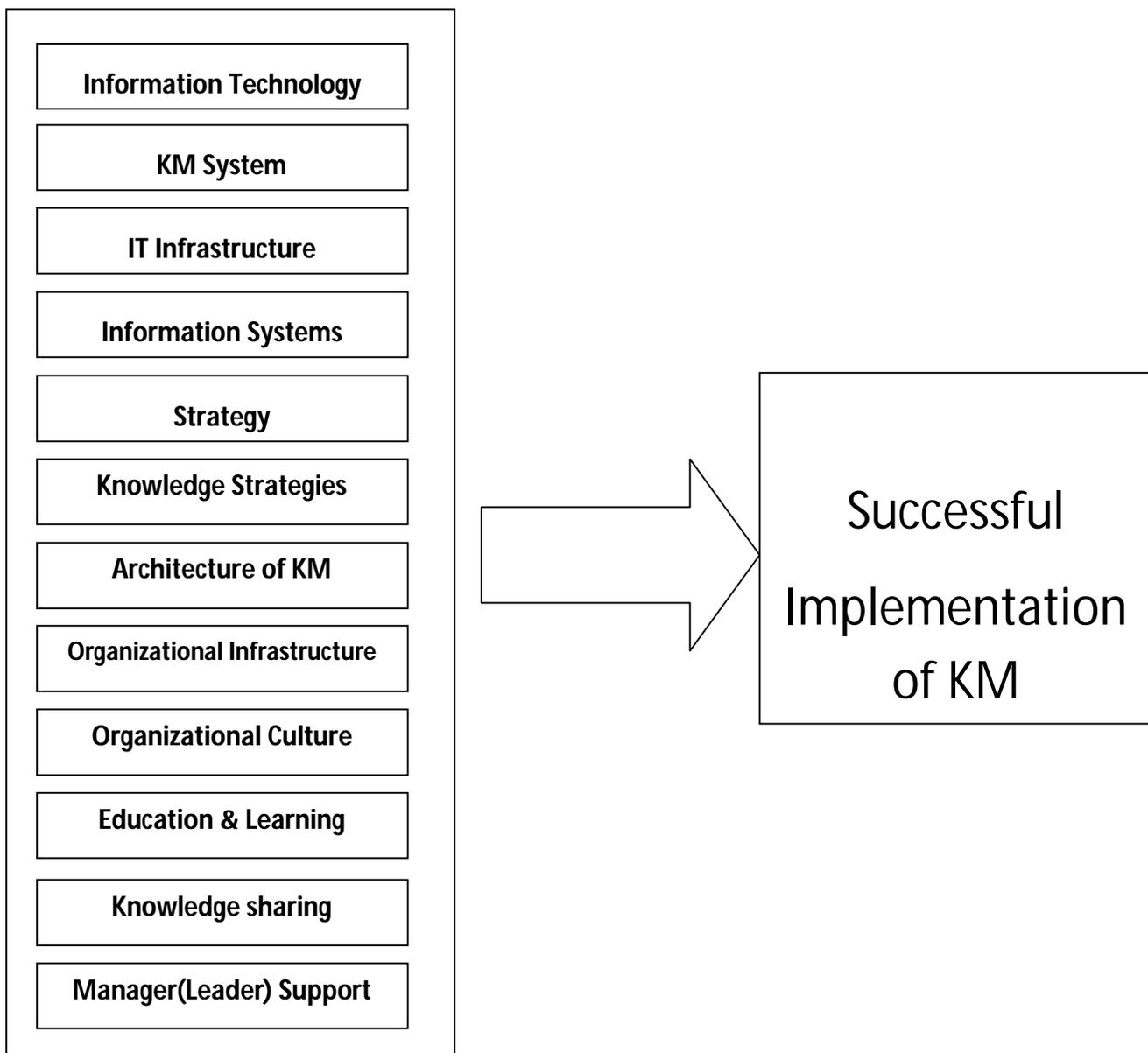
Questions of research

According to above context about Critical Success Factors of Knowledge Management, can be said that the main questions of present study are following and this paper tends to respond to these questions:

1) According to Critical Success Factors of Knowledge Management, which factors is important considering to the responders expectation?
2) Is the model of present study goodness of fit, due to factor analysis?
3) How amount of the factors need for improving the Success of KM generally?

