Investigating the Effects of Knowledge-Based Economy on Intellectual Capital (Case study: Saderat bank branches in Chaharmahal and Bakhtiari Province)

***Asadollah Falaki Nafchi[1*] and Dr. Shadi Ebrahimi Mehrabani[2]**

[1] MA student of Department Management, Islamic Azad University, Dehaghan Branch, Isfahan, Iran
[2] Faculty member of Department Management, Islamic Azad University, Dehaghan Branch, Isfahan, Iran

*Corresponding Author

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Abstract

The main purpose of this study was investigating effects of knowledge-based economy on intellectual capital. This study was a descriptive-survey, applied and cross-sectional research. Population was managers, assistants and employees of 17- category in Saderat bank branches in Chaharmahal and Bakhtiari province. Questionnaire was used to collect data. According to results of this study, there is a significant relationship between knowledge-based economy and intellectual capital. In addition, there is a significant relationship between knowledge-based economy and relational capital. SPSS software was used to analyze data.

Key words: knowledge-based economy, relational capital, intellectual capital, Structural aspect.

Introduction

Today, in management and economy literatures, has been emphasized on role of knowledge as a critical source to keep competitiveness and profitability (Amiri, 2009: 44).

Since the early 90s, with the presence of endogenous growth theories, economists noted to the importance of knowledge as a key factor in keeping sustainable growth. In this decade, knowledge management literature quickly grew in level of firms (Bontis and Donnell, 2005:23).

Level of development of each country depends on optimal utilization of resources and facilities to achieve its economic objectives. This indicates the specific role of promoting in economic development strategy of countries. In efficiency strategy as a long-term program, human resources considered as the most important factor. It has an effective role in optimum utilization of other factors (Curado, 2006: 25).

Another important factor in examination of effective factors on growing of utilization in large scale is that to improve utilization we should consider rapidly changing world. Today, effective factors on utilization are different from few decades ago (Fouary, 2004:203).

Economic Co-operation and Development organization to answer this question why has economic performance of European developed countries been weaker than United States since 1995? Found response in US productivity growth, especially labor productivity and

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strengthening components of knowledge-based economy such as increasing of costs of information technology and communications, increasing of research and development costs, and increasing training costs. These components had significant impacts on labor performance and led to advancement of technology (Godin, 2010: 396).

Knowledge-based economy

In knowledge-based economy, production, distribution and using of knowledge have main and dominant role to generate wealth. Labor and capital played a major role in the economy until 1960. Since 1960, world economy has been found sinusoidal form. The major reason of this situation is perhaps rapidly changing technologies, computers, the internet and the development of knowledge that have changed traditional forms of economic behavior. This situation was continued until 2010. Since 2010, knowledge-based economy has been replaced of sinusoidal shape of economy. Thus, nations would have chance of a stronger economy if they develop space for creativity and innovation in society by knowledge (Kuhen and Kaimankiss2011: 515).

Intellectual capital

Drucker (1993), a famous scientist in management stated that" we are entering to a scientific society which capital, natural resources and workforce are not the main economic resources, but knowledge is the main economic resource. In recent years, many researchers have been conducted on the value of intellectual capital of companies. There is no doubt that the 21st century will see a dramatic change in the appearance of nations' wealth. Knowledge-based economy has been found higher position in comparison with other factors of production such as land, capital and machinery (Malekian & Zaree: 2009).

This concept was introduced in 1991 for the first time. When skandia, the big Swedish company started to use a series of innovative methods to special attention to its intangible assets. Companies that want to maintain and expand their financial performance and want to take advantage of effects of this emerging competitive capital, they should have new models of organizational assets (Marr, 2008: 209).

Development of intellectual capital

Intellectual capital concepts are deep rooted. In 1968, an economist named John Kenneth Galbraith used "intellectual capital" term for the first time. Peter Drucker introduced "Conscious workers" term before him. Many systems are using intellectual concept, but also there are many employed people that are not aware of this concept (Motovaseli, 2006: 33).

Edwards Deming, the creator of the concept of quality cycles has criticized a U.S manager that had spent 97% of his times to analyze statistics and digits, and spend less than 3% to know their intangible assets. In other words, they spend 97% of their time to examine things which 3% has done.

