

## E-services improvement with Knowledge Management approach

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### ABSTRACT

This research aims to study the E-services improvement with Knowledge Management approach considering the role of E-services as a mediator variable in the Road Maintenance and Transportation Organization of Sistan and Balouchestan province of Iran. The population of the study has been selected from the employees including managers, supervisors, and experts of transportation and terminal organization and the number of this population is 94 people. For sample determining, the researcher has used Morgan Table. At least, 79 people were counted due to that table. It should be noted that the researcher added 10 percent to the sample size for decreasing the error of sample determination and generalizability as well. Accordingly, 86 questionnaires were distributed in this organization and 80 questionnaires were only collected. Data were gathered by three types of questionnaires: e-services, customers' satisfaction, and knowledge management questionnaires, respectively. Pearson correlation, Liner Regression, and factor analysis were used for measuring and analyzing the collected data. The findings have figured out that a positive relationship exists between all variables in this study in 95 % confidence level. Furthermore, the results of regression test have illustrated that the rate of change between customers' satisfaction, and knowledge management was 18.4 %. Likewise, other consequences were significant and useful for present organization and every organization desiring to use these variables successfully in the environment.

**KEYWORDS:** Customers' Satisfaction, E-services, Knowledge Management, Customer relationship management

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### 1. INTRODUCTION

In any firm, the quality of the e-service is the main feature distinguishing one from another, and in achieving a competitive advantage (Batagan, Pocovnicu, & Capisizu, 2009; Miller, 2010). Hence, firms try to apply the quality e-service commensurate in accordance with the needs and desires of customers, and to reduce the gaps between the visions of top management and the actual quality service based on the perspective of the users of this service [2].

Knowledge management has increasingly become critical for the success of companies in this emerging era of e-commerce [7]. As business activities shift increasingly to the Web, the challenge facing corporate management is maintaining competitive advantage by building strong relations with employees, customers, and suppliers and partners. A good knowledge management strategy can help achieve this goal. Unfortunately, many companies use knowledge management technologies which do not suit today's new information era [15, 5].

The changes in the global environment in taking advantage of Internet and the World Wide Web for various day-to-day operations have led many organisations to venture into electronic services (e-services) as they believe it would help them stay competitive among firms and cater towards the growing expectations of its customers. Benefits have been reported for both individuals and organisations (Batagan, Pocovnicu, & Capisizu, 2009). A considerable number of developed countries have successfully embarked on e-services as a means of convenience and customer reach to their community and people. However, in developing countries, nearly 85% of e-government projects have either totally failed (e-government projects were either not implemented or implemented but immediately abandoned) or partially failed [13] (major goals were not attained and/or there were undesirable outcomes) (Holmes, 2001; Heeks, 2003; Dada, 2006). The major problem behind e-government project failure in developing countries is the gap between the e-service design and the reality, embracing a variety of factors including information, technology, process objectives and values, staffing and skills, management systems and structures, and more importantly accommodating customer expectation (Heeks, 2003; Kumar & Best, 2006; Udo, Bagchi, & Kirs, 2010).

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This paper is configured as follows: next section includes literature review; the third section describes methodology of the research. Then in the fourth section, the results of data analysis have been described. The last section includes conclusions and future research.

## 2. LITERATURE REVIEW

In recent years, various organizations and companies started using knowledge process and new concepts such as knowledge work, knowledge workers, knowledge management, and knowledge organizations show that this process is extremely used [8]. By using these concepts, Pitter Draker informed about a new type of organization in which mental power is governed instead of arm power [8]. Based on this theory, in future, the societies with higher knowledge can be expected to have more development and progress. Thus, having more natural resources cannot be as important as the knowledge. Knowledge organization will achieve organizational capabilities, enabling them to make huge power with low power (Alvani, 2001, p. 283).

Today, competitive condition and environment of organizations has become more complex and experienced more changes than before. This environment is rapidly changing in such a manner that this speed is more than their conjunction ability and answering speed for more organizations. Continuous changes in knowledge have created new imbalances for organizations. Endless stream of knowledge resulted to changes of markets, requiring constant changes in organizations [7]. The most important role that can be attributed to knowledge management is considering it as a change methodology. Knowledge management can be the most important factor for changing an organization by absorbing new knowledge into the system on one hand and effective administration of that knowledge on the other hand (Abtahi & Salavati, 2006, P. 3-4).

