

A Study on the Relation between Knowledge Management Strategies and Organization Performance (Case Study: ATA Airlines)

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Abstract: This study aims at investigating the relation between knowledge management strategies and ATA Airlines performance. It studies whether there is a significant relation regarding the main hypothesis through gathering descriptive data by field research method. The statistical universe comprises 92 employees and managers of ATA Airlines who were selected by random sampling method and the computational formula explained in the research method section. Kolmogorov-Smirnov test has been used to determine normality of the received responses. With regard to the significance level, the assumption of normal sample distribution was not rejected. To determine the relation between knowledge management strategies and organization performance, Pearson correlation coefficient test has been applied. This study tests only one main hypothesis (the relation between knowledge management strategies and organization performance). Also factor analysis method based on the new and advanced method of structured equations (partial least squares) has been applied to analyze more important coefficients and factors, to estimate independent variables and to determine the effect of the subordinate independent variables on the dependent variable. Finally a mathematical function (regression model) has been presented as the organization performance function by using subordinate variables of knowledge management strategies.

Keywords: Knowledge management, organization performance, strategy

INTRODUCTION

Knowledge management is a new method for thinking about the organization and sharing creative and intellectual resources of the organization and in the other words it consists of all the methods by which the organization manages its knowledge-based assets including knowledge collection, storage, transmission, usage, updating and creation.

Knowledge management is a fast growing approach that pays a great attention to the recent challenges to increase efficiency and improve effectiveness of business-wise processes besides continuous innovation. The need to knowledge management based on the growth of business community perception stems from the fact that knowledge is regarded as an important element in organizational performance and access to sustainable competitive advantage (Davenport *et al.*, 2001). Such a major high level shift has important outcomes in the processes of intermediate and final levels in the organization. In fact, absorbing and applying concepts, tools, techniques and strategies of knowledge management in the future developments to establish knowledge-based companies is not easily possible; as it requires selecting tools and techniques accurately and applying them in a coordinated manner. In order to

select technology and techniques accurately and to implement knowledge management successfully, it is necessary to understand the existing technological infrastructures, identify the organization specific strategies and their importance level, organizational structure and commercial and cultural infrastructures. Furthermore, understanding the combination of these components to achieve efficiency is a matter of great magnitude which results in attaining organizational goals.

Converting a company to a knowledge based institute through technologies and strategies of knowledge management involves considering dynamics hidden in knowledge based economy, knowledge and knowledge management. In short, knowledge management is deemed as a process of creation, evaluation, presentation, distribution and application of knowledge (Choi and Lee, 2003). From knowledge management strategy perspective, an organization must consider its current strategy and examine what kind of knowledge keeps it alive and dynamic or it must consider its existing knowledge and examine what kind of strategy can obtain the best advantage from it. To explain the relation between knowledge and strategy, the organization must formulate its strategic plan, identify the knowledge required for strategy implementation and compare it with the existing

knowledge in order to specify the strategic knowledge gap (Halawi *et al.*, 2006). Although knowledge management strategy has not yet been classified explicitly by scholars, knowledge management strategy can be classified by the nature of knowledge itself (Shih and Chiang, 2005). Organization deals with two kinds of knowledge management strategy: first, coding strategy where knowledge is coded and saved in data bases; and second, personalization strategy where personal interaction is necessary and information technology is merely a tool for communication (Hansen *et al.*, 1999). Tacit knowledge management is called management personalization strategy. Organizations which adopt such a strategy offer specialized products and services to meet special customers' needs. Measures related to knowledge management will create a competitive advantage when they are consistent with the organization strategic processes. This consistency will be resulted through different strategies. These strategies are namely coding strategy, personalization strategy, intellectual properties strategic management, etc. Each of these strategies has a particular duty. That is, coding strategy through IT, personalization strategy through team founding and intellectual properties strategic management through utilizing knowledge based properties will focus the organization general orientation on knowledge. When managers actively adopt knowledge management attitude which supports the organization competitive strategy, both managers and customers take benefit from it. The concept of this attitude means creating social interaction and interpersonal communications with organization individuals, using the knowledge existing in the mind of people and sharing it. So it is reasonable to expect that coordination between knowledge management strategy and organization performance improves strategies effectiveness and creates a competitive advantage (Mohammadi *et al.*, 2008).