Intellectual capital needs patience and endurance to be active. Only large companies could benefit from their power of intellectual capital. With the absence of intellectual capital, there are many ambiguous areas. Intellectual capital guarantees public trust to stock exchange markets. On the other hand, there is a problem in using of intellectual capital in stock exchange markets. We cannot measure increasing of intellectual capital every day to put on exchanges. Peti and Goupter (2000) suggested the most important

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events of intellectual capital in a timetable (Muhammad and Ismail, 2009: 206).

Components of intellectual capital

In general, researchers in the field of intellectual capital agree on three elements: Human capital, structural capital, customer capital (relational).

Human capital is one of the most important intellectual capitals in organizations. It is source of innovation and a critical effective factor on performance of any company. In other words, human capital is the saved knowledge of an organization included of competence, mindset and beliefs of employees. Roudes et.al, (1997) stated that employees create intellectual capital by their intellectual competence and attitudes (Roudes and Miihialitch, 2007: 327).

Bruking (1996) believed that human capital of an organization includes skills, ability to solve problems, and leading styles. Human capital indicates individual contribution of an organization by its employees. Rous et.al, (1997) believed that employees create intellectual capitals by their competence, attitudes and mental abilities (Emad Zadeh et.al, 2006: 105).

Competence includes skills and education. Attitudes cover behavioral details of employees. Mental abilities help employees to change their performance and in finding innovative solutions for problems. But employees are the most important assets of organization (Sreekumar, Mahapatra, 2011: 221)

Structural capital

Structural capital includes all source of inhuman knowledge in an organization such as databases and organizational charts, procedure, strategies (Stiglitz, 2010: 76). Structural capital includes hardware and software, databases, patent and trademarks and other capabilities that support employees' performance. Edvinsson and Malone (1997) considered structural capital as hardware and software, databases, organizational charts, patent and trademarks and other capabilities that support employees' performance (Tann, 2007: 5). According to Bontis (1998), if an organization has a poor registering and recording system, Intellectual capital would not achieve completely its potential targets.

Customer capital

Knowledge in organization's relations with its environment includes customers, suppliers, the scientific community, etc. The most important component of a relational capital is customer capital, because, the success of an organization depends on the customer's investment (Zack, 2006: 198).

Stewart (1997) believed that customer capital is information of market to attract and keep customers. Customer capital is current value of organization's relations and also its future potential values (TING and Lean, 588: 87).

The necessity and importance of intellectual capital

In past decades, the process of producing services has been changed. In addition, in Knowledge-based economy, the success of organization depends on ability of managing intangible assets. According to Mor, organizations attend to intellectual capital management because (Vahidi, 2005: 33).

- It helps organization to set strategies.
- It helps to evaluate implementing of strategies.

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- It helps organizations to make various decisions.
- Using of results of measuring intellectual capital as basis of compensation.
- It helps to convey the property to external stakeholder organizations
- Measuring values and performance of companies.

Literature review

Sadeghi & Azarbayjani (2006) in an investigation entitled "positive, significant and impact of being knowledge-based on labor demanding in Iran concluded that labor with high level of education can lead dynamism and technological developments in production cycle and increases knowledge exporting capacity and ability to compete in international markets (Sadeghi and Azarbayjani, 2006: 175)

Tan (2007) by means of Palic model to measure intellectual capital investigated relationship between intellectual capital and its components with financial performance of companies in Singapore stock exchange. Results showed that there is a positive and significant relationship between them.

Cohen Kaimenakis (2007) in an investigation entitled "Intellectual capital and organizational performance in small to average knowledge-based organizations" found that there is a mutual relationship of some especial features of intellectual capital in these companies. Also, experimental information showed that some especial levels of intellectual capital helped intellectual capital performance in Pakistan positively. Results showed that in addition to measuring financial performance, measuring intellectual capital performance is so important. Results showed that the chemical, oil and gas and cement sectors had high intellectual capital performance, banks had an average intellectual capital performance, and public sector enterprise had low intellectual capital performance.

Ting & leen (2009) by means of Palic model to measure intellectual capital investigated relationship between intellectual capital performances with financial performance in companies in Malaysia. Results showed that intellectual capital had positive and significant impact on profitability.

Methodology

This study was a descriptive-survey, applied and cross-sectional research. Population was managers, assistants and employees of 17-category in Saderat bank branches in Chaharmahal and Bakhtiari province. Library study method was used. Questionnaire was used to collect data. 182 questionnaires were distributed and 177 questionnaires were returned. Questionnaire was designed according to trusted questionnaires and literatures. Validity of questionnaire was confirmed by professors in this field. Cronbach's alpha procedure was used to measure reliability of questionnaire and its coefficient was 0.7. Sample size was calculated by Cochran formula. Random sampling method was used. Descriptive and inferential analyzing methods were used. Parametric and non-parametric methods were used. SPSS software was used to analyze data.

