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## The impacts of intellectual capital, innovation and organizational strategy on firm performance

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### Abstract

The concept of intellectual capital was popularized by Tom Stewart in 1991 when Fortune Magazine published his article “Brainpower: How intellectual capital is becoming Americas’ most valuable asset”. It can be described as the difference between a firm’s market value and the cost of replacing its assets. Today innovation is considered as a necessity for every company due to the terminating competition in market, globalization and rapid development of technology. Innovation is defined as “implementing new ideas that create value”. Strategy is the outcome of decisions made to guide an organization with respect to environment, structure and processes that influence its firm performance. The organizational literature that improved business performance requires an organizational structure, information systems and management style that are related to a specific-firm strategy. Firm performance can be measured in a variety of ways, including financial performance, product performance and market performance. The purpose of this study is to research the relationships between intellectual capital, innovation, organizational strategy and firm performance. The main contribution of this study is to investigate the effects of intellectual capital, innovation and organizational strategy on performance of firms operating in Antalya, Turkey.

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## 1. Introduction

Intellectual capital evaluation seems to be one of the most important and relevant topics in the new strategic management (Roos et al., 2005). It is widely accepted that an organization's capability to innovate is closely tied to its intellectual capital, or its ability to utilize its knowledge resources. Intellectual capital has been studied by many past researchers (Amir and Lev, 1996; Edvinsson and Malone, 1997; Wen-Ying and Chang, 2005; Rehman et al., 2011; Ahmad and Mushraf, 2011) who investigate the influence of intellectual capital on firm performance. According to Mohan Subramaniam and Youndt (2005) human, organizational and social capital and their interrelationships selectively influenced incremental and radical innovative capabilities. As anticipated, organizational capital positively influenced incremental innovative capability, while human capital interacted with social capital to positively influence radical innovative capability.

With this study the relationships between intellectual capital, organizational strategy, innovation and firm performance have been researched.

## 2. Literature Review and Hypotheses

### 2.1. Intellectual capital

The concept of intellectual capital was first used in 1969 by John Kenneth Galbraith in a letter to Michael Kalecki. However, it was Tom Stewart who popularized the concept in 1991, when Fortune Magazine published his article "Brainpower: How intellectual capital is becoming Americas' most valuable asset" (Bontis, 1998). There are various definitions of intellectual capital in the literature. Intellectual capital has also been defined as the difference between a firm's market value and the cost of replacing its assets. Stewart (1997) defined intellectual capital as the total stocks of the collective knowledge, information, technologies, intellectual property rights, experience, organization learning and competence, team communication systems, customer relations, and brands that are able to create values for a firm.

Components of intellectual capital consist of human capital, structural capital and external (customer) capital. This classification is admitted in general.

- Human capital

Human capital is recognized as the largest and the most important intangible asset in an organization. According to Schultz (1993), the term "human capital" has been defined as a key element in improving a firm assets and employees to increase productive as well as sustain competitive advantage. Human capital refers to processes that relate to training, education and other professional initiatives to increase the levels of knowledge, skills, abilities, values, and social assets of an employee which will lead to the employee's satisfaction and performance, and eventually on a firm performance (Marimuthu, et al., 2009).

- Structural capital

Structural capital includes all the non-human storehouses of knowledge in organizations which include the databases, organizational charts, process manuals, strategies, routines and anything whose value to the company is higher than its material value. Roos et al. (1997: 42) describe structural capital as "what remains in the company when employees go home for the night".

- Customer capital

Customer capital is also named relational capital and external capital. This capital refers to the organization's relationships or network of associates and their satisfaction with and loyalty to the company (Akpınar and Akdemir, 1999). Customer capital puts forward the value of the relationship of an enterprise with customers, suppliers and the rest of the society for consideration and states the loyalty of mentioned ones to the enterprise (Chwalowski, 1997:89).

### 2.2. Innovation

Due to fierce competition in the marketplace, globalization and an explosion of technology in recent years, innovation and differentiation are considered as a necessity for every company. At the same time, to achieve market success and sustain a competitive advantage, businesses need to exploit new opportunities, develop new products

and/or services and markets (Tajeddini, 2010: 221). Innovation is defined as “implementing new ideas that create value”. This generic description refers to the various types of innovation such as product development, the deployment of new process technologies, and also management practices. This means the adoption of new products and/or processes to increase competitiveness and overall profitability, based on customer needs and requirements (Leskovar, 2007: 535). The Oslo guide (2005: 51) has given a large extent place to the definitions about innovation and the types of innovation. In these definitions, four types of innovation are discussed. These are product innovation, process innovation, marketing innovation and organizational innovation.