This study aims at identifying knowledge management strategies on the basis of the importance of knowledge management processes in the studied organization (i.e., ATA Airlines) and its relation with this organization performance.

LITERATURE REVIEW

In this section, concepts and definitions pertaining to studies regarding strategy and knowledge management as well as the results of the related scholars and organizations researches will be presented. A set of definitions regarding knowledge management and strategy is as below.

Knowledge: It is a fluid combination of experiences, values, existing information and organized attitudes which provides a framework for evaluation and

utilization of experiences and new information. Knowledge is supposed in dynamic, accumulated and static forms (Nunaka and Hirotaka, 2006).

Knowledge management: It is the process of creating, collecting, organizing, disseminating and utilizing knowledge. Knowledge management is based on the assumption that organizations have a high volume of data. These data consist of reports, financial information, tangible information, confidential information, etc. Organizations apply different mechanisms to organize irregular data and convert them into practical information which totally form knowledge management processes (Iranshahi, 2007).

Strategy: It means recognizing main opportunities and focusing organizational resources on the realization of their hidden benefits. Opportunities are the main component of the strategic movement without which strategy is meaningless. Opportunities have potential benefits; the more these benefits, the more the value of the opportunity. By exploring the opportunity and applying organizational capabilities, strategy actualizes the potential benefits. Strategy means struggle for perception of the fact that today in the world what position we have occupied and what position we do consider for ourselves (Torkashvand, 2002).

External opportunities and threats: These are social, cultural, economic, geographical, environmental, political, legal, governmental, technological and competitive events and trends which are effective on the organization future. They are mostly beyond the organization control, so they are called external factors (Ahangaran, 2003).

Internal strengths and weaknesses: As strengths and weaknesses are controllable by the organization, they are called internal factors. Strengths and weaknesses are created in the light of activities pertaining to management, marketing, accounting, production and operation, research and development and computer information systems. One of the main duties of the strategic management is identifying them in different units of the enterprise and evaluating them. Organizations endeavor to implement strategies that improve internal strengths and decrease weaknesses (Nikufar, 2008).

The most essential feature of the twenty first century intelligent organizations is emphasis on knowledge and information. Contrary to old organizations, today firms possess advanced technology and are required to capture, manage and utilize knowledge and information in order to improve efficiency and to manage and follow endless developments. Knowledge is a strong tool which can create changes in the world and make innovations possible. In the following, some selected theories of

Table 1: Phases of knowledge management life cycle in different models

Model	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Despres and chauvel	Creation	Mapping	Storing	Sharing/transmission	Re-usage	Evolution/inference
Gartner group	Creation	Organization	Capturing	Access	Usage	-
Davenport and prusal	Generation	-	Encoding	Transmission	-	-
Nissen	Capturing	Organization	Formalization	Distribution	Usage	-
Amalgamated	Creation	Organization	Formalization	Distribution	Usage	Evolution/inference

Gupta and Sharma (2004)