Knowledge management process includes various activities [10]. Nowadays, mostly discussed topic in knowledge management is knowledge share and/ or transfer. Knowledge share is very important because it leads to rapid application of knowledge by various parts of organization and the organization can take advantages of this case (Proust et al., 2006, p. 204)

One of the most difficult tasks of knowledge management is transferring knowledge to appropriate individuals or placing organization knowledge where it is needed. This problem is often underestimated (Proust, 2006, p. 205). So that everyone does not need to know everything or say everything to everybody. The real purpose of knowledge transfer is presenting the required knowledge for performing duties to relevant persons and groups as our holly prophet said: "science pesticide is being forgotten and the knowledge presented to unauthorized persons would be lost."

E-service includes actions, attempts and/ or performance and development of services through the application of information technology and electronic systems which includes presenting service to customers through information system logistics [3,6,12].

This definition reflexes three crucial components of electronic services which can be respectively considered as the components of electronic services. These components are as follows: Client, Communication channels, and Technology [3].

Libovits (2005) presented the concepts of data/information/knowledge and organizational processes in a model by which the data shall be changed to applied information and information shall result to knowledge and then the knowledge shall be used for individual and organizational processes (Main Ajmal et al., 2009).

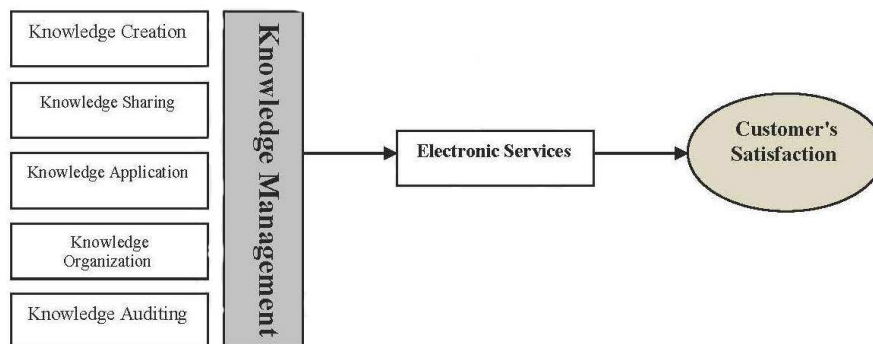
In relation to the concept of customer's satisfaction, various definitions were presented by marketing theorists [14]. Katler defines customer's satisfaction as a degree in which real operation of the company meets the expectation of the customer [9]. According to Katler in case the operation of company meets the expectation of the customer, customer feels satisfied, otherwise, he feels dissatisfied (Dave Andri & Delkhah, 2005: 188).

## 3. METHODOLOGY OF RESEARCH

The purpose of this research is to study the effect of knowledge management on customer's satisfaction based on interfering variable of electronic services and its role in enhancing the customer's satisfaction [9].

Method of this research is measuring, analytical and descriptive method. In this research, the existing condition of management variables, its components, electronic services, customer's satisfaction, and the relationship between them in the selected society were described and analyzed [9]. Also it is worth mentioning that period of this research is sectional and related to a 6-month period. In this research, there are three types of variables including dependent, independent and interfering variables in which knowledge management concepts are considered as independent variable, customer's satisfaction as dependent variable and electronic services as interfering variable. Also, it is worth mentioning that questionnaire method is used for evaluation of all variables and in general conditions polling of experts and specialists are the basis of data analysis in the present research.

Knowledge management is considered as independent variable which includes the following five aspects: knowledge sharing, knowledge creation, knowledge application, knowledge organization, and knowledge auditing. Customer's satisfaction is dependent variable of this research which is analyzed in framework of one variable. This research has an interferer variable titled electronic services which was analyzed in general in framework of 22 questions.



