The Relationship between

Intellectual capital and Business Performance: An empirical study in Iraqi industry

Dr. Saari bin Ahmad
College of Business,
University Utara Malaysia,
06010 UUM Sintok,
Kedah, Malaysia
saari@uum.edu.my

Abbas Mezeal Mushraf
College of Business,
University Utara Malaysia,
06010 UUM Sintok,
Kedah, Malaysia
abbas_muzel@yahoo.com

Abstract–The purpose of this study is to explore the relationships between Intellectual capital and business performance in Iraqi industry. The main objective of this study is to investigate whether intellectual capital has a direct effect on business performance. However, a review of the management literature reveals that the relationship between intellectual capital and business performance is still vague. Hence this study will try to fill the gap from the perspective of resource-based view.

Keywords- intellectual capital; business performance; Iraqi industry.

I.   INTRODUCTION

According to resource-based theory, the intellectual capital (IC) is a main source to improve business performance [1]. Therefore, intellectual capital has been studied by many past researchers [2], [3], [4], [5], [6], [7], who investigate the influence of intellectual capital on business performance. However, most past researchers focused on the impact of individual intellectual capital on performance while neglecting the effects of specific elements of intellectual capital.

In addition several empirical studies that have tried to demonstrate the relationship between intellectual capital and business performance have encountered problems that linked mainly to the measurement of intellectual capital [8].

Intellectual capital is becoming the preeminent resources for creating economic wealth. Tangible assets such as property, plants, and equipment continue to be important factors in the production of goods and service. However, their relative important has decreased through time as the importance of intangible assets. Intellectual based assets have increased in term of their importance. This shift in importance has raised a number of questions critical for managing IC. Some of the questions are such as: How does an organization, evaluate the value of IC? What are the most effective management processes to maximize the yield from IC? What are the working definitions of IC? How can we develop a framework for identifying and classifying the various components of intellectual capital?

II.   INTELLECTUAL CAPITAL

Based on the review of literature, intellectual capital is defined in many different ways. (See Table: 1)

TABLE I.   PRESENT A SUMMARY OF THE MAIN IC DEFINITIONS

Authors	Definition of (IC)
[1]	The sum of knowledge of company's members and practical translation of this knowledge like trademark, patents and brands.
[3]	The collection of intangible resources and their flows.
[4]	A source of intangible (hidden) assets that often don't appear on the balance sheet.
[6]	Package useful knowledge that includes an organizations processes technologies, patents, employees, skills and information about customers, supplier and stakeholder.
[7]	Assert that intellectual capital assists enterprises in promoting competitive advantage and value.
[9]	IC is the term given to combined intangible assets which enable the company to function
[10]	It is the knowledge, experience, brainpower of employee as well as knowledge resources, stored in an organizations databases system processes, culture and philosophy.
[11]	Knowledge that can be converted into profit.
[12]	A composite of the wisdom, intelligence, flexibility, creativity, and entrepreneurship core competencies necessary to succeed in an increasingly competitive global economy where technology and knowledge dominate.
[13]	IC as the difference between intangible assets and intangible liabilities.
[14]	The set of intangible values that promote the organizational capability for generating profits now and in the future.

III. ELEMENTS OF INTELLECTUAL CAPITAL

Intellectual capital, (also considered as intangible assets) is defined as (capital) assets that are lack of physical substance but which are likely to yield future benefits [15]. According to [16] intellectual capital is the aggregate sum of intangible value which comprises:

a. Human capital (HC): knowledge skills and capabilities.
b. Structural capital (SC): everything that remains when the employees go home, databases, software, manuals, treatments, organization structure etc.
c. Customer capital (CC) is the relationship built up with the customers and is a significant part of structural capital.
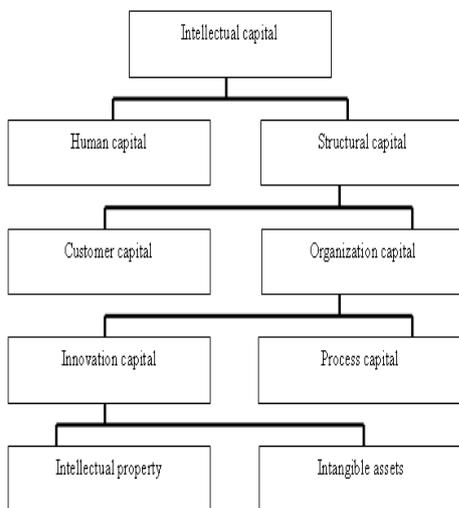d. Relational capital (RC) reflected in the reputation of organization and customer loyalty .see figure (1).