METHODOLOGY

This Study Was Survey research. The sample size of the present study is 75 that selected from 96 of the Electric Distribution company in Zahedan-Iran. On the other hands, questionnaire of current survey was designed by researcher oneself. It contains 36 items and it has nine dimensions namely: Information Technology, Knowledge Management System, IT infrastructure, Information systems, Strategy, Knowledge strategies, Architecture, knowledge management, Organizational infrastructure, and Organizational culture its reliability of this questionnaire was reported 0.873.

All questions analyzed by 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, Amos 16.0.1 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 83%.

RESULTS

Table-1 is illustrating the One-Sample T-Test of nine selected items of Critical Success Factors of Knowledge Management namely Information Technology, Knowledge Management System, IT infrastructure, Information systems, Strategy, Knowledge strategies, Architecture, knowledge management, Organizational infrastructure, and Organizational culture. The information of the table-1 is respectively; mean, standardize deviation, mean difference, significant amount, and T-value. According to the hypnotizes of present study, the selected items would be acceptable as long as the amount of significant and t-value are respectively less than 0.5 and not between -1.96 and 1.96 and these situation show that the result of each item should be agreeable in 95 percent confidence level. In brief, due to the table-1 can be said that all item, considering to the 95 percent laws, are acceptable according to responders' expectations.

Table-1: Sample T-test of personals expectation about Critical Success Factors of Knowledge Management

| Varieties of Present Survey	Mean	S.D.	Mean Difference	Sig. (2-tailed)	T-Value
Information Technology	3.9320	1.20670	0.43204	.000	3.620
Knowledge Management System	4.0971	2.87830	1.09709	.000	3.89
IT infrastructure	3.4272	1.13416	0.42718	.000	3.823
Information systems	3.8350	1.02992	0.33495	.001	3.63
Strategy,	4.6019	1.95709	1.10194	.000	5.714
Architecture knowledge management	4.8932	1.88863	0.68835	.000	4.812
Knowledge strategies	3.9320	1.19855	0.43204	.000	3.658
Organizational infrastructure	3.3883	1.06856	0.38835	.000	3.688
Organizational culture	4.4757	1.36371	0.97573	.000	4.261

In accordance with Byrne , 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 Critical Success Factors of Knowledge Management are respectively: Information Technology = P1, Knowledge Management System = P2, IT infrastructure = P3, Information systems = P4, Strategy = P5, Knowledge strategies = P6, Architecture knowledge management = P7, Organizational infrastructure = P8, and Organizational culture = P9, Critical Success Factors of Knowledge Management = CSKM).

The data of figure (1), (2) and table (2) are illustrated that the exploratory model, including all hypothesized variables provided an adequate fit ($x2$ = 87.57; DF = 27; p = 0.0000; a ratio of $X2$ to DF of less than 3; goodness of fit index [GFI] = 0.94; adjusted goodness-of-fit index [AGFI] = 0.89; root-mean-square error of approximation [RMSEA] = 0.071 and [RMR] = 0.031) for the data and indicated that the model of present study about Critical Success Factors of Knowledge Management due to factor analysis law are acceptable and all necessary output of this process are respectively structural equation modeling (Estimate State and T-value) and the Model summary of Goodness of fit statistics. All outputs are in conformity with Byrne's (1998) procedures.
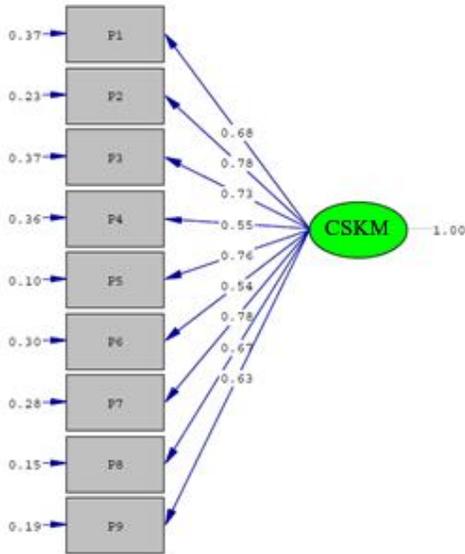
Chi-Square=87.57, df=27, P-value=0.00000, RMSEA=0.071