**Figure1. The Conceptual Framework of Research**

### 3.1 Reliability of Questionnaire

For determination of questionnaire reliability, 30 questionnaires were randomly selected among the distributed questionnaires and were analyzed by using Cronbach's Alpha Coefficient. The reliability of knowledge management, customer's satisfaction and electronic services questionnaires were 86.0, 81.0 & 91.0, respectively. As these amounts are more than the amount of Cronbach's Alpha e.g. 7.0, the reliability of these questionnaires is acceptable.

### 3.2 Validity of Questionnaire

Also, for analysis of questions validity, content validity was used for evaluation of content validity of specialists' opinions, university professors, and experts. In this stage, after interview, the required reforms were conducted and it is assured that the questionnaire evaluates the same characteristics requested by the researchers. In this research, Likert five-factor scale was used in which the first option is "completely disagree" and the fifth option is "completely agree".

### 3.4 Method of Data Analysis

Statistical analysis software of SPSS 17.0 and Lizrel 8.54 were used for analysis of gathered data and Spirman Correlation tests, linear regression and T-Independent test were used for factor analysis and structural equations.

Moreover, method of analysis and evaluation are as follows:

- 1) In this research, first the amount of correlation and meaningfulness of relationships between the independent, dependent, and interferer variables analyzed. This was performed with 99 percent confidence level. In case of confirmation of this part and existence of a meaningful relationship (positive or negative), we will go to the next step e.g. regression calculations and structural equations.
- 2) After confirmation of meaningful correlation between the variables, the amount of this effect shall be analyzed without interference of interferer variable and we will analyze the model in present of interferer variable by using simple linear regression test and in case of existence any relationship.
- 3) After confirmation of this effect, e.g. direct effect of independent variable on dependent variable, we will study the stage of entering interferer variable. To this end, factor analysis and structural equations were used and after analysis of model fitness, the major question of the research shall be confirmed or rejected.
- 4) Eventually, T-Independent Test and ANOVA were used for comparison between the variables from viewpoint of demographic indexes.

## 4. Data analysis results

### Analysis of the First main Question of the Research

**Question:** Does any meaningful relationship exist between the variable of the present research (knowledge management, its aspects and customer's satisfaction)?

For testing this question, measures from number 1 to 6 were used and then Spirman Correlation Test was used for confirming or rejecting each option. The meaningful reliability of this test is 95 percent and the question shall be

acceptable when its meaningfulness is less than 0.05, otherwise, the meaningfulness between two variables shall be rejected and this shows lack of meaningful relationship in 95% of confidence level.

#### 4.1 First sub-question:

**Question:** Does any meaningful relationship exist between the variables of the present research (knowledge creation of knowledge management and customer's satisfaction)?

**Table 1:** the correlation between Knowledge Creation and customer's satisfaction.

Name of Variables	Knowledge Creation
Customer's Satisfaction	0.395**
Meaningful Amount	0.000
** Relation Meaningfulness of Correlation in confidence level shows 95%.	

**Result:** This table shows correlation between **Knowledge Creation** of knowledge management and customer's satisfaction. As observed, a meaningful and positive relationship exists in confidence level of 95% between the variables of research. And it can be stated that, for example, by increasing one unit in **Knowledge Creation** aspect of knowledge management, 0.395 unit will positively be changed and ascended in customer's satisfaction.

#### 4.2 Second sub-question:

**Question:** Does any meaningful relationship exist between the variables of the present research (**Knowledge Sharing** of knowledge management and customer's satisfaction)?

**Table 2:** the correlation between Knowledge Sharing and customer's satisfaction

Name of Variables	Knowledge Sharing
Customer's Satisfaction	0.589**
Meaningful Amount	0.000
** Relation Meaningfulness of Correlation in Confidence level shows 95%.	

**Result:** This table shows correlation between **Knowledge Sharing** of knowledge management and customer's satisfaction. As observed, a meaningful and positive relationship exists in confidence level of 95% between the variables of research. And it can be stated that, for example, by increasing one unit in **Knowledge Sharing** aspect of knowledge management, 0.589 units shall positively be changed and ascended in customer's satisfaction.

#### 4.3 Third sub-question:

**Question:** Does any meaningful relationship exist between the variables of the present research (**Knowledge Application** of knowledge management and customer's satisfaction)?

