J. Basic. Appl. Sci. Res., 2(10)10737-10741, 2012
© 2012, TextRoad Publication
ISSN 2090-4304
Journal of Basic and Applied Scientific Research
www.textroad.com

Investigation of the Relationship between Intellectual Capital and Creativity in Educational Organizations

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ABSTRACT

Today's economy is based upon intellectual capital and its commodities are knowledge & information. Intangible resources are factors other than financial & physical assets that create value for a company & are also controllable. The present paper investigates the relationship between intellectual capital & creativity in an educational organization. It is based upon applied goal, the gathering of data is of descriptive type and it is a survey research and a correlation one. To this end, standard questionnaire of(Torrens and Bontis) was distributed among 100 people and finally 95 questionnaires were analyzed. The hypotheses were analyzed using SPSS and correlation test and it was concluded that there is a positive significant relationship between intellectual capital and its dimensions (human capital, structural capital, relationship capital) and creativity in the studied org. The conceptual model of the research was also verified by Lisrel software.
KEY WORDS: intellectual capital, human capital, structural capital, relationship capital, creativity.

INTRODUCTION

Accelerated global changes in science, technology, industry and management & in general values and standards have made successful companies and organizations to lead their goals, tendency and interests towards creativity and innovation. Organizations and companies in the present period of time which is called by different names like knowledge age, post industrial age, information society age, discontinuity age, temporary societies age, speed age and finally innovation and creativity age, have been prepared to confront the management of quick global changes.

In such an environment, intellectual capital have increased performance quality of companies and in new economic competition, knowledge based assets present a competitive advantage [11].

LITERATURE REVIEW

Intellectual capitals can be regarded as the knowledge assets of a company [4]. Although there is unanimity on the constituents of IC, a common and acceptable definition for IC has not been presented yet [7]. According to Mar and Schiuma's definition, IC is attributed to a knowledge assets group of an organization that play role in improving competitive position of the organization through adding value to key share holders. IC can be defined as knowledge, competencies, skills and capabilities that create wealth and help from valuable outcomes [11].

Intellectual capital(IC) dimensions

Human capital: HC has been defined as personal knowledge, skill, capabilities & experiences of personnel of an organization in creating value and solving business issues [6].

Most of the experts who have studied IC, have considered IC in it's personal level and regarded it as a combination of knowledge, skill, intelligence and talent of personal. For instance, penning et.al has considered the human capital of a professional and technical service company as the knowledge and skill of the experts that they use to offer professional service [11]. Buntis views the pure intelligence of an organization's members as the essence of human capital [2]. Human capital forms the fundamental of intellectual capital and is the main element for implementing the performances related to intellectual capital. This capital is a resource for innovation and is capital of creating competitive advantage [5].

Chen believes that human capital is the latent knowledge in the minds of personal and is defined as a combination of competencies, attitude and creativity of personnel. Staff competency is known as the hardware part of HC. It is in fact the ability of personnel to do their tasks which comes from either work experience or training.

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Attitude is in fact the software part of IC. This part includes motivation & satisfaction from job and is a precondition to the expression of personnel competencies. Personnel creativity enables than to use their knowledge and have continuous innovation & therefore it is an important factor in developing IC in a company [8].

Structural capital: SC refers to the structures & processes in an organization that personnel use them & apply their knowledge & skill through them [12]. This kind of capital includes mechanisms and structures that their main role is supporting personnel to reach optimal intellectual performance and optimal performance in business. This capital in fact includes all non human knowledge bases in an organization like databases, processes, strategies and organizational chart that add values beyond physical assets. Nicolini(1993) views structural capital as a type of instrument and infrastructure that helps personnel With converting knowledge from its personal form to a group asset. Edvinson and Malon (1997) have defined structural capital as a factor that improves personnel productivity and will remain in the company after those personnel leave the company. Contrary to human capital, structural capital is completely under company's control and can be benefited in reaching company's goals. Bontis (2002) considered structural capital as common processes and tasks of company that include non-human knowledge resources. He believes that technological components and architechtural competencies comprise SC. SC is also attributed to formal knowledge of the organization, experience and knowledge of people in the form of instructions, processes and so on. According to Edvinson and Malon, SC enables a company to develop the relations inside networks with the inside and outside of the organization. Components of IC include all non-human knowledge resources that include databases, organizational charts, executive instructions and processes and strategies and in general everything that its value is greater than its financial aid [3]. In Stwart's opinion (1977), SC includes the existing knowledge in IT, patents and brands ownership[3].

Relationship capital: relationship capital was first called customer capital. Stwart believes that the main subject of this kind of capital is the knowledge in marketing solutions and relationships with customers [10]. Chen et al (2004) described and classified customer capital in the form of marketing skills market behavior and customer loyalty degree[10]. The expression relationship capital has a more comprehensive concept than customer capital. In general IC is a combination of factors that organize company's relationships with surroundings. RC is not only referred to customer capital but it also refers to company's relationship with networks, unions, competitors, etc.[10]. Ross (1997) views RC as the relationship between organization with internal and external stakeholders. RC is the value of relationships that an organization establishes with different external groups [13]. RC has been defined also as: knowledge that exists inside the relationships of the organization with customers, suppliers, stockholders, etc. [13]. Also customers' relationship is the main factor in RC but it is not the only factor. RC is an image of the organization. Measurement of RC is dependent upon organization's image[13]. When it comes to universities, RC refers to explicit and implicit knowledge related to the ways through which universities interact with other institutions like research contracts, treaties, pacts and so on[1].

Creativity

From psychological viewpoint, creativity is defined as the expression of an integration of new thoughts using intuition from unknown resources. Gilford paralleled creativity with divergent thinking namely achieving new solutions for solving problems with convergent thinking namely achieving correct answer. Papalia views creativity as the ability to look at things in a different way, seeing problems that no one else notices, and then offering effective and unusual and new solutions. Bazermann (1986) views creativity as a cognitive process of forming a novel idea, concept, commodity or discovery. Although there are many definitions for creativity, it is believed that it is a multi-dimensional concept[8]. The most comprehensive theory about creativity has been developed by the American scientist Gilford. He believed that intellectual abilities of human can not be limited to one dimension and called intelligence or whatever. Using advanced statistical methods and computers he concluded that human intellectual powers can be devided into 150 different and measurable factors and in his opinion some of these factors are directly relevant to creativity. These factors include intellectual flow, intellectual powers flexibility and genuine thought and decision-making. In his opinion these factors comprise divergent thinking or unusual thinking. People with divergent thinking are different from people in action and way of thinking and go beyond habits and commodities and use new and creative methods.

Personnel are the IC of their companies. They increase the productivity of their organization by utilizing all of the resources and capitals of the organization. They produce new outputs or produce the usual outputs with less resource using creativities they express in work environments. According to what was said up to now, the main question of the research is propounded as:

Whether there exists significant relationship between IC and creativity or not?

RESEARCH METHODOLOGY

This research is an applied study with descriptive nature and from control viewpoint it is a field research and utilizes correlation test. Pearson correlation test has been used where IC and its dimensions are independent variable and creativity is the dependent variable. Considering the goals of the research, research type and variables under study, research hypotheses are as follows:

Main hypothesis: There is a significant relationship between IC and creativity in the studied organization.
Hypothesis 1: There is a significant relationship between human capital and creativity in the studied organization.
Hypothesis 2: There is a significant relationship between structural capital and creativity in the studied organization.
Hypothesis 3: There is a significant relationship between relationship capital and creativity in the studied organization.

In this research, statistical population is the personnel of shahid tondguyan faculty and sample size is 95 based on Cochran formula.

Sampling method in this research was accidental classified method and data gathering method was field method with its tool being questionnaire. Bonit's questionnaire (1998) with 24 questions was used to measure IC and Torrence questionnare was used to measure creativity on 5-spot likert measure. Supply chain questionnaire consisted of 17 questions and its reliability was calculated with Cronbach's alpha as 0.865. Content validity of the questionnaires was verified by experts. Cronbach's alpha for IC questionnaire was 0.899and for creativity 0.863 which are both acceptable.