Fig (1): Structural Equation Modeling (Estimate State) of Success factors.
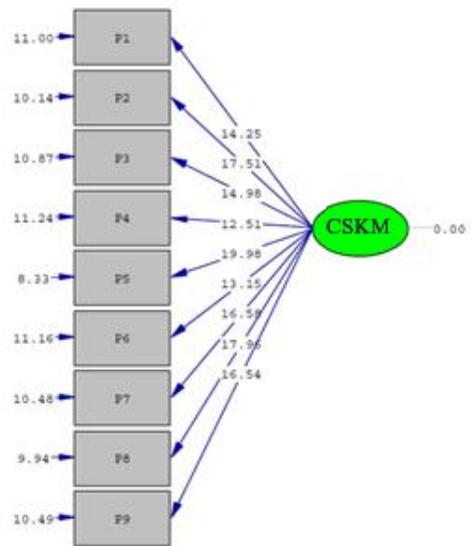
Chi-Square=87.57, df=27, P-value=0.00000, RMSEA=0.071

Fig (3): Structural Equation Modeling (T-Value) of Success factors

Table-2: Model summary of Goodness of fit statistics

Chi-square	DF	RMSEA	GFI	AGFI	NFI	NNFI	CFI	IFI	RMR
87.57	27	0.071	0.94	0.89	0.95	0.95	0.96	0.96	0.031

The table (3) illustrate Friedman test of Critical Success Factors of Knowledge Management that it shows mean rank of factors and as well as it shows which item or factor considering to expectations and perceptions of responders is more or less important, and if one item is less important, it means, the organizations don't need to improving that item like others and vice-versa. All results of present test are in 95 percent confidence level and if the significant scale is less than 0.05 and the ratio of $X2$ to DF is more than 3, it means that the test has done correct and the output of it is acceptable and extendable.

Table-3: Friedman Test of Critical Success Factors of Knowledge Management

Critical Success Factors of Knowledge Management	Mean Rank
Information Technology	4.98
Knowledge Management System	4.94
IT infrastructure	4.62
Information systems	4.91
Strategy	5.28
Architecture knowledge management	6.01
Knowledge strategies	4.51
Organizational infrastructure	4.56
Organizational culture	5.18
X2 = 67.160 df = 8 Sig. = .000	

The result of table (3) was illustrated that Architecture knowledge management has high score and has effect on Success of Knowledge Management and on the other hand, Knowledge strategies has low score than other items. Also, according to significant of this test is less than 0.05, so it means that difference between items or Critical Success Factors of Knowledge Management is acceptable and extendable.

Conclusions and Suggestions

The results of first question's analyses were showed that the factors were selected for probing and investigating Critical Success Factors of Knowledge Management by researcher form some references, were acceptable and agreeable considering to the expectation of responders and they can be selected as most important factors of Success of Knowledge Management. On the other hands, probed factors' mean score are more than the average of responses of people which selected as population of present study, so, can be said that the first question of present study was acceptable and agreeable in 95 percent confidence level.

Secondly, the results of goodness of fit in second question were indicated that the second question was acceptable and the model of present study was goodness of fit, because the ratio of X2 to DF of less than 3, and the adjusted goodness-of-fit index (AGFI) of more than 0.90, the root-mean-square error of approximation (RMSEA) of less than 0.08, and Root Mean Square Residual (RMR) of less than 0.045 and the normal fit index (NFI), Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI) and Incremental Fit Index (IFI) of more than 0.90.

Thirdly, considering to the results of third question test (Freidman Ranke Test), can be said due to expectation of responders, Architecture of knowledge management has high score and has effect on Success factors of KM and on the other hand, Knowledge strategies has low score than other items. Also, according to significant of this test is less than 0.05, so it means that difference between items or factors of Success of KM is acceptable and extendable.

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