**Table 3:** the correlation between Knowledge application and customer's satisfaction

Name of Variables	Knowledge Application
Customer's Satisfaction	0.649**
Meaningful Amount	0.000
** Relation Meaningfulness of Correlation in confidence level shows 95%.	

**Result:** This table shows correlation between **Knowledge Application** of knowledge management and customer's satisfaction. As observed, a meaningful and positive relationship exists in confidence level of 95% between the variables of research. And it can be stated that, for example, by increasing one unit in **Knowledge Application** aspect of knowledge management, 0.629 unit will positively be changed and ascended in customer's satisfaction.

#### 4.4 Fourth sub-question:

**Question:** Does any meaningful relationship exist between the variables of the present research (**Knowledge Organization** of knowledge management and customer's satisfaction)?

**Table 4:** the correlation between Knowledge Organization and customer's satisfaction

Name of Variables	Knowledge Organization
Customer's Satisfaction	0.295**
Meaningful Amount	0.000
** Relation Meaningfulness of Correlation in reliability level shows 95%.	

**Result:** This table shows correlation between **Knowledge Organization** of knowledge management and customer's satisfaction. As observed, a meaningful and positive relationship exists in confidence level of 95% between the variables of research. And it can be stated that, for example, by increasing one unit in **Knowledge Organization** aspect of knowledge management, 0.295 unit will positively be changed and ascended in customer's satisfaction.

#### 4.5 Fifth sub-question:

**Question:** Does any meaningful relationship exist between the variables of the present research (**Knowledge Auditing** of knowledge management and customer's satisfaction)?

**Table 5:** the correlation between Knowledge Auditing and customer's satisfaction

Name of Variables	Knowledge Auditing
Customer's Satisfaction	0.336**
Meaningful Amount	0.003
** Relation Meaningfulness of Correlation in reliability level shows 95%.	

**Result:** Table (4-5) shows correlation between **Knowledge Auditing** of knowledge management and customer's satisfaction. As observed, a meaningful and positive relationship exists in confidence level of 95% between the variables of research. And it can be said that, for example, by increasing one unit in **Knowledge Auditing** aspect of knowledge management, 0.336 unit shall positively be changed and ascended in customer's satisfaction.

#### 4.6 Sixth sub-question:

**Question:** Does any meaningful relationship exist between the variables of the present research (knowledge management and customer's satisfaction)?

**Table 6:** the correlation between Knowledge management and customer's satisfaction

Variables	Knowledge Management
Customer's Satisfaction	0.516**
Meaningful Amount	0.000
** Relation Meaningfulness of Correlation in reliability level shows 95%.	

**Result:** This table shows correlation between knowledge management and customer's satisfaction. As observed, a meaningful and positive relationship exists in confidence level of 95% between the variables of research. And it can be stated that, for example, by increasing one unit in **Knowledge Management** aspect of knowledge management, 0.516 unit shall positively be changed and ascended in customer's satisfaction.

According to the results of the first to sixth sub-questions, it can be claimed that a positive relationship exists between two major variables of this research and any changes in each of the mentioned variables shall create changes in other variables and these changes are positive and direct between the variables, e.g. in case one variable decreases, the other variables shall have a decreasing rate and vice versa .In case one variable increases, the other variables shall have descending and increasing rate.

**Question:** Is effect of independent variable (knowledge management) on dependent variable (customer's satisfaction) meaningful without interference of interferer variable (electronic services) according to Regression Test?

Meaningful confidence level of this test is 95 percent and the second major questions shall be acceptable in case the amount of meaningfulness is less than 0.01, otherwise the second major question related to meaningfulness and existence of correlation between the variables shall be rejected and this shows that there is no effect or a little effect between the predictor variables and dependent variable in 95 percent of confidence level. In case of meaningfulness of regression model related to customer's satisfaction, regression equation can be written and the amount of this effect can be calculated according to the coefficient results from the analysis.