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Discussion and results

In descriptive analyzing, frequency tables, graphs and in inferential analyzing methods K-S test, T-test method and one way ANOVA method were used. Pierson correlation and regression were used.

Descriptive results

According to figure-1, it can be seen that 94.9% of respondents were male and 5.1% of respondents were female.

Figure-1 frequency distribution according to gender

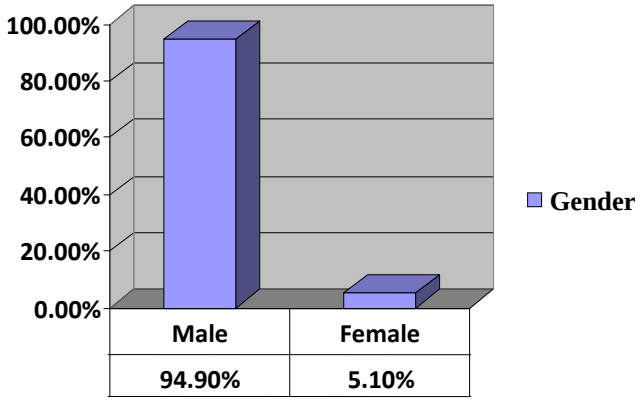
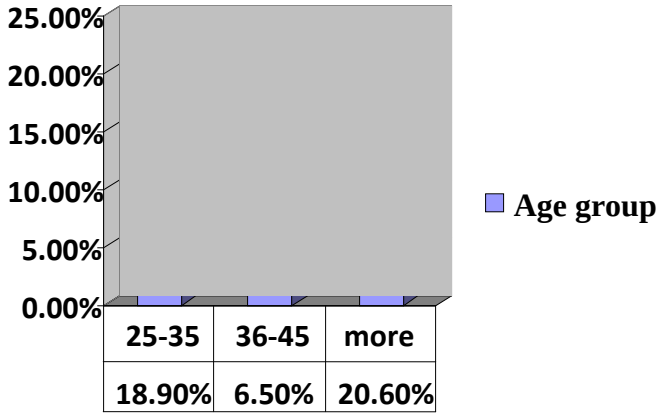


Figure-2 shows frequency distribution according to age of respondents. It can be seen that 18.9% of respondents were in 25-35 age group, 6.5% in 36-45 age group and 20.6% were more than 45.

Figure-2 frequency distribution according to age



Inferential statistics

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The main hypothesis: knowledge-based economy is effective on intellectual capital in Saderat Bank of Chaharmahal and Bakhtiari province.

H_0: There is no relationship between knowledge-based economy and intellectual capital. (p=0)

H_1: There is an effective relationship between knowledge-based economy and intellectual capital. (p≠0)

If significance level is greater than Alpha, H_0 is approved. According to Table-1 (sig=0.001), thus it can be conclude that H_0 was rejected. It means that there is a significant relationship between knowledge-based economy and intellectual capital. Pierson test was used to examine this correlation. This relation is direct and linear relation. Correlation was so strong.

Table-1 Correlation coefficient between knowledge-based economy and intellectual capital

Dependent variable	Independent	intellectual capita
Knowledge-based economy	Intensity	0.985
	Significance	0.001
	number	177

Regression analyze was used to examine this impact on intellectual capital.

Regression

Knowledge-based economy was considered as X (independent variable) and intellectual capital was considered as Y (dependent variable). Adequacy index of this relationship has been showed in Table-2.

Table-2 Adequacy index of this relationship

Correlation coefficient	Adjusted determination coefficient	determination coefficient	St.d
0.985	0.970	0.970	0.11376

According to table-2 the amount of correlation between two variables was 0.985, determination coefficient was 0.970. It can be said that 97% of changes in intellectual capital were caused by knowledge-based economy. Thus it can be concluded that model has sufficient adequacy.

In table-3, it was examined whether regression was significant by means of F test.

Table-3 F test to examine whether regression was significant

Source of changes		Sum of squares	df	Average of squares	F	Sig
knowledge-	regression	147.972	1	147.972	11434.284	0.001

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based economy	residuals	4.555	175	0.013		
	Total	152.527	176			

According to sig. value (0.001) it can be said that regression was significant in level of 99%.