Product innovations include both presentation of new products and services to market, and major improvements in the functional or user characteristics of existing goods and services (Oslo guide, 2005: 52). Process innovation includes major changes in methods, equipments and/or software. A new type of production method can be an example for process innovation. Marketing innovations, to increase the company’s sales, aim to respond the customers’ needs more successful way, open new markets or locate a company’s product in market in a new way. The new sales techniques, new financial methods (venture capital) can be seen as marketing innovations. Organizational innovation can be defined as implementing a new organizational method in commercial practices, workplace organization or external relations for a company (Antonioli, et al., 2004: 19). Organizational innovations in commercial practices, involve the realization of new methods of organizing routines and procedures for conducting the work.

### 2.3. *Organizational strategy*

Strategy is the outcome of decisions made to guide an organization with respect to environment, structure and processes that influence its organizational performance. There are several typologies. According to Zahra and Pearce (1990) and Smith et al. (1989), the most popular typology is Miles and Snow’s. Miles and Snow’s typology consists of four types of business strategy defined as prospector, defender, analyzer and reactor (Croteau and Bergeron, 2001: 78-79). If management does not select one of these strategies, then the organization will be slow to respond to opportunities and probably show an ineffective performance in its sector (Hambrick, 1983: 8).

Organizations supporting the prospector strategy wish to have access to the largest possible market. They are characterized by their repeated efforts to innovate and bring changes in their industry. Organizations favoring the defender strategy have a restricted market and stress production efficiency. They emphasize the excellence of their products, the quality of their services and their lower prices. Organizations implementing the analyzer strategy share both prospector and defender characteristics, but in moderation. They seek to be first to introduce some new products, but are satisfied to remain in second place with certain products that offer a good quality/price ratio. Finally, organizations supporting the reactor strategy ignore new opportunities, and cannot maintain markets already acquired or take true risks (Croteau and Bergeron, 2001: 78-79).

### 2.4. *Firm performance*

Firm performance can be measured in a variety of ways, including financial performance (e.g., profitability, return on investment), product performance (e.g., product reliability, number of unique product features), and market performance (e.g., market share, customer satisfaction) (Jones, Lanctot and Teegen, 2000: 263).

For business firms, two groups of measures may serve as a basis for performance assessment. They are growth measures such as sales growth, and profit measures such as return on assets (ROA) and return on sales (ROS). The former is indicative of how effectively a firm can open up new markets or expand in existing markets. The latter shows the efficiency of its operation (Li and Ye, 1999: 45).

Some empirical evidence suggests that in certain cases both internal and external technology acquisition should lead to improved firm performance, along several performance measures. Zahra (1996) studied the relationship between firm financial performance and technology strategy and found that while external technology sourcing is often beneficial, its effect on firm financial performance was moderated by the firm’s operating environment and was negatively associated with financial performance in stable and homogeneous environments (Jones, Lanctot and Teegen, 2000: 263).

The organizational literature (e.g. Miles and Snow) suggests that improved business performance requires an organizational structure, information systems and management style that are related to a specific-firm strategy (Miles and Snow, 1994).

Despite the difficulties in explaining the contribution of information technology to firm performance, a few studies have concluded on the importance of the alignment among business strategy, information technology, and firm performance. In a study on firm performance, Bergeron and Raymond (1995) used both an objective (return on assets) and a subjective measurement (instrument of Venkatraman, 1989b); in each case, the results obtained were comparable and significant (Croteau and Bergeron, 2001: 81).

A strategic plan must specify goals, strategic objectives and actions and the final performance measures by which management and the stockholders will gauge success. Top management's performance can usually be measured in terms of sales volume, market share, cash flow, profit, ROI, dividends and market value (Donovan, 2009: 1).

### 3. Methodology

#### 3.1. Research Goal

In this survey, we aim to identify the effects of intellectual capital, innovation and organizational strategy on firm performance. For this study a field survey using questionnaires were conducted. Insurance companies operating in Antalya were chosen as the research population. Data obtained from these questionnaires were analyzed and three hypotheses were tested by correlation and regression analyses.