**Table 7:** the effect of knowledge management on customer satisfaction

Correlation Coefficient	The Rate of Change	Adjusted Correlation Coefficient	Deviation from Estimated Standard
0.429	0.184	0.168	0.45671
a. Predicted variables (fixed amount), knowledge creation, sharing, application, organization & auditing			

**Result:** According to this table, it can be stated that effect of independent variable of knowledge management on dependent variable (customer satisfaction) is equal to 429.20 according to its components (knowledge creation, sharing, application, organization & auditing) and this shows a relatively strong correlation between these two variables. Also, according to the rate of change, in case of one unit change in independent variable of knowledge management, the dependent variable shall be changed equal to 184.0 or 5.18 percent, showing that the relationship of dependent variable and independent variable for one unit change is positive in this test.

**Question:** Is the effect of independent variable (knowledge management) on dependent variable (customer's satisfaction) meaningful with interference of interferer variable (electronic services) according to regression test? And does the conceptual model used for this study enjoy appropriate suitability?

According to meaningfulness of regression model and regression equation in the second major question, the interferer variable can be located in the model and its interference can be determined by using fitting Model and structural equation.

It is worth mentioning that in the following charts, abbreviations are used for facilitating the analysis whose complete terms are as follows:

**Table 8:** the effect of independent variable (knowledge management) on dependent variable (customer's satisfaction)

Index	Reported Amount
K Square (Degree of Freedom=297)	690.00
Fitness Index GFI	0.96
Adjustment of Fitness Index AGFI	0.94
Square Root of Approximate Error Variance	0.039
RMSEA	

According to above table, it can be stated that items with meaningful amount of less than 0.05, a meaningful difference exists between the means of two case groups (males and females), therefore, it can be stated that due to conformity with the above mentioned condition, a meaningful difference exists between means of two groups in knowledge management and customer's satisfaction items and no meaningful difference exists between two groups in other items of electronic services due to lack of meaningfulness condition and the amount of difference in confidence level of 95 percent is negligible. According to the rate of 2 to 1 of conformity with acceptance condition, the first minor question about the difference between the average of two groups (males and females) is accepted.

According to tables, it can be stated that, in items with meaningful amount less than 0.05, a significant and meaningful difference exists between the means of case variables according to education index, therefore, it can be stated that, no meaningful difference exists between average of various groups in the mentioned variables due to

unconformity with the above mentioned condition and this shows ineffectiveness of education on the case variables in the present society, therefore, the second minor question is rejected.

According to tables, it can be stated that, meaningful difference exists between the means of two case groups in items with meaningful amount less than 0.50 according to job record, therefore, it can be stated that, a meaningful difference exists between average of various groups in the mentioned variables and this shows the effectiveness of job record on amount of each case variables in the present society due to conformity with the above mentioned condition and it can be claimed that the third minor question is accepted.

According to tables, it can be stated that, in items with meaningful amount less than 0.50, no significant and meaningful difference exists between the means of case variables according to job record, therefore, it can be stated that, due to unconformity with the above mentioned condition, no meaningful difference exists between mean of various variable groups in the mentioned variables and this shows ineffectiveness of organizational position on amount of each case variable in the present society and it can be claimed that the fourth minor question is rejected.

## 5. Conclusion

Knowledge management has increasingly become critical for the success of companies in this emerging era of e-commerce. As business activities shift increasingly to the Web, the challenge facing corporate management is maintaining competitive advantage by building strong relations with employees, customers, and suppliers and partners and the quality of the e-service is the main feature distinguishing one from another, and in achieving a competitive advantage.

The findings have figured out that positive relationship exists between all variables in this study in 95 % confidence level. And the results of regression test have illustrated that the rate of change between customers' satisfaction, and knowledge management was 18.4 %. Likewise, the other consequences were significant and useful for present organizations and every organization desiring to use these variables in the environment successfully.

For future researches, we suggest investigation of following relations:

- Analysis of knowledge sharing system's impact on satisfaction improvement
- Analysis of the impact of factors and resources of electronic service quality on various parts of satisfaction
- Analysis of the role of knowledge application in improvement of knowledge capital for dynamism of organization's goals
- Analysis of relationship between organizational knowledge creation and auditing on improvement of customer-based knowledge organization
- Comparing knowledge-based management in private and cooperative parts and analysis of the existing barriers of customer's satisfaction
- Analysis of effect of knowledge-based systems and expert systems on customer-based system promotion by using new statistical methods

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