Figure 1.   Skandia model [16]

Skandia (1994) "Visualizing intellectual capital in Skandia a supplement to Skandia's (1994) annual Report. Sweden Skanidia'[16].

While Stewart believes that (IC) is intellectual materials consisting of knowledge, information, intellectual property and experience [6] (see figure 2):
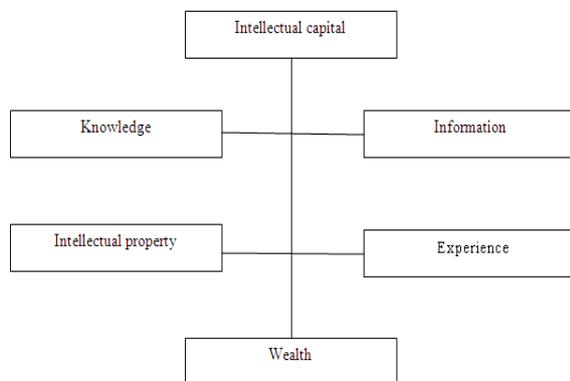

Figure 2.   Stewart model [6]

Customer Capital

The term customer capital is explained as the relationship between firms and their customers. The customer capital as relational capital [1]. This is one of the important dimensions which influence the inward relationships of an organization and the customer [18].

Human Capital

Human capital is one of the important variables in the study of intellectual capital. It is the dimension of intellectual capital which deals with the human knowledge and its experience, which is based on other elements and which will influence a firm's value by affecting the other elements. Employee knowledge and capabilities are the important sources of innovation [19], [20].

It is appropriate to deduce that human capital closely influences innovation capital. Employees are needed to carry out the internal process of a firm. Employees are also required to perform all customer services. By providing quality of service while implementing internal processes, the capability of employees would affect process efficiency and customer satisfaction [20]. Stewart (1997) focused on the relationship between customers and employee capabilities. He pointed out that employees should possess suitable knowledge or skills to serve customer needs [6].

According to Wang and Chang (2005), human capital affects business performance through innovation capital, process capital and customer capital. Figure 3 shows the links between the intellectual capital components and business performance [20].

According to Skandia's model, the hidden factor of human and structural capital is a mixture of intellectual capital with added together. On the other hand Human capital is explained as the combination of innovation capital, process capital and customer capital. Human capital is the ability of company's individual employees to meet the task at hand [21].
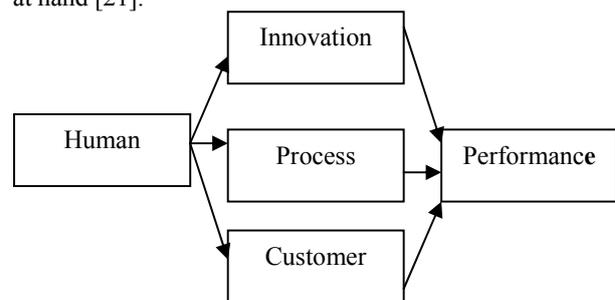

Figure 3.   Conceptual framework of the indirect impact of human capital elements on performance Source: Wang and Chang [21]

A. Structural Capital

Structural capital has not been defined adequately in the past studies, in which it had different tags but similar meanings among different intellectual capital concepts. Based on the past literature, structural capital [22], [23] can be process capital (Van Buren, 1998) and organizational capital [17], and it also interlink with innovation capital [19]. In addition Bontis (2002) explained structural capital as the knowledge entrenched within the schedules of an

organization that includes technological modules and architectural competencies. Generally speaking the knowledge infrastructure in Gold et al. (2001) explained the variables such as organization structure, culture and technology [24].