*Hypothesis 1: Intellectual capital has a positive effect on firm performance.*

*Hypothesis 2: Innovation has a positive effect on firm performance.*

*Hypothesis 3: Organizational strategy has a positive effect on firm performance.*

#### 3.2. Sample and Data Collection

In this study, a field survey using questionnaires were conducted for analysis. Firms operating in insurance companies sectors in Antalya were chosen as the research population. Randomly selected 186 insurance companies were taken as the sample of the research. The number of insurance companies registered to Antalya Chamber of Commerce and Industry is 435 (population) in Antalya 2013. Analysis has been carried out using data which were obtained from the insurance firms in Antalya by using a questionnaire form. The respondents were chosen from the middle and senior managers of firms. Questionnaires were subjected to respondents by interviewing face to face. Data obtained from those 186 questionnaires were analyzed through the SPSS 20.0 statistical program.

The question items were developed after a thorough review of literature related on intellectual capital and performance such as Atieno (2009), Man and Wafa (2008), Boudreau and Ramstad, (1997), Marr and Neely (2001). In this study the scales for business strategies (Croteau ve Bergeron, 2001) were used. As creating a set of questions used in the form of the questionnaires, the scales for innovation (Akman and Yıldız, 2008) were used.

#### 3.3. Analyses and Results

First the *Descriptive Statistics* test was applied in order to obtain descriptive information about insurance companies. The values obtained from the test are given in Table 1.

Table 1. Descriptive Statistics for Insurance Companies

Size of Firms	1-5 employees 119 (64%)	6-10 employees 61 (32.8%)	11-15 employees 6 (3.2%)	
Education Level	High School 42 (22.6%)	Undergraduate 32 (17.2%)	Graduate 102 (54.8%)	Post Graduate 10 (5.4%)
Working Time for Manager	1-5 years 99 (53.2%)	6-10 63 (33.9%)	11-15 20 (10.8%)	+16 4 (2.2%)
Working Time in Sector for Firms	1-5 years 65 (34.9%)	6-10 73 (39.2%)	11-15 33 (17.7%)	16-20 15 (8.1%)
Status for Manager	Manager 39 (21.0%)	Assist. Director 41 (22%)	Firms Owner 24 (12.9%)	Technical Staff 82 (44.1%)
Gender	Male 112 (60.2%)	Female 74 (39.8%)		

Cronbach's alpha is .812 and Cronbach's alpha based on standardized items is .836 for reliability statistics. The reliability coefficients for variables are given in Table 2.

Table 2. Reliability Analysis

<i>Variables</i>	<i># of Items</i>	<i>Cronbach's Alpha</i>
Intellectual capital	6	0.852
Innovation	5	0.865
Organizational Strategy	4	0.822
Firm performance	5	0.823

Alpha coefficients obtained were accepted because they were higher than 0.50, as defined by Bagozzi and Yi (1988), and 0.70 as defined by Nunnally (1978), respectively.

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.715 and Sig. is 0.000. KMO value is greater than 0.50. Therefore data set is suitable for factor analysis. The cumulative percent in rotation sums of squared loadings is 61.051. This result shows that four factors resulted in factor analysis explained 61.051 % of the total variance.

Table 3. Rotated Component Matrix

<i>Factors</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
	0.708			
	0.688			
Intellectual capital	0.664			
	0.645			
	0.634			
	0.595			
		0.778		
		0.762		
Innovation		0.756		
		0.736		
		0.719		
			0.690	
			0.660	
Organizational strategy			0.650	
			0.636	
				0.808
				0.796
Firm performance				0.787
				0.757
				0.712

The Pearson correlation was used to examine the relations between the variables. The results show that all the variables correlate with the firm performance (Table 4).

Table 4. Pearson Correlation Results

<i>Variables</i>		<i>IC</i>	<i>IN</i>	<i>ST</i>	<i>FP</i>
Intellectual capital (IC)	Pearson Correlation	1	0.292**	0.273**	0.222**
	Sig. (2- tailed)		0.000	0.000	0.002
	N	186	186	186	186
Innovation (IN)	Pearson Correlation	0.292**	1	0.561**	0.221**
	Sig. (2- tailed)	0.000		0.000	0.002
	N	186	186	186	186
Organizational Strategy (OS)	Pearson Correlation	0.273**	0.561**	1	0.101**
	Sig. (2- tailed)	0.000	0.000		0.002
	N	186	186	186	186
Firm performance (FP)	Pearson Correlation	0.222**	0.221**	0.101**	1
	Sig. (2- tailed)	0.002	0.002	0.002	
	N	186	186	186	186

*Pearson Correlation and Significance*

\*\* Correlation is significant at the 0.01 level (2-tailed)

\*Correlation is significant at the 0.05 level (2-tailed)

Regression analysis was used to determine the direction and strength of the relationships between intellectual capital, innovation, strategy and firm performance (Table 5).

