

# **The Impact of Intellectual Capital on Shareholders' Wealth in Emerging Markets: Evidence from EGX**

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## **Abstract:**

Since the third industrial revolution, there have been changes in the sources of value creation for both companies and shareholders, which led to changes in the characteristics of the business environment not at the local level but also at the international level, which included emerging markets. Changes in the business environment have become faster with the Fourth Industrial Revolution. The study proposes an intellectual capital (IC) framework for shareholders' wealth maximization in emerging markets. It measured intellectual capital, within five control variables. Those variables are corporate financial leverage, size, industry and dividend policy. But Shareholders' wealth (dependent variable) was measured according to the modified value added intellectual capital (MVAIC) model. The study found contribution of IC to shareholders' wealth maximization according to value creation, taking into account the characteristics of the

corporation. Based on inferential analysis, this explains the change in shareholders' wealth at the Egyptian corporation. Human capital efficiency (HCE), structural capital efficiency (SCE), capital employed efficiency (CEE) under financial leverage (FL) and corporate size (CZ), affected (97.9%) of value creation for shareholders in Egyptian exchange. Thus, this study extends the IC concept to cost, growth, risk and profitability for corporation in emerging markets.

**Keywords:**

Intellectual Capital; Shareholders' Wealth; Value Added; Emerging Markets; Egypt

**JEL Classification:** G32, O30, O34, H25

**1. Introduction:**

Since the third industrial revolution, there have been changes in the sources of value creation for both companies and shareholders, which led to changes in the characteristics of the business environment not at the local level but also at the international level, which included emerging markets. Changes in the business environment have become faster with the Fourth Industrial Revolution. The Internet of Things (IoT) and its accompanying technologies are employed as promoters to improve production chains in the fourth industrial revolution, which promotes developments in science and technology (Xu et al., 2018). Thus, the importance of intangible capital as a source of value creation for shareholders has increased.

Intellectual capital (IC) is usually presented as non-monetary resources, or intangible assets. It can be shown in several examples, such as, new ideas, research and development (R&D), employee training, know-how, and customer satisfaction (MERITUM, 2002; Firer and Williams, 2003; Lev and Zambon, 2003). IC represents a corporate strength that can guarantee the development and maintenance of competitive advantage and achieving corporate objectives (Guthrie and Petty, 2000). This strength has boosted the value of IC information. As the economy has changed from industrial manufacturing based on tangible assets to knowledge economy based on skills and intangible assets such as IC (Moore and Craig, 2008), business should acquire more skills (e.g. management of intangibles, innovation, intellectual property, etc.). These skills were overlooked in traditional economy. (Al-Ali, 2003).

IC considered a new concept to overcome the deficiency of tradition administrations, to adapt to new situations and get additional aspects of competition. IC with its components: the information, experience and skills offer advantage in competition and support the values existing within the structure of any firm. Although some research studies on IC have been conducted, to date no research has been carried out on the effects IC on Shareholders' Wealth. For that, IC and its effects on Shareholders' Wealth were discussed in this study.

## **2. Literature review and theoretical framework:**

### **2.1 Intellectual capital:**

IC is considered a generator of wealth and a driver of financial performance in an era where companies have a great social responsibility (CSR), which they are committed to bear in order to achieve competitive advantage and sustainability (Xu & Wang, 2018). Since the end of the last century and the beginning of this century, the business landscape has changed dramatically as a result of entering what is known as the world of knowledge or the era of the Fourth Industrial Revolution, where economic resources of capital, natural resources, or labor are no longer the basic resources, but knowledge and will remain knowledge.

The twenty-first century is the century of the knowledge economy where large sums of money are directed to investments in information, information technology, Internet, e-commerce, software, trademarks, patents, rights, research and innovation, globalization, and global research. All of this represents cognitive, intellectual and intangible assets (Striukova et al., 2008; Dimitris et al., 2009). Technological developments are coupled with rapid markets, continuous, and up-to-date information. All this requires knowledge-based skills that need to be measured, improved and developed (Ricceri, 2008; Firer and Stainbank, 2003). All of this had a significant impact on

intellectual capital, its components, and its importance in business organizations.

On other hand; According to Tsai et al, (2019), Political social networks boost corporate innovation. Political ties and innovation are linked via government subsidies and intellectual resources. It assists businesses get government subsidies and intellectual capital, which boosts innovation.

### **2.1.1 Concept of Intellectual Capital:**

The concept of IC is one of the concepts that received wide attention at the beginning of this century, as it is one of the tools of excellence and success of business corporations in various fields. Given the importance of IC concept, its definitions have varied as a result of several reasons including: the relative modernity of the concept, the diversity of researchers' areas of interest in their studies of intellectual capital. Some of them dealt with it as knowledge management and an added value to the business organization. Others were interested in it in terms of its components, methods and methods of measuring it, how to use it and maximizing its value (Marr & Moustaghfir, 2005). Also, among the reasons of differences in defining IC is the difference of scientific branches that dealt with the concept. some of them belong to management, or accounting, or economics.