The following figure shows the direction of relationship between variables in the form of a concept model:

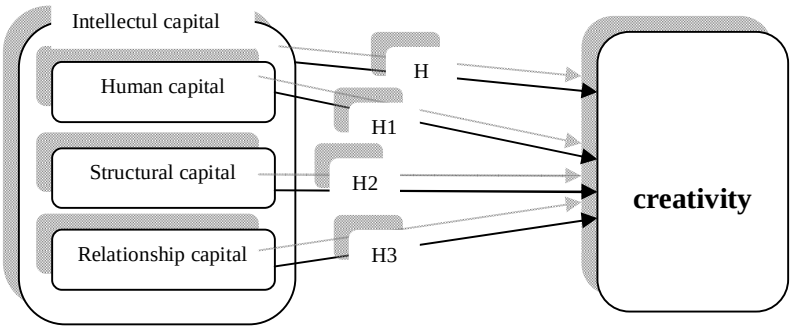

Figure 1: conceptual model

DATA ANALYSIS

a. hypotheses test

In order to investigate research hypotheses, Pearson correlation coefficient test was used and its results are summarized in Table 1:

Table 1: results of correlation test

	creativity		
	Correlation capital	Sig	**result**
Hypothesis 1:HC	0.788	0.000	confirmed
Hypothesis 2: SC	0.692	0.000	confirmed
Hypothesis 3: RC	0.791	0.000	confirmed
Main hypothesis: IC	0.834	0.000	confirmed

According to the results of correlation test and considering the significance level which is less than 0.05 in all cases, all of the hypotheses have been verified. Because all of the correlation coefficients are positive there is a positive and direct relationship between variables. This means there is a positive and direct relationship between IC and its dimensions and creativity. The higher is IC, the more creativity will exist in the company and vice versa.

b. standard estimation of the model

According to the output of the LISREL software which is summarized in table 2, X^2/df is 0.0000 and this shows that the model is appropriately fitted. Also approximate squares Mean error root must be less than 0.8 which

is 0.0000 in this model. Therefore we can say that data match the model and the indices show that the presented model is an appropriate one and data are matching well with the model.

Table 2: standard estimation test using LISREL

fitness statistic	Chi-Square	Df	p-value	RMSEA
value	0.00	0	0.000	0.000

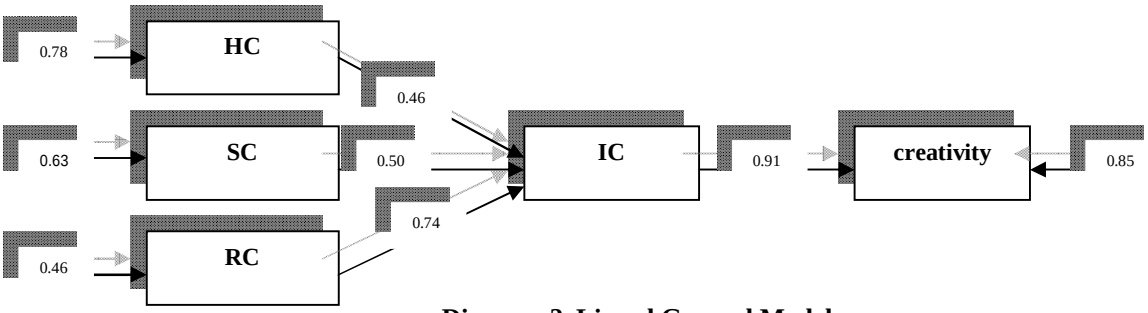

Diagram 2. Liserel General Model

Conclusion

Present research studies IC relationship with creativity in educational organizations. Results showed that there is a positive relationship between IC and creativity in the studied university. Furthermore the mentioned relationship is a significant one. Therefore it can be said that university must improve IC dimensions to increase creativity in their personnel. In this paper physical and financial capital has been replaced by IC. In a knowledge-based organization, products live and die based on knowledge and the most successful organizations are those that use this intangible asset more effectively. Organization of suitable structures and processes to improve creativity in every organization needs suitable intellectual space. Infrastructure of creation and development of creativity, provides such a space. These infrastructures include leadership commitment, common basic goals, common prospect and values in universities. University must produce and distribute knowledge. Learning is the key to penetrate into knowledge assets and consequently increase of IC. Considering what was said before and due to the importance of IC development in creativity development in universities as the main factor for innovation and technology and science production, universities management must pay attention to IC reinforcement and using creativity, they provide appropriate preconditions to create structures and infrastructure of creativity processes in order to produce more IC. IC framework to provide comparison possibility must be limited and open enough to let organizations to add their interests. Finally it is advised to HR managers and researchers to help increase learning, value creation, and performance improvement of human resources through measurement, management and development of IC including HC, SC and RC and also applying strategies to create and share it as a key factor in achieving competitive advantage.

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