Table-4 T-test results- relationship between knowledge-based economy and intellectual capital

Model	t	Standard coefficients	Non-standard coefficients		Sig
		Beta	St.d	B	
Constant	8.886		0.030	0.266	0.001
knowledge-based economy	106.931	0.985	0.009	0.925	0.001

According to table-4, it can be said that with 1 unit increasing of knowledge-based economy, intellectual capital would increase 0.985. T-test results for regression coefficients have been showed in table-4. According to p-value it can be said that relation is significant.

Function of line between two variables is as follows

(Intellectual capital)=0.266 + 0.925* (knowledge-based economy).

These results were similar to Kuhen and Kaimankiss (2007) results.

First sub- hypothesis: knowledge-based economy is effective on structural aspect in Saderat Bank of Chaharmahal and Bakhtiari province.

H_0: There is no relationship between knowledge-based economy and structural aspect. (p=0)

H_1: There is an effective relationship between knowledge-based economy and structural aspect. (p≠0)

If significance level is greater than Alpha, H_0 is approved. According to Table-5 (sig=0.001), thus it can be conclude that H_0 was rejected. It means that there is a significant relationship between knowledge-based economy and structural aspect. Pierson test was used to examine this correlation. This relation is direct and linear relation. Correlation was so strong.

Table-5 Correlation coefficient between knowledge-based economy and structural aspect

Dependent variable	Independent	structural aspect
Knowledge-based economy	Intensity	0.918
	Significance	0.001

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	number	177

Regression analyze was used to examine this impact on structural aspect.

Regression

Knowledge-based economy was considered as X (independent variable) and structural aspect was considered as Y (dependent variable). Adequacy index of this relationship has been showed in Table-6.

Table-6 Adequacy index of this relationship

Correlation coefficient	Adjusted determination coefficient	determination coefficient	St.d
0.918	0.842.	0.842.	0.29012

According to table-6 the amount of correlation between two variables was 0.918, determination coefficient was 0.842. It can be said that 84.2% of changes in structural aspect would be caused by knowledge-based economy. Thus it can be concluded that model has sufficient adequacy.

In table-7, it was examined whether regression was significant by means of F test.

Table-7 F test to examine whether regression was significant

Source of changes		Sum of squares	df	Average of squares	F	Sig
knowledge-based economy	regression	158.358	1	158.358	1881.428	0.001
	residuals	29.628	175	0.084		
	Total	187.986	176			

According to sig. value (0.001) it can be said that regression was significant in level of 99%.

Table-8 T-test results- relationship between knowledge-based economy and structural aspect

Model	t	Standard coefficients	Non-standard coefficients		Sig
		Beta	St.d	B	
Constant	1.666		0.076	0.127	0.097

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knowledge-based economy	43.375	0.918	0.022	0.975	0.001

According to table-8, it can be said that with 1 unit increasing of knowledge-based economy, structural aspect would increase 0.918. T-test results for regression coefficients have been showed in table-8. According to p-value it can be said that relation is significant.

Function of line between two variables is as follows

(Structural aspect)= 0.127 + 0.918* (knowledge-based economy).

Second sub- hypothesis: knowledge-based economy is effective on relational capital in Saderat Bank of Chaharmahal and Bakhtiari province.

H_0: There is no relationship between knowledge-based economy and relational capital. (p=0)

H_1: There is an effective relationship between knowledge-based economy and relational capital. (p≠0)

If significance level is greater than Alpha, H_0 is approved. According to Table-9 (sig=0.001), thus it can be conclude that H_0 was rejected. It means that there is a significant relationship between knowledge-based economy and relational capital. Pierson test was used to examine this correlation. This relation is direct and linear relation. Correlation was so strong.

Table-9 Correlation coefficient between knowledge-based economy and relational capital

Dependent variable	Independent	relational capital
Knowledge-based economy	Intensity	0.947
	Significance	0.001
	number	177

Conclusion

The main purpose of this study was investigating effects of knowledge-based economy on intellectual capital. This study was a descriptive-survey, applied and cross-sectional research. Population was managers, assistants and employees of 17- category in Saderat bank branches in Chaharmahal and Bakhtiari province. Questionnaire was used to collect data.Results of study showed that there is a significant relationship between knowledge-based economy and intellectual capital. In addition, there is a significant relationship between knowledge-based economy and relational capital. Also, there is a significant relationship between knowledge-based economy and structural aspect.

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