some scholars are presented. Chase (1998) believes that organizations possess two great properties, one is individuals that work in the organization and the other is the knowledge that exists in the head of employees. Thus knowledge must be created, saved and utilized which is the obligation of knowledge management. Knowledge management is comprised of an extensive field of concepts, managerial tasks, technologies and measures. On the other hand, swift changes in personal computer technology and electronic communications during past decade have empowered us to create, collect, manipulate, save and transmit data (Chase, 1998). Alike any other resource, knowledge is vital in the survival and success of any organization in the global market. Organizations must have mechanisms to create and control knowledge. However, many organizations have not yet investigated knowledge management activity officially. Probably the reason of such negligence is that most organizations have not appreciated the concept and importance of knowledge management (Skyrme, 2001). Nowadays organizations assets include comprehensive quality management, re-engineering and intellectual property; and in the twenty first century, those companies will be successful that are pioneer in the field of knowledge. Gupta introduced seven levels of knowledge. These levels are namely customer knowledge, stakeholder relationships, business environment insights, organizational memory, knowledge in processes, knowledge in products and services, knowledge in people (Gupta and Sharma, 2004). Knowledge management deals with both technological tools and current organizational methods which include generating new knowledge, obtaining valuable knowledge from external resources, using this knowledge in decision making, incorporating knowledge into the processes, products and services, coding information in the documents, software and data bases, facilitating knowledge growth, transmitting knowledge to the other departments of the organization and finally measuring knowledge properties and efficiency of knowledge management (Leonard, 1990). Knowledge management is a set of activities that help company to attain knowledge from inside and outside the organization. Knowledge management refers to the process of capturing specific expertise and applying intelligence in the organization so as to train innovation through continuous organizational learning (Quinn *et al.*, 1996). A holistic view considers knowledge to be present in ideas, judgments, talents, relationships, perspectives and concepts. Knowledge is stored in the individual brain and/or organizational processes and is encoded in documents, products, services and systems.

Table 2: Features of knowledge management general paradigms

Row No.	Technical/computer paradigm	Organic paradigm
1	Technological	Social-organizational
2	Technical	Human oriented
3	Linear (mechanical)	Non linear (discontinuous)
4	Only explicit	Tacit and explicit
5	Static	Dynamic
6	Optimization	Adaptability

Hazlett *et al.* (2005)

Knowledge is action, focused innovation, pooled expertise, special relationships and alliances. Knowledge is value added behavior and activities (Pfeffer and Sutton, 2000). Malchup (1990) has classified knowledge into five groups, namely practical knowledge which is used in actions, measures and decisions of individuals. Political knowledge, professional knowledge, business knowledge and other experimental knowledge are placed in this group. Intelligence knowledge satisfies human rational curiosities. This knowledge is regarded as a part of human oriented knowledge. Spiritual knowledge is related to the human religious knowledge and prevents human from committing sins. Unnecessary knowledge is out of human interests and is maintained without purpose. Entertainment knowledge is favorable for the sake of entertainment and emotions and it includes tales, proverbs, games, gossips, news, events, etc. (Malchup, 1980). Sarmen to believe that knowledge management pursues a multi steps process identification of which is beneficial in understanding knowledge management. These steps that are known as the life cycle of knowledge management are namely knowledge creation, capturing or generation, organization, storing, encoding or formalization, distribution, sharing or transmission and finally knowledge application (Sarmiento, 2005). Nissen *et al.* have considered a life cycle for knowledge management. They have used others works (Davenport *et al.*, 2001) to complete their literature regarding the model of knowledge management life cycle and they have presented their synthetic model as per Table 1 (Gupta and Sharma, 2004).

Hazlett *et al.* (2005) has divided knowledge management into two main paradigms due to the interdisciplinary nature of researches and theories: technological and social-organizational. These two paradigms are also called technical/computer and organic ones. Later other paradigms were added to this classification. Features of knowledge management general paradigms are presented in Table 2 (Hazlett *et al.*, 2005).