In literature, researchers differentiate between the concept or the definition of this term and its main fields or components. This is

what the researcher clarifies through the following two sections. Although the field of study in IC, also known as intangible assets, or other names that will be discussed in the next section, started and continued since the early nineties (Marr, B. & Chatzkel, 2004). However, so far, the research literature in this field has not reached a unified term used to define IC, classify it and define its components clearly (Choong, 2008). The definitions of IC can be divided into three groups: The first group focuses on the human element. The second group focuses on intangible assets. As for the third group, the two sides are combined, the human element and the intangible assets (Petty & Guthrie, 2000).

#### **2.1.1.1 The first group: Focus on the human element:**

Youndt et al. (1996, P. 838) defines IC as “the distinct capabilities enjoyed by a limited number of individuals working in the organization that enable them to make intellectual contributions that help the organization in increasing its production and achieving high performance levels, compared to similar organizations”. Similarly, Stewart (1997, p.24) defines IC as the knowledge, information, intellectual property rights and expertise that can be employed and used to produce wealth and strengthen the competitiveness of the organization.

### **2.1.1.2 The second group: Focus on intangible assets:**

Hansen (1999, p. 110) defines IC as an intangible competitive asset that can be used as a strategic competitive advantage through innovation and creativity, and is a mean for building an corporation and its continuity in a rapidly changing business. Also, Mar (2008, p.2) defines IC as a group of intangible materials that distinguish the corporation from other corporation and help the corporation in achieving added value.

### **2.1.1.3 The third group: Integration between the human element and the intangible assets:**

The Organization for Economic Co-operation and Development (OECD, 2000) defines IC as the economic value of two types of intangible assets in the corporation: financial structure, which includes corporation processes, procedures, technology, intellectual property, distribution networks, and human capital, as well as customers and suppliers. This also includes experiences, knowledge and innovations.

All of the above can be summarized as: IC is everything that contributes to creating value for the corporation other than its financial capital and its physical capital, and it has a future benefit as a result of the accumulation of knowledge in its human resources, good relations with its customers, or promising operations and strategies in its financial structure.

### 2.1.2 IC classifications:

Brooking (1996) argued that IC can be divided into four components (intellectual, human, infrastructural, and market capitals). where Market capital reflects the brand, its positioning, and distribution. It represents the company's power in the market. Human capital represents problem-solving capacity, creativity, and leadership skills that employees have. IC can be presented in intangible resources like (patents, copyright, and trademarks) that company usually protect through legal processes. Finally, infrastructural capital is the managerial philosophy and culture inside the company.

Edvinsson & Malone (1997) introduced a model for IC, but it was faced with criticism as it lacked a number of factors (Kianto et al., 2014). It divided IC into two sectors: Structural capital, and human capital.

Several researches argue that human capital ("HC") is the most important IC. However, if employees leave, the company can lose its human capital (Bontis et al., 1999). The case is different with structural capital ("SC"), and relational Capital ("RC") as they belong to the company.

Some researches summarized IC into customer capital, structural, and human capital (Stewart, 1997; Bontis et al., 2000). While McElroy (2002) replaced customer capital with social capital.

Burr and Girardi (2002) agreed with Edvinsson & Malone (1997) in the two-classification model. But they added that IC is affected by the interaction between capacity (knowledge, skills, experiences, information), willingness (employees' willingness to apply what they know), and opportunities (the circumstances available for employees to apply what they know).

Khalique et al., (2011, 2015) considered six kinds of IC: human, structural, social, technological spiritual, and customer capital. But Aisenberg Ferenhof et al. (2015) proposed an IC model showing the main IC dimensions and sub-dimensions. The main dimensions are Human Capital (HC), Structural Capital (SC), Relational Capital (RC), and social capital. Each dimension covers a group of sub-dimensions. HC covers knowledge, motivational aspects, attitudes and agility, interpersonal relationships skills. SC covers organizational capital, innovation capital, process capital, and technological capital. RC covers business capital, and customer capital. While, Social capital covers social actions and interactions.

A broader classification was introduced by Alkhateeb et al. (2018) which included a) Human capital (HC), b) Structural capital (SC), c) Relational capital (RC), d) Social capital (SOC), e) Technological capital (TC), f) Spiritual capital (SPC), g) Renewal capital (RNC), h) Trust capital (TRC), and, i) Entrepreneurial capital (ENC).

- a) Human capital: The knowledge and skills that an employee obtained. It increases his contribution value to the organization (Fernandez, Castilla and Moore, 2000).
- b) Structural capital: according to Bonits (1999) structural capital are the non-human knowledge in organizations, represented in databases, strategies, organizational charts, process manual, routines, etc.
- c) Relