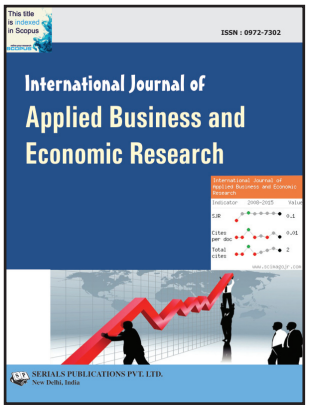

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Investigating the Effect of Knowledge Management (Infrastructures and Processes) on Performance (Case Study: SAIPA Co.)

Mohammad Rabii Mendejin[1] and Niusha Arastekhoo[2]

[1]*Associate Professor and Full-Time Faculty Member of the School of Management, Central Tehran Branch, Islamic Azad University, Tehran, Iran*
[2]*Master of Executive–Strategic Management, Faculty of Management, E-Campus, Islamic Azad University, Tehran, Iran*

ABSTRACT

Today, knowledge and its effective management is known as a valuable and important competitive asset, which is a basis for sustainable growth, a key to sustainable competitive advantage and superior performance of an organization. Therefore, the present study aims to investigate the role of knowledge management infrastructure and processes in the performance of Saipa Co. Knowledge management infrastructures include culture, technology and structure knowledge management processes include knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection.

For this purpose, fairly standard questionnaires were distributed among employees of Saipa Co. on the basis of random sampling. Ultimately, results showed that only IT infrastructure and knowledge protection process affect performance of Saipa Co.

According to the results, from among the components of knowledge management infrastructure, the mean of the components of IT and organizational structure is less than the average (number 3 on a 5-point scale) and from among the knowledge management process, the mean of the components of knowledge acquisition, knowledge application and knowledge protection is less than the average. Finally, according to the results of hypotheses testing, some suggestions are proposed to improve the situation of Saipa Co.

Keywords: knowledge management infrastructure, knowledge management process, and organizational performance.

1. INTRODUCTION AND STATEMENT OF THE PROBLEM

With the arrival of the knowledge economy, knowledge is more preferable than other production factors such as land, capital, machinery, and so on. So that in this economy, knowledge is the most important

production factor and is known as the most important competitive advantage of organizations (Sitramann et. al., 2002). In the present era, various expressions such as post-industrial age (Huber, 1990), information age (Shapiro and Varian, 1999), Third Wave (Hope and Hope 1997), or the knowledge society (Drucker, 1993) are used to describe the current status of communities. Regardless of the terminology, most experts believe that one of the important issues raised in this period is the concept of knowledge management. Knowledge management is a concept that has been a cause for debate in academic circles. Knowledge management is an approach that is rapidly evolving and pays much attention to the recent challenges to increase efficiency and improve the effectiveness of business processes, along with continuous innovation. The need to manage knowledge comes from the fact that knowledge is a very important factor in organizational performance and access to sustainable competitive advantage (Davenport and Grover, 2001).

Today, knowledge is known as a valuable and important competitive asset, which is a basis for sustainable growth, a key to sustainable competitive advantage and superior performance of an organization. Various authors have defined knowledge management from different perspectives and with different approaches and different motivations. Knowledge management involves all the ways that organizations manage their knowledge assets that include the collection, storage, transmission, usage, update, and creation of knowledge. Dracker states that knowledge management is achieving organizational goals through motivating knowledge workers and creating facilities for them according to the organization's strategy so that their ability to interpret data and information by giving meaning to data and information is added. Another definition of knowledge management is explicit and systematic management of vital knowledge and processes related to the creation, organization, dissemination, usage, and discovery of knowledge (Nonaka et. al., 1385).