Table 3: Main strategic elements in popular models of knowledge management

Theorist	Model elements						
Newman and Kenrad	Creation	Maintenance	Transmission	Utilization			
Nunaka and Hirota	Socialization	Externalization	Combination	Internalization			
Tommy and Peri	Knowledge concept	Knowledge content	Knowledge measurement	Change management	Knowledge tool	Management	
Adel and Grison	Identification	Creation	Applying	Adaptation	Distribution	Organization	Collection
Hales	New knowledge search	Creating knowledge and learning	Storage	Distribution	Removing redundant knowledge	Applying	
Turban Demerest	Generation	Attainment	Filtration	Storage	Management	Distribution	
Mac Adam and Mac Griedy	Knowledge structure	Knowledge publication	Knowledge application	Knowledge establishment			
Probest and Robb	Identification	Attainment	Development	Sharing	Maintenance	Using	Assessment
Hix	Creation	Storage	Publication	Applying			
Mac Diori	Knowledge generation	Continuous knowledge					
APQC	Creation	Attainment	Expansion	Sharing	Exchange	Spending	Exchange/ communication
Noise and Deblan	Attaining	Publication	Using				
Anderson Consultants	Attainment	Creation	Analysis	Sharing	Applying		
Makut	Acquisition	Transmission and utilization	Storage				
Vig	Creation and making reference	Collection and conversion	Publication	Making practical			
Spak and Spaj Kernt	Creating new knowledge	Maintaining existing and new knowledge	Knowledge distribution	Usable synthetic knowledge			
Vegman	Determination	Development	Storage	Sharing	Applying	Assessment	
Leman Guer	Harness	Organization	Learning	Applying	Assessment		
Kip and Dali	Creation	Harness	Defining framework	Storage	Sharing		
Greenwood	Creation	Consolidation and maintenance	Transmission	Using			
Davenport and Prosak	Harness	Creation	Sending	Using			
Mervik		Creation	Sending	Using			
Promote	Targeting	Specification	Development	Publication	Using	Storage	Assessment
Beckman	Identification	Capturing	Storage	Distribution	Applying	Creation	Commerce
Hals apple	Attainment	Selection	Internalization	Using	Production	Manifestation	
Bekovitz	Finding	Applying	Learning	Sharing	Creation	Maintenance/ removal	Assessment
Paulofski	Identification	Attainment	Publication	Establishment	Transmission		

Hazlett *et al.* (2005)

Hung *et al.* (2005) have indicated that most of knowledge management plans are focused on seven steps. Customer knowledge (the most vital knowledge in most organizations), knowledge in processes (applying the best knowledge when doing tasks), knowledge in products and services (intelligent solutions based on customers' needs), knowledge in people (training and controlling mental power which is

the most valuable asset), knowledge in communications (deep personal knowledge that supports successful cooperation), organizational memory, knowledge properties (measurement and management of your intellectual capital. Kankanchalli *et al.* (2003) insisted on the belief that organization must utilize knowledge strategies appropriate for its industry. They made attempt to explain the effect of industry on the relation

between knowledge management strategies and company performance. Their main hypothesis is that knowledge management strategies adapted with a company must be affected by the industry type which is divided into three groups namely manufacturing, financial and services industries. Knowledge management strategies of the manufacturing companies can create higher corporate performance if they have more consistency with human based strategy compared with system based strategy (Kankanchalli *et al.*, 2003). In the following, main strategic elements in the popular models of knowledge management are presented in Table 3.

RESEARCH METHODOLOGY

The present study has been carried out through descriptive survey method as it describes a situation or circumstances, here knowledge management, step by step. Also it is an applied research in terms of objective because it can contribute to the studied firm managers and employees and even other organizations to recognize knowledge management strategies and to get informed about whether there is a significant relation between knowledge management and organization performance. Finally, field research method (interview and questionnaire) has been employed for data collection.

Data collection and sampling method: Library data collection has been used for the research theoretical principles. In so doing, data were collected through

referring to the credible references, related books, internet, etc., to gather data, a questionnaire was designed and the opinions of experts and users were collected. Below equation has been used to estimate volume of sample for more assurance (Momeni, 2007):

$$n = \frac{N \cdot Z_{\alpha/2} \cdot \sigma^2}{\epsilon^2 (N - 1) + Z_{\alpha/2} \cdot \sigma^2}$$

where,

$Z_{\alpha/2}$ = The value of normal change corresponding to the confidence level (1- α); in this study it will be 1.96 and confidence level is considered 95%

σ^2 = The universe variance

ϵ^2 = The value of the allowable error

By the above equation, volume of sample was estimated 92.