On the other hand, as discussed by Bontis (2001), structural capital is the hardware, software, databases, organizational structure, patents, trademarks and everything else that employees use to support their business activities and processes [22]. The extract of structural capital, however, has more emphasis on the "the knowledge embedded within the routines of an organization" [23:45]. The cultural and technological aspect, which is combined with structural capital, has more involvement toward knowledge base infrastructure [25].

Structural capital includes technological factors and technical competencies [22], [23] argues that the relationship between structural capital and human capital can be located within social network. The social characteristics interconnect each individual in an organization. The social characteristic is one of the outlets as defined by [22]. These outlets are the owners of the tacit knowledge within their social networks. Among different components of IC, structural capital is the most difficult as it is related to other capital in terms of definition. The main focus of structural capital is to embrace a sound foundation, with views from organizational capital, process capital, even innovation capital and the KM model [25].

B. Relational Capital

The relational capital is defined as customer capital. Sometimes customer capital and relational capital are defined similarly [1]. The focus of relational capital is on organization [25].

In the knowledge based society, intellectual capital plays a significant role in the establishment of intangible and knowledge towards value creation [1], [26], [27], [28] Particularly, the past literature explains human, organizational and customer capital as different entities and suggest that they are interconnected causally so that human capital creates knowledge which then can become constant in organizational capital to promote customer relations [1], [14], [29], [30].

IV. BUSINESS PERFORMANCE

If organizations cannot measure performance, they cannot manage their business [31]. If organizations are to survive and prosper in information age competition, they must use measurement and management systems derived from their strategies and capabilities. This statement summarizes the necessity of performance to measure, and as direct consequence, and to evaluate their performance [32].

Summarizing the ideas of many authors, it can be said that the roles of business performance evaluation are to ensure compliance with crucial minimum standards, to check how well organization are doing, to test strategic

assumptions, and to provide a reliable basis for communicating with interested parties [33].

The business performance extends the eras of measurements to the three perspectives [34]. There are innovation, rate of new product development, customer satisfaction, customer retention and operating costs [35].

Business performance is defined as measurable result of the level of attainment of organizations goals [36] or measurable result of the organization's management of its aspects (ISO 1999), or mechanism for improving the likelihood of the organization successfully implementing a strategy [37]. Business performance evaluation is the process to help management decisions regarding an organization's performance by selecting indicators, collecting and analyzing data, assessing information against performance criteria, reporting and communicating and periodically reviewing and improving this process [33].

V. INTELLECTUAL CAPITAL & BUSINESS PERFORMANCE

Most of the notions on the role of intellectual capital state that it is the most important source of competitive advantage for the firm in question, state that intellectual capital is considered as primary strategic source of the firm profitability [27].

According to Marr (2004), intellectual capital most significantly contributes to an improved competitive position of an organization. Further more intellectual capital enables the organization to add value to important status thus leads to improve its competitive advantages. The value added origins from the enhancement of effectiveness and efficiency of organizational routines. Thus intellectual capital is the key factor in succeeding in that. To obtain competitive advantage it is crucial for organization to utilize knowledge efficiently and to enhance their innovation potential. Furthermore, reporting these intangible assets systematically to customer partners and investors, as well as creditors has become critical success factor. Managing intellectual capital (IC) is therefore becoming increasingly important for future oriented organizations [27]. See Figure (4) that illustrate how intellectual capital impacts on business performance.
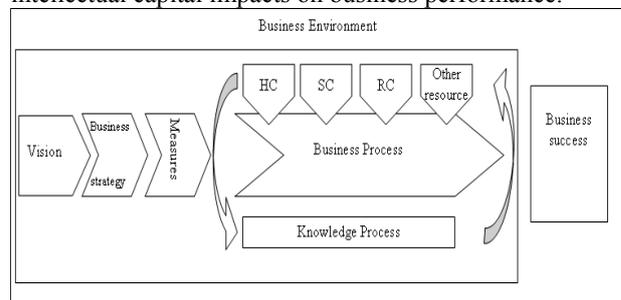

Figure 4. illustrate how intellectual capital impacts on business performance

In brief, intellectual capital is widely recognized as the critical source of true and sustainable competitive

advantage [22:559]. In other words, IC components are the basis for sustainable source of business advantage [31:289]. The view of [31:143] is a bit different since they contended that the IC elements almost continuously provide employee with the means to a desired organizational ends. Moreover Herremans and Issac (2003) noted that it is possible to establish a difference between generator IC elements and vacillator IC elements where generators are directly causing the generation of wealth whereas the facilitators support and enhance to generation of wealth [39].

The confusion here is IC elements is always seen as a positive factor. This means that more is better than less, but it also means that the IC of a firm has to be of the right kind in order to be the source of long-term business success [41].

VI. CONCEPTUAL FRAMEWORK

Based on the previous studies, the conceptual framework is developed based on the recourse-based view. Consequently, Figure 5 shows the relationship between intellectual capital and businesses performance.
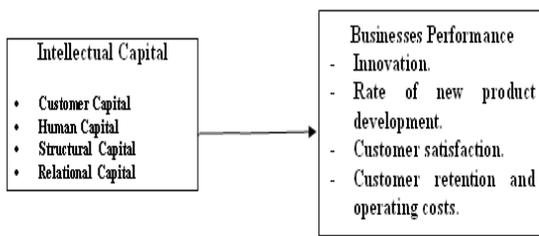

Figure 5.   Conceptual framework

The proposed conceptual framework might be a good contribution to the intellectual capital literature. It shows the relationship between intellectual capital and businesses performance.

VII. HYPOTHESIS DEVELOPMENT

The similar study was conducted by Wang & Chang (2005) show that intellectual capital elements directly affect business performance. It is also found that there is a positive relationship between intellectual capital and business performance and there also exists a cause-effect relationship among four elements of intellectual capital. Human capital affects innovation capital and process capital. Innovation capital affects process capital, which in turn influences customer capital. Finally, customer capital contributes to performance [20].

In another study conducted by James, Mark and Karma (2005), found that the relationship between social capital and knowledge management, both helps organizations to achieve a sustained superior performance within the market. It also suggests that organizations with high levels of social capital have more knowledge-management capabilities than other organizations with low levels of social capital [42].

H: There is relationship between intellectual capital and business performance

Ha: There is relationship between customer capital and business performance

Hb: There is relationship between human capital and business performance

Hc: There is relationship between structural capital and business performance

Hd: There is relationship between relational capital and business performance.

VIII. RESEARCH DESIGN

The objective of this study is to investigate the factors that effect business performance among Iraqi companies. On the other hand it will be looking forward to know the relationship between intellectual capital and Iraqi industry's' performance. This study involves investigating the factor and problems face by Iraqi industry. The main concern of this study is to investigate the problem which Iraqi industry is facing in term of improving their performance. The design of the questionnaire for this research required a wide rang of measures and items. The items have been collected and adopted from different sources.

IX. SAMPLING METHOD

This study is focused to be collected form difference Iraqi companies. There will be only one set sample in the study which will be targeting the random sampling of the 320 managers of Iraqi companies. The companies will be further divided in to three categories on the base of their market equity.

X. DATA COLLECTION

Data will be collected through quantitative survey approach. This data will be collected through field survey. The questionnaires will be distributed among the 320 managers of Iraqi companies, especially managers to answer the questions in the questionnaire.

XI. DATA ANALYTICAL APPROACH

In this study, the responses and information collected from the various statistical methods will be used to analyze the data that we will collect from the 191 respondents. The Statistical Package for the Social Sciences (SPSS, version 17.0) package.

XII. RESULT

Correlation Analysis:

A correlation Coefficient between the four variables of intellectual capital namely (Human capital, Customers capital, Relational capital and Structural capital) and Business performance, were shown in the Table (2).