In short, for many organizations, achieving better performance not only depends on efficient use of tangible (or concrete) assets and natural resources, but also depends on effective management of knowledge (Lee and Sakuku, 2007). Therefore, there is a growing trend in investment in knowledge management activities every year. According to AMR Research, US companies have invested about 73 billion dollars in knowledge management software in 2007, which had about 1% growth in 2008 (Mac Gravy, 2007). The Forrester research firm (2007) also reports that 20% of small and medium-sized businesses in North America and Europe have taken measures to implement CRM programs and knowledge management tools in 2010 and afterwards, which reflects the rapid growth of the knowledge management software for small and medium-sized businesses. One of the main reasons for companies to invest in knowledge management is creating the ability to facilitate effective management of the flow of information and knowledge within the enterprise.

Various resources form capabilities and knowledge capabilities of a company. These resources, on the one hand, include technological infrastructures, organizational structure, and organizational culture that are related to knowledge infrastructures of the organization and on the other hand, they include knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection that are related to knowledge processing of the organization (Alavi and Leidner, 2001; Gold, 2001). In total, the resources determine an organization's knowledge management capabilities that are related to different indicators of organizational performance (Grant, 1996; Gold et. al., 2001; Lee and Sukoco, 2007; Zac et. al., 2009).

Given the composite nature of the knowledge capabilities, most organizations have multiple levels and multiple sources that form their knowledge capability. Hence, the role of each resource in organizational

performance is different in each of the different organizations. The right composition of knowledge capabilities (knowledge infrastructure and knowledge management processes) will have advantages such as competitive advantage and organizational performance. However, researchers believe that knowledge management capabilities in total (Gold et. al., 2001; Zim et. al., 2007) affect the organizational performance; just some of the resources that comprise these resources may also lead to improved organizational performance (Grant, 1991). Although previous studies have investigated the relationship between overall knowledge management capabilities and knowledge management performance, understanding the relationship between components and factors constituting these capabilities and organizational performance has not been investigated.

On the other hand, as we know, one of the most important industries of countries is the automotive industry; therefore, the concept of knowledge management capabilities (infrastructures and processes) and organizational performance is investigated in terms of Saipa's staff in this study. In other words, the aim of this study is to investigate the relationship between knowledge infrastructure capabilities (technological infrastructures, organizational structure and organizational culture) and knowledge process capabilities (knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection) in Saipa using structural equation modeling technique.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Gold (2001) proposed a model of knowledge management that has been known as one of the best models in this area. In this model, knowledge management capability is considered as a multidimensional concept, including a process perspective focused on a set of activities (knowledge process capabilities) and an infrastructure perspective focused on infrastructures (knowledge infrastructure capabilities) (Alavi and Leidner, 2001; Lee and Choi, 2003). Each of these perspectives (capabilities) are also composed of a number of other aspects: knowledge infrastructure capabilities include technology, organizational culture and organizational structure and knowledge process capabilities including knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection (Gold, 1998).

Previous research suggests that these capabilities and processes are pre-requisite for effective management of knowledge (Alavi and Leidner, 2001; Davenport et. al., 1998). Most researchers have considered the theoretical framework of Gold et. al., as a predictor of organizational performance and success of knowledge management (Chan and Chao, 2008; Jennex and Olfman, 2005; Laframboise et. al., 2007). Gold et. al., (2001) concluded that both knowledge process capabilities and knowledge infrastructure capabilities are positively correlated with organizational performance. However, what is not well known is whether there exists a difference between the dimensions of knowledge process capabilities and knowledge infrastructure capabilities (Law, 1998; Petter, 2007).

Resource-based view (RBV) is a useful perspective to understand the relationship between IT resources and organizational performance. Resource-based view (RBV) points out that organizations have resources that enable them to achieve competitive advantage and superior performance relative to competitors (Wernerfelt, 1984). Many scientists use the terms resources and capabilities interchangeably (Christensen and Overdorf, 2000; Gold et. al., 2001; Sanchez et. al., 1996). Grant (1991) states that the resources of the organization are the basic unit of analysis and are considered as direct data for the production process, while the capabilities of organizations are pooling of resources. Hence, resources are the source for organizational

capabilities and capabilities are the only competitive advantage (Grant, 1991). Resources are less generative themselves and it is capabilities that are seen as the main driver of profitability. Resource-based view (RBV) acknowledges that although some resources are likely to improve the performance, some also do not lead to superior performance. Thus, the main challenge for organizations is to identify and understand the resources that directly impact organizational performance (Wade and Hulland, 2004; Zack et. al., 2009).

Knowledge management capabilities will be classified into two types of knowledge infrastructure capabilities and knowledge processes capabilities (Gold et. al., 2001). In next section, each of capabilities will be discussed in short.

1. Knowledge infrastructure capabilities: previous investigations have recognized the importance of effective infrastructures to support knowledge management initiatives in organizations (Davenpor and VO lpel, 2001). Different elements and resources constitute knowledge infrastructure capabilities. The present study adopts the framework of Gold that includes technology, organizational culture and organizational structure.

    1.1. Technology: Technology entails IT systems (IT) that enable the combination of information and knowledge as well as the creation, exchange, storage and protection of knowledge resources in organizations. Although existence of proper technological infrastructure is essential for effective management of knowledge, studies that examine the relationship between IT and organizational performance indicators have been fruitless. In other words, these studies have failed to show the direct relationship between IT and organizational performance. For example, Powell and Dent (1997) studies US organizations and concluded that IT, itself, does not increase organizational performance, but rather, performance will increase when IT is combined with other assets such as human assets. Tse (1997) suggested that the lack of relationship between IT and performance is because technology is not easy to copy (Powell and Dent, 1997).

    1.2. Organizational culture: in the context of knowledge management, organizational culture is values, beliefs, behaviors and symbols that affect knowledge management in organization. Knowledge-friendly culture is one of the most influential factors on knowledge management and its application consequences (Alavi et. al., 2005-2006;; Davenport et. al., 1998 Ho, 2009). Sin and Tse (2000) concluded that organizational culture values such as consumerism, service quality, informality and innovation are significantly correlated with marketing effectiveness. Most recently, Aydin and Ceylon (2009) have shown that the cultural dimensions are correlatedwith organizational performance.

    1.3. Organizational structure: organizational structure includes organizational hierarchy, rules and regulations and the reporting relationships (Herath, 2007) and is intended as a means of coordination and control. Knowledge management scientists have concluded that changes in the organizational structure, such as changing the hierarchical structure to horizontal structures, are essential for knowledge exchange and creation in organizations (Beveren, 2003; Nonaka and Takeuchi, 1995). Such changes are positively related to improved organizational outcomes, both in financial terms and services (Richert, 1999).

2. Knowledge process capabilities: Gold et. al., (2001) suggested that knowledge process capabilities (knowledge storage, exchange and conversion throughout the organization) also require the influence power of infrastructure capabilities. Four aspects of knowledge acquisition, converting it into a useful form, its application, and its protection are identified as knowledge process capabilities (Gold et. al., 2001), each of which will be briefly explained below.

   2.1. Knowledge acquisition: the word acquisition goes back to the organization's ability to identify, explore and acquire knowledge from internal and external sources that are essential for performance and efficiency (Zahra and George, 2002). Knowledge acquisition can include various aspects such as knowledge creation, share, and distribution. Knowledge acquisition is the potential capacity that reflects the company's ability to use the knowledge and create advantage. Many studies have suggested a strong and positive relationship between knowledge acquisition and performance indicators. For example, Song (2008) showed that knowledge creation is significantly associated with improved performance. When the acquired knowledge is appropriately used, a significant positive relationship between knowledge acquisition and organizational performance can be seen (Lyles and Salk, 1996).

   2.2. Knowledge conversion: knowledge obtained from various sources (from within and outside the business) needs to be converted to organizational knowledge to be effectively used within the business (Lee and Choi, 2003). This conversion process that occurs in the chain of data, information and knowledge is short term and unstable in nature. Therefore, organizations must quickly convert data into information and information into organizational knowledge to take advantage of the benefits of the conversion process. Accordingly, it is expected that the conversion process will affect functional outcomes.

   2.3. Knowledge application: Baht (2001) states that "the application of knowledge means that knowledge is converted into a more effective and more relevant from to the actual value creation chain of the organization". To create value, organizations need to apply their knowledge for products and services through different ways such as repackaging existing knowledge, training, and motivating employees to think creatively and use their understanding of organizational processes, products and services. For example, many organizations encourage organizational learning processes. Dorug et. al., (2003) suggested that organizations that create new knowledge at a lower cost and more quickly than their competitors and apply that knowledge effectively and efficiently, will succeed in creating a competitive advantage.

   2.4. Knowledge protection: knowledge protection is necessary for the proper functioning and internal control of the organization. Knowledge protection, generally, involves the use of copyrights and patents that are guaranteed by IT systems. Knowledge protection process should not be abandoned or left on margin. Protection of organizational knowledge seems necessary to achieve competitive advantage. As the acquisition and exchange of knowledge is important for competitive advantage, protecting and storing knowledge is also important to gain business value (Lee and Sukoco, 2007).

Figure 26.1 summarizes the conceptual model of the study and the relationship between the variables.

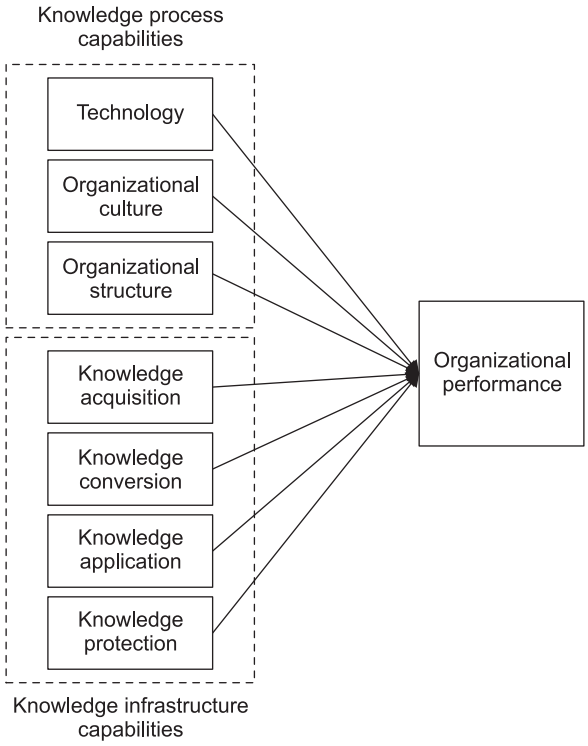

Figure 26.1: Conceptual model of the study

Given that the components of knowledge management and knowledge process have been considered as independent variables and organizational performance has been considered as the dependent variable, two main hypotheses and seven sub-hypotheses have been examined as follows:

Main research hypotheses:

1. Knowledge process capabilities have a positive effect on organizational performance.
2. Knowledge infrastructure capabilities have a positive effect on organizational performance.

Sub-hypotheses:

1. Technology has a positive impact on organizational performance.
2. Organizational culture has a positive impact on organizational performance.
3. Organizational structure has a positive impact on organizational performance.
4. Knowledge acquisition has a positive impact on organizational performance.
5. Knowledge conversion has a positive impact on organizational performance.
6. Knowledge application has a positive impact on organizational performance.
7. Knowledge protection has a positive impact on organizational performance.

3. RESEARCH BACKGROUND

Review of previous (domestic and foreign) studies is shown in Table 26.1.