The questionnaire validity and reliability: Research validity means the accuracy of indices and criteria provided for measuring the given phenomenon. Since tools of data collection in this study comprise hardware (maps and satellite images) and software (formulas and mathematical calculations), there is no need to calculate validity. In the field research, questionnaire is the tool of data collection. In the present study, data has been gathered through a questionnaire with closed questions (five-choice). Firstly, the designed questionnaire was distributed among the preliminary sample (30 people)

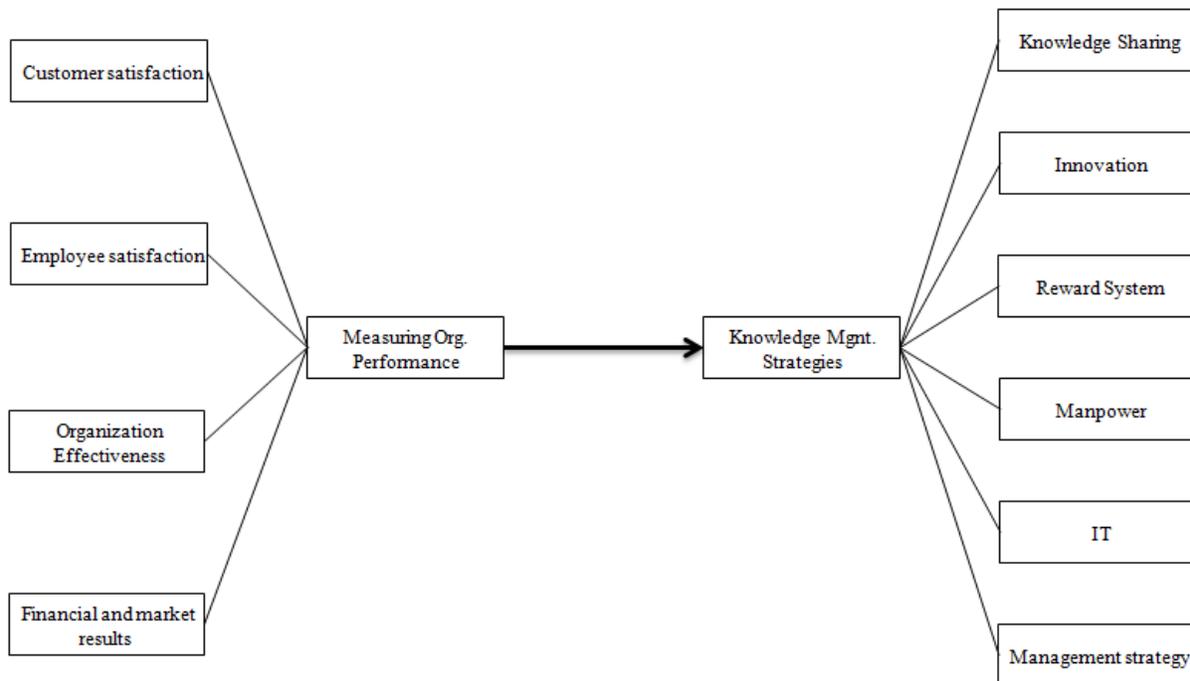


Fig. 1: The research conceptual model

Table 4: Kolmogorov-Smirnov test

	A	B	C	D	E	F	G	H	I	J
Kolmogorov-Smirnov Z	0.458	0.574	0.674	0.624	0.740	0.599	0.744	0.800	0.688	0.556
Asymp. sig. (2-tailed)	0.973	0.897	0.755	0.831	0.644	0.865	0.638	0.544	0.730	0.916

Table 5: The results of Pearson correlation coefficient

Independent variables	Sig.	Correlation coefficient	Test results
Knowledge sharing	0.000	0.518	Direct significant relation
Innovation	0.000	0.519	Direct significant relation
Reward system	0.000	0.414	Direct significant relation
Manpower	0.000	0.435	Direct significant relation
IT	0.000	0.432	Direct significant relation
Management strategy	0.006	0.282	Direct significant relation
Customer satisfaction	0.000	0.462	Direct significant relation
Employee satisfaction	0.002	0.326	Direct significant relation
Organizational effectiveness	0.000	0.432	Direct significant relation
Financial and market results	0.000	0.476	Direct significant relation

and then its defects were removed and it was modified by using experts' opinions. Ultimately the finalized standard questionnaire was distributed and gathered after determining validity.

Reliability deals with the matter that to what extent the measurement tools provide identical results in the same circumstances. In the other words, how much is "the correlation between a set of scores and another set of scores in an identical test obtained independently from a test group". Cronbach's alpha method has been applied to determine reliability. Having gathered preliminary data, Cronbach's alpha has been calculated to be 0.87 which indicates high reliability of the research.

The research conceptual model: To determine the relation between knowledge management strategies and organization performance, the criteria of each one must be firstly specified. With regard to the strategies of knowledge management (knowledge sharing, innovation, reward system, manpower, information technology and management strategy), four criteria (customer satisfaction, employee satisfaction, organizational effectiveness, financial and market results) have been used to measure organization performance (Fig. 1). So the research conceptual model will be as following:

Research implementation: In this study, only one hypothesis has been tested:

- Knowledge management strategies have a significant relation with the organization performance.

Normality test (Kolmogorov-Smirnov): To test normality of dependent and independent variables, Kolmogorov-Smirnov test has been applied and it shown in Table 4.

With respect to the significance level that is more than 5% for each variable of knowledge management strategies (knowledge sharing, innovation, reward system, manpower, information technology and management strategy) and organization performance

(customer satisfaction, employee satisfaction, organizational effectiveness, financial and market results), the assumption of normal sample distribution is not rejected.

Pearson correlation coefficient:

H₀: Knowledge management strategies have a significant relation with the organization performance.

H₁: Knowledge management strategies do not have a significant relation with the organization performance.

The Results of Pearson Correlation Coefficient is shown in Table 5.

Knowledge sharing, innovation, reward system, manpower, IT, management strategy, customer satisfaction, employee satisfaction, organizational effectiveness and financial and market results equal, respectively 0.518, 0.519, 0.414, 0.435, 0.432, 0.282, 0.462, 0.326, 0.432 and 0.476; their significance level is less than 5% which indicates that all variables and indices have a direct significant relation with the organizational performance, so H₀ is approved by 99% confidence.

Factor analysis for main variables and factors: To analyze more important coefficients and factors, to estimate coefficients of independent variables and to determine the effect of independent variables on each other, factor analysis based on new and advanced method of structured equations (partial least squares). Figure 2 depicts the graphical diagram of VPLS software output which includes variables coefficients and their significance (t statistic).

As shown above, the determination coefficients of knowledge management strategies and organization performance are respectively 0.978 and 0.993. It indicates that changes of independent variable (knowledge management strategies) are explained by sub dimensions (knowledge sharing, innovation, reward system, manpower, IT, management strategy) and changes of dependent variable (organization

Table 6: Model coefficients estimation

Conceptual model indices	t-student	Model coefficients estimation	Results
Knowledge sharing-knowledge management strategies	3.520	0.439	Direct significant relation
Innovation-knowledge management strategies	7.990	0.666	Direct significant relation
Reward system-knowledge management strategies	3.190	0.540	Direct significant relation
Manpower-knowledge management strategies	9.770	0.765	Direct significant relation
IT-knowledge management strategies	7.970	0.638	Direct significant relation
Management strategy-knowledge management strategies	6.580	0.742	Direct significant relation
Customer satisfaction-organization performance	12.670	0.439	Direct significant relation
Employee satisfaction-organization performance	18.140	0.530	Direct significant relation
Organizational effectiveness-organization performance	4.220	0.183	Direct significant relation
Financial and market results-organization performance	7.950	0.703	Direct significant relation
Organization performance-knowledge management strategies	1.965	0.400	Direct significant relation