TABLE II.   PEARSON CORRELATION BETWEEN VARIABLES OF INTELLECTUAL CAPITAL AND BUSINESS PERFORMANCE (N=191)

	Human capital	Customers capital	Relational capital	Structural capital
Pearson	0.391*	0.612**	0.551**	0.255**

Correlation	*			
Sig. (2-tailed)	0.000	0.000	0.000	0.000

Note: * P≤0.05, ** P≤0.01

The correlations between all attributes of intellectual capital and business performance were positive and were significant at the 0.01 level (2-tailed). These results revealed support for hypothesis.

Multiple Regression Analysis.

Business performance was regressed against four variables of intellectual capital namely (Human capital, Customers capital, Relational capital and Structural capital)

The equation for business performance was expressed in the following equation:

$Y_s = \beta_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4$, Where,

Y_s = Business performance

β_0 = constant (coefficient of intercept)

X_1 = Human capital

X_2 = Customers capital

X_3 = Relational capital

X_4 = Structural capital

$B_1, ..., B_4$ = regression coefficient of four variables .

Table (3) showed the results of the regression analysis. To predict the goodness-of fit of the regression model, the multiple correlation coefficient (R), coefficient of determination (R^2), and F ratio were examined. First, the R of independent variables (five factors, X_1 to X_5) on the dependent variable (Business Performance, or Y_s) is 0.654, which showed that the business performance had positive and high overall association with the four attributes. Second, the R^2 is 0.428, suggesting that more than 40% of the variation of business performance was explained by the four attributes. Last, the F ratio, which explained whether the results of the regression model could have occurred by chance, had a value of 34.739 (p =0.00) and was considered significant. The regression model achieved a satisfactory level of goodness-of-fit in predicting the variance of business performance in relation to the four attributes, as measured by the below – mentioned R, R^2, and F ratio. In other words, at least one of the four attributes was important in contributing to business performance. In the regression analysis, the beta coefficients could be used to explain the relative importance of the four attributes (independent variables) in contributing to the variance in business performance (dependent variable). As far as the relative importance of the four intellectual capital attributes is concerned, customer capital, $B_2=0.435$, p=0.000) carried the heaviest weight for business performance, followed by relational capital, $B_3=0.339$, p=0.000, human capital, $B_1=0.005$, p=0.943, and structural capital, $B_4=-0.167$, p=0.130. The results showed that a one-unit increase in customer capital would lead to a 0.435 unit increase in business performance, one-unit increase in relational capital would lead to a 0.339 unit increase in business performance, one-unit increase in human capital would lead to a 0.005 unit increase in business performance, and one-unit increase in structural capital would lead to a 0.167 unit decrease in business performance. In conclusion, the results of multiple regression analysis agree hypothesis 3, that there is relationship between intellectual capital attributes and the overall business performance. So, there is a relationship, which is what you expected.

TABLE III.   REGRESSION RESULTS OF BUSINESS PERFORMANCE BASED ON THE DIMENSIONS (N=191) DEPENDENT VARIABLE: BUSINESS PERFORMANCE INDEPENDENT VARIABLE: FOUR INTELLECTUAL CAPITALS ATTRIBUTE

	Sum of Squares	df	Mean Square	F	Sig.
Regression	29.088	4	7.272	34.739	0.000
Residual	38.937	186	0.209		
Total	68.025	190			

Regression Analysis

Independent variables	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.122	0.328		3.423	0.001**
HC	0.006	0.086	0.005	0.072	0.943
CC	0.438	0.079	0.435	5.546	0.000**
RC	0.406	0.100	0.339	4.059	0.000**
SC	-0.131	0.086	-0.107	1.522	0.130

Note: * p < 0.05, ** p < 0.01

XIII. CONCLUSION

The result of this study emphasize there is positive the relationship between intellectual capital (consists of customer capital, human capital, structural capital, relation capital) and businesses performance (consists of innovation, rate of new product development, customer satisfaction, customer retention and operating costs). In addition, further research will be needed to confirm the result in another sample.

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