Table 26.1
Review of previous (domestic and foreign) studies

	Author(s)	*Title*	*Results*
1	Zack, M., McCain, J., Synzh, S. (2009)	Investigating the relationship between knowledge management and organizational performance: exploratory analysis	The results show that knowledge management functions are directly linked to organizational performance and especially financial performance.
2	Wang and Wang (2011)	Knowledge sharing, innovation and performance	The 12 hypotheses of this study were approved.
3	Huang and Lee (2008)	Moderating effect of knowledge management on innovative performance	Results showed that social interaction has a positive and meaningful impact on knowledge management and knowledge management has a significant positive impact on innovative performance.
4	Glott and Terziovsky (2004)	Investigating the relationship between knowledge management and innovative performance	Three main hypotheses of this study that IT and human resources affect performance from the perspective of knowledge management were confirmed.
5	Daruch and Mac Naton (2002)	Examination of the relationship between knowledge management and types of innovation	Knowledge management is one of the important drivers of innovation.
6	Daruch (2005)	Knowledge management, innovation and performance	The results show that companies that have knowledge management systems have optimized use of resources in order to innovate and perform better.
7	Bavarsad, B., Habibi, L., and Tavanbakhsh, H. (2010)	Investigating the relationship between knowledge management and organizational performance in companies listed in Tehran Stock Exchange	Results suggest the existence of a positive relationship between knowledge management and organizational performance and indirect relationship between knowledge management and financial performance (with the mediatory role of organizational performance). In general, findings suggest lack of a significant relationship between knowledge management and financial performance.
8	Rajaeepour, S. and Rahimi, H., (2008)	Investigating the relationship between knowledge management conversion process and performance of faculty members of Isfahan University	The results show that there is asignificant positive correlation between the process of knowledge management conversion and performance. There was no significant difference between the mean of the realization of knowledge management components of faculty members in terms of age, gender, field of study, and employment status.
9	Allameh M. and Zare, M. (2008)	Investigating the relationship between knowledge management, innovation and organizational performance	The results show that knowledge management and innovation have a direct relationship with each other and both affect organizational performance directly and indirectly.
10	Karimi Alagheband (2006)	Knowledge sharing capabilities as a key factor for gaining competitive advantage of organizations with an emphasis on customer relationship management	The results show that knowledge management has the ability to get and keep organizations on competitive edge and to achieve competitive advantage.
11	Monavaryan A. (2007)	Knowledge management model for government departments: case study of the Ministry of Labor	The results show that the variables of organizational culture, technology, human resource, and training affect knowledge cycle and emphasize that training should be under focus in all organizations and at all times, which can facilitate cultural change and additional use of technology.

4. RESEARCH METHODOLOGY

The present study is applied in terms of its objectives since the purpose of this study is to determine causal relationships between variables of knowledge management infrastructure, knowledge management process, and the effect of their components on organizational performance. It is descriptive and correlational in terms of data collection method and is based on the structural equation modelling. To investigate the relationships between variables, several methods have been proposed in recent decades. One of these methods is structural equation modeling or multivariate analysis with latent variables.

Structural equation modeling is a comprehensive statistical approach to test hypotheses about the relationship between observed and latent variables. Through this approach, the acceptability of the theoretical models in specific communities can be testes and since most of the variables in management research, especially organizational behavior, are latent, the necessity to apply these models is increasing day by day.

In the analytical framework of the research, variables of knowledge management infrastructure, knowledge management process and their components are latent exogenous variable and organizational performance is endogenous latent variable. On the other hand, knowledge management infrastructure, knowledge management process and their components can be considered as independent variables and organizational performance can be considered as dependent variable.

The main tool to gather information in this research is a questionnaire. As already mentioned, three subscales, including technology, culture and structure are used to measure knowledge management infrastructure capabilities in this questionnaire. Six questions are used to assess technology infrastructure, six questions are used to assess culture, and six questions are used to assess structure. Four subscales including knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection are used to assess knowledge management process capabilities. Four questions are used to measure knowledge acquisition, four questions are used to measure knowledge conversion, four questions are used to measure knowledge application, and four questions are used to measure knowledge protection. Eight questions are also used to measure organizational performance. The scale used for all variables is a 5-point Likert scale (from completely disagree to completely agree).