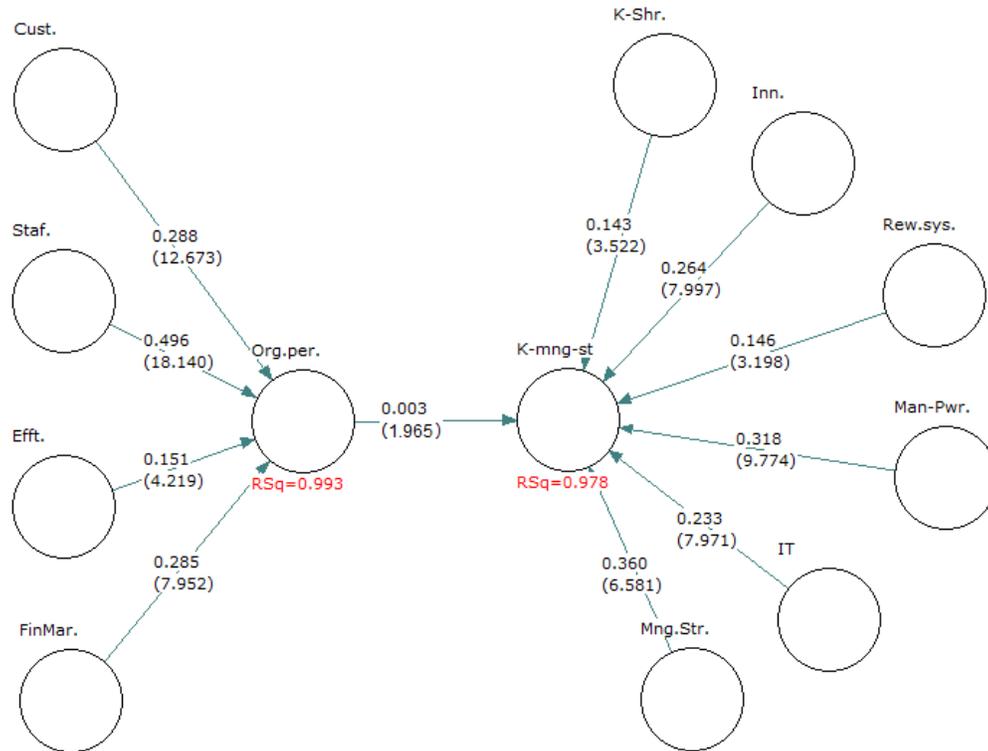


Fig. 2: Structured equations of VPLS software output

performance) are explained by sub dimensions (customer satisfaction, employee satisfaction, organizational effectiveness, financial and market results) by 98% approximation. Table 6 presents effectiveness coefficient of each independent variable on the dependent variable and t statistic.

Confidence level of each coefficient's t-student value is more than 95% (1.96) and the main hypothesis is approved. With regard to the calculated correlation coefficient, one can conclude that:

- One unit increase in knowledge sharing makes 0.439 unit increase in knowledge management strategies.
- One unit increase in innovation makes 0.666 unit increase in knowledge management strategies.
- One unit increase in reward system makes 0.540 unit increase in knowledge management strategies.

- One unit increase in manpower makes 0.765 unit increase in knowledge management strategies.
- One unit increase in IT makes 0.638 unit increase in knowledge management strategies.
- One unit increase in management strategy makes 0.742 unit increase in knowledge management strategies.
- One unit increase in customer satisfaction makes 0.439 unit increase in organization performance.
- One unit increase in employee satisfaction makes 0.530 unit increase in organization performance.
- One unit increase in organizational effectiveness makes 0.183 unit increase in organization performance.
- One unit increase in financial and market results makes 0.703 unit increase in organization performance.