Table 5. Regression Results for Firm Performance

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
Contant	6.807	2.098		3.244	0.001
Intellectual capital (IC)	0.226	0.052	0.218	4.354	0.000
Innovation (IN)	0.192	0.048	0.196	2.923	0.025
Organizational Strategy (OS)	0.465	0.074	0.283	6.275	0.000

$R^2 = 0.419$   
 $F = 53.506$   
 Dependent Variable is "Firm Performance"

Hypothesis proposed in the model were tested by using multiple linear regression analysis. As a result of findings, the equation considered as a mathematical model is given numerically.

$$FP = 6.807 + 0.226*IC + 0.192*IN + 0.465*OS$$

The results of multiple linear regression analyses belonging to performance, human capital, social capital and financial capital were shown schematically in a collective manner in Figure 1 below. The relationships accepted were shown by arrows with thick lines.

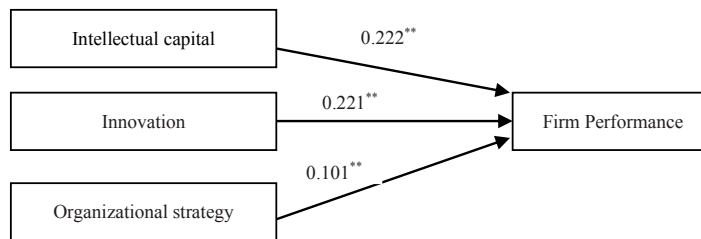


Figure 1. Conceptual Model Linking Intellectual Capital, Innovation, Organization Strategy and Performance

#### 4. Conclusion

This study explored the literature on intellectual capital, innovation, organizational strategy and their effect on firm performance. According to Veltri (2010); the main aim of the paper is to supply a state-of-the-art of the empirical evidence of relationships between intellectual capital (IC) and firm performance by systematizing the existing researches on such relationship. The main existing research on the relationship between intellectual capital (IC) and firm performance will be shown, in order to highlight the main results achieved by researchers.

Chen et al (2005) according to the results of their research support the hypothesis that firms' intellectual capital has a positive impact on market value and financial performance, and may be an indicator for future financial performance. In addition, the authors found investors may place different value on the three components of value creation efficiency (physical capital, human capital, and structural capital). Finally, evidence is presented that R&D expenditure may capture additional information on structural capital and has a positive effect on firm value and profitability.

Wang and Chang (2005) according to the results show that intellectual capital elements directly affect business performance, with the exception of human capital. Human capital indirectly affects performance through the other three elements: innovation capital, process capital, and customer capital. 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. The cause-effect relationship between leading elements and lagged elements provides implications for the management of firms in the IT industry.

Bontis and friends (2000) of the study is to investigate the three elements of intellectual capital, i.e. human capital, structural capital, and customer capital, and their inter-relationships within two industry sectors in Malaysia. In addition, the results of the research Ahmad and Mushraf (2011) revealed that value added intellectual capital and its components have a significant positive relationship with companies' profitability.

Table 1 demonstrates the descriptive and statistical information of the respondents. Most of the respondents are in the graduated level (54.8 %). Males dominate (60.2 %) and size of the firms has 1-5 employees (64 %).

Within the literature review it was determined that intellectual capital, innovation and organizational strategy have a positive effect on firm performance.

The results regarding the hypotheses are shown in Table 6. Totally 3 hypotheses are ranked in this Table. With regard to the results; Beta coefficients ( $\beta$ ), Significance ( $\rho$ ) and Accepted/Rejected (A/R) status are also given in Table 6. According to these results; 3 hypotheses was accepted at significance level of 0.01 and 0.05 level.

Table 6. The Results Belonging to Hypotheses

Hypotheses	$\beta$	Sig. ( $\rho$ )	A/R
Intellectual capital has a positive effect on firm performance.	0.226	0.000	A
Innovation has a positive effect on firm performance.	0.192	0.025	A
Organizational Strategy has a positive effect on firm performance.	0.465	0.000	A

The empirical findings of this research show that there are positive relationships between intellectual capital, innovation and organizational strategy and firm performance.

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