In order to assess the reliability, a sample was given a pre-test containing 30 questionnaires and then using the data obtained from questionnaires, the reliability was calculated using Cronbach's alpha. The reliability coefficients for knowledge management infrastructure, knowledge management process, and organizational performance were .874, .863, and .923, respectively. These figures reflect the fact that the questionnaire has the desired level of reliability and validity.

The validity of the questionnaire was assessed using factorial validity. Factorial validity is a kind of construct validity that is achieved through factor analysis. Factor analysis is a statistical technique that is widely used in most humanities. In fact, the use of factor analysis is necessary in branches that use questionnaires and tests and variables are latent (Klein, 1380; translated by Sadrossadat).

In exploratory factor analysis, the KMO value of variables of knowledge management infrastructure, knowledge management process, and organizational performance was .847, .812, and .832, respectively. This suggests that sufficiency of samples for the research variables. Also, since the significant coefficient of Bartlett test is zero (less than .05), factor analysis was considered appropriate to identify structures. After confirming theoretical model of the study, confirmatory factor analysis is used to check the accuracy

of measurement models. The results showed that all factor loadings were above .5, which is indicative of convergent validity.

5. THE POPULATION AND SAMPLING METHOD

The population of this research includes headquarter staff of Saipa Co. Due to the relatively high number of staff of Saipa, the population will be considered as finite and finite population formula is used.

The sampling method used in this research is stratified sampling. Given that different units are involved in knowledge management activities in Saipa, stratified random sampling method is used. Various units have been considered as a separate stratify and a sample is chosen from among each unit based on the number of each unit. This makes random sampling of all people from among headquarter staff of units, which leads to greater generalization of the results to the company.

To calculate the sample size, the following formula (finite population) is used:

$$n = \frac{NZ_{\frac{\alpha}{2}}^2 \; pq}{\varepsilon^2(N-1) + Z_{\frac{\alpha}{2}}^2 \; pq}$$

Where:

P: is estimate of the proportion of variable quality; P = .5

Z: is single normal variable corresponding to 95% confidence level; $z_{\alpha/2} = 1.96$

ε: is amount of permitted error; ε = .08

N: is the number of population;

$$n = \frac{400 \times [1.96^2] \times 0.5 \times 0.5}{(0.08)^2 \times (399-1) + (1.96)^2 \times 0.5 \times 0.5} = 115.33 \cong 116$$

In this study, 400 questionnaires were distributed among all employees of Saipa Co., of which approximately 130 questionnaires were returned.

6. RESEARCH FINDINGS

Descriptive statistics demographic variables is as follows: 64% were male and 36% were women. Also, about 19% were younger than 30 years, about 39% were between 31 and 40 years, 37% were between 41 and 50 years, and about 19 were older than 51 years. About 5% has an associate's degree, about 39% had a bachelor's degree, about 5% had a master's degree, and about 6% had PhDs. Finally about 36% had a working experience of less than 10 years, 42% had a working experience between 11 and 20 years, and about 21% had a working experience of more than 21 years.

7. ASSESSMENT OF THE STATUS OF RESEARCH VARIABLES

Kolmogorov-Smirnov test was used to test the normality of data. All variables were normally distributed. In other words, population mean test was used to assess the status of variables. According to this test, if the significance value (*t*-statistics) is between 1.96 and −1.96 (the average state), then there would be

no significant difference between the status of the variable and the mean value (number 3 on the Likert scale).

As it is obvious, most variables are in an average and inappropriate state because the mean values of variables range from 2.61 to 3.34.

Table 26.2
Population mean test (H_0: $\mu = 3$) for components

Components	*Sig. level*	*T-statistics*	*Mean*	*Status*
Technology	.006	–2.590	2.90	Inappropriate
Organizational culture	.000	4.845	3.34	Average
Organizational structure	.000	–4.458	2.70	Inappropriate
Knowledge acquisition	.013	–1.971	2.88	Inappropriate
Knowledge conversion	.002	2.375	3.18	Average
Knowledge application	.000	–5.314	2.61	Inappropriate
Knowledge protection	.000	–2.168	2.83	Inappropriate

Table 26.2
Population mean test (H_0: $\mu = 3$) for variables

Variable	*Sig. level*	*T-statistics*	*Mean*	*Status*
Knowledge infrastructures capabilities	.249	1.256	3.06	Average
Knowledge process capabilities	.687	-.618	2.96	Inappropriate
Organizational performance	.000	-3.234	2.75	Inappropriate

8. EVALUATION OF MODELS USED TO MEASURE THE RESEARCH VARIABLES

Confirmatory factor analysis is one of the oldest statistical methods used to assess the relationship between latent variables (obtained factors) and observed variables (questions) and indicates the measurement model. Before starting hypotheses testing and conceptual models, it is necessary to ensure the accuracy of the models used to measure independent variables (knowledge process capabilities and knowledge infrastructure capabilities) and the dependent variable (organizational performance). Therefore, measurement models of these three variables were performed using first-order confirmatory factor analysis.

The results of measurement tools are presented in Tables 1.4, 1.5 and 1.6. As the results show, first of all, all factor loadings are greater than .5 and, secondly, the average variance extracted (AVE) of all variables is greater than .5, which indicates the convergent validity (Straub, 1989; Chin, 1998). Also, as the results show, the average variance extracted (AVE) of all variables is greater than the second order of the two-by-two relationship, indicating the diagnosis validity (Chin, 1998).

9. EVALUATION OF STRUCTURAL MODEL OF THE STUDY

Structural equation modeling using LISREL software is used to search for causal relations between the variables. Figure 26.2 shows the effect of exogenous latent variables (knowledge process capabilities and knowledge infrastructure capabilities) on endogenous latent variable (organizational performance). The following results have been achieved on the relations between elements:

Table 26.4
Results of factor loadings for knowledge management infrastructures

Variable	*Index*	*Factor loading*
Technology	TECH1	.66
	TECH2	.67
	TECH3	.76
	TECH4	.71
	TECH5	.78
	TECH6	.81
Structure	STR1	.66
	STR2	.74
	STR3	.78
	STR4	.76
	STR5	.72
	STR6	.65
Technology	CUL1	.70
	CUL2	.78
	CUL3	.70
	CUL4	.79
	CUL5	.79
	CUL6	.65

Table 26.5
Results of factor loadings for knowledge management processes

Variable	*Index*	*Factor loadings*
Knowledge acquisition	ACQ1	.67
	ACQ2	.79
	ACQ3	.69
	ACQ4	.61
Knowledge conversion	CON1	.75
	CON2	.88
	CON3	.60
	CON4	.80
Knowledge application	APP1	.78
	APP2	.87
	APP3	.62
	APP4	.80
Knowledge protection	PRO1	.77
	PRO2	.77
	PRO3	.80
	PRO4	.66

Table 26.6
Results of factor loadings for organizational performance

Variable	*Index*	*Factor loadings*
Financial aspect	PER1	.67
	PER2	.72
	PER3	.80
	PER4	.76
	PER5	.81
	PER6	.80
	PER7	.80
	PER8	.83

- The impact of knowledge infrastructure capabilities on organizational performance is –.0 and its significance level is –.35. (Hypothesis is rejected)
- The impact of knowledge process capabilities on organizational performance is .36 and its significance level is 2.05. (Hypothesis is confirmed)
- The impact of IT infrastructure on organizational performance is .21 and its significance level is 2.39. (Hypothesis is confirmed)
- The impact of structural infrastructure on organizational performance is –.02 and its significance level is –.24. (Hypothesis is rejected)
- The impact of cultural infrastructure on organizational performance is –.09 and its significance level is .98. (Hypothesis is rejected)
- The impact of knowledge acquisition on organizational performance is –.01 and its significance level is –.12. (Hypothesis is rejected)
- The impact of knowledge conversion on organizational performance is –.07 and its significance level is –1.03. (Hypothesis is rejected)
- The impact of knowledge application on organizational performance is –.09 and its significance level is 1.03. (Hypothesis is rejected)
- The impact of knowledge protection on organizational performance is .25 and its significance level is 2.74. (Hypothesis is confirmed)[1]

As the lower part of Figure 26.2 demonstrates, all fitness indices of the model are of relatively good value.