- One unit increase in knowledge management strategies makes 0.400 unit increase in organization performance.

CONCLUSION

This study has applied Kolmogorov-Smirnov test to examine normality of dependent and independent variables. As significance level of each variable is more than 5%, the assumption of normal sample distribution is not rejected. Also Pearson correlation coefficient results reveal that determination coefficients of Knowledge sharing, innovation, reward system, manpower, IT, management strategy, customer satisfaction, employee satisfaction, organizational effectiveness and financial and market results equal, respectively 0.518, 0.519, 0.414, 0.435, 0.432, 0.282, 0.462, 0.326, 0.432 and 0.476; and their significance level is less than 5% which indicates that all variables and indices have a direct significant relation with the organizational performance, so H_0 is approved by 99% confidence.

To analyze more important coefficients and factors, to estimate coefficients of independent variables and to determine the effect of variables on each other, factor analysis method based on new and advanced method of structured equations (partial least squares). The software calculation results show that the determination coefficients of knowledge management strategies and organization performance are respectively 0.978 and 0.993. It means that changes of independent variable (knowledge management strategies) are explained by sub dimensions (knowledge sharing, innovation, reward system, manpower, IT and management strategy) and changes of the dependent variable (organization performance) are explained by sub dimensions (customer satisfaction, employee satisfaction, organizational effectiveness, financial and market results) by 98% approximation. Calculations reflect that confidence level of each coefficient's t-student value (1.96) is more than 95% and the main hypothesis is approved.

With regard to the calculated correlation coefficients, one can conclude that one unit increase in knowledge sharing, innovation, reward system, manpower, IT and management strategy make respectively 0.439, 0.666, 0.540, 0.765, 0.638 and 0.742 units increase in knowledge management strategies. Furthermore, one unit increase in customer satisfaction, employee satisfaction, organizational effectiveness and financial and market results make respectively 0.439, 0.530, 0.183 and 0.703 units increase in organization performance. Also one unit increase in knowledge management strategies makes 0.400 unit increases in organization performance.

Among the main results of this study is determination of the correlation coefficient between dependent and independent variables. Thus below

regression equation can be offered as the performance function of ATA Airlines:

$$Y = a + 0.439x_1 + 0.666x_2 + 0.540x_3 + 0.765x_4 + 0.638x_5 + 0.742x_6$$

where,

Y : Dependent variable of national identity
a : Fixed value (intercept on the axis) in the regression equation

$x_1...x_5$: Knowledge sharing, innovation, reward system, manpower, IT and management strategy, respectively

Model parameters : The effect of independent sub variables on the model

RECOMMENDATIONS

Suggestions:

- ATA Airlines is suggested to increase the organization performance by using the offered function (regression model) and consider sub variables of knowledge management strategies.
- It is suggested to use optimization models such as linear programming to determine accurately the organization performance and then measure cyclic changes of performance by implementing the regression model.
- It is suggested to synchronize its executive programs in the field of knowledge management strategies by considering the models of determining organization performance so as to create a more strong causal relationship in ATA Airlines performance.

Recommendations:

- This study used 4 sub-variables to measure and to determine the organization performance. Other researchers are suggested to apply such models as EFQM, MALCOLM BALDRIGE, etc., to determine the relation between organization performance as the dependent variable and knowledge management strategies as the independent variable in their future studies.
- Using mathematical modeling to optimize the effective factors on the organization performance and re-test the relation between knowledge management strategies and organization performance.
- Using Friedman test to rank model variables increasing manpower capabilities for linear modeling and national programming by the related organizations.
- Determining other effective variables through future studies based on Durbin-Watson test and R^2 increase.

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