10. SUGGESTIONS BASED ON HYPOTHESES

According to the analyses of previous sections, two variables of knowledge management IT infrastructure and knowledge protection havea positive effect on organizational performance (hypotheses 2-1 and 2-7 are

[1] It should be noted that the standard and common error level to investigate the relations is .05. At 5% error level, the critical points in the normal curve are1.96 and -1.96. If the significance coefficient of regression test is greater than 1.96, the null hypothesis (lack of relationship) is rejected and hypothesis 1 (significant relationship) is confirmed and vice versa.

confirmed). It is generally recommended to emphasize boosting these two variables in order to improve organizational performance. In more details, following recommendations are proposed:

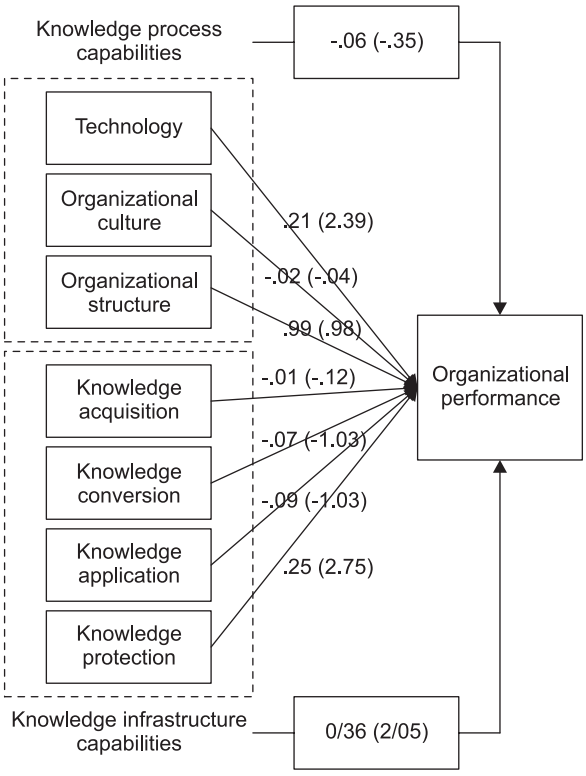

Figure 26.2: Model is standard estimation model and significance coefficients

- Managers are recommended to continuously monitor and review competitors and colleagues' activities and regularly be aware of their technological improvements. In this regard, benchmarking and imitating successful competitors of automotive industry is recommended. However, coping and imitation should be creatively and tailored to specific conditions in Saipa.
- It is recommended to provide proper conditions of establishing effective relationship between Saipa company's employees with colleagues and people outside the organization.
- It is recommended to expand team learning culture in the company.
- It is recommended to seek to create opportunities for interaction with business partners.

Given that knowledge protection has a positive effect on organizational performance, helping to protect important information and knowledge in Saipa Co. is recommended. For this purpose:

- Saipa is recommended to continuously update and upgrade its security and safety systems in order to protect its valuable and important organizational information.
- Saipa is recommended to adopt strict policies and procedures in order to protect its important and confidential intra-organizational information.
- It is recommended to pay due attention to employees with important and valuable information so that they don' think about leaving the company and don't become passive people.

Although the effect of many variables of the study (organizational culture, organizational structure, and so on) on organizational performance was not confirmed based on the results of the study, it is suggested to be cautious in this regard. For example, it is true that organizational culture or organizational structure doesn't have significant effect on organizational performance, but they affect organizational performance indirectly and in their interactions with other variables. The same is true about other variables (Mills, Smith, 2011, 166). In support of this issue, it is noted that in other studies, researchers have suggested that creating a positive atmosphere requires promotion of cultural factors such as job autonomy, communication structures, and the unity and integrity (Ryn et. al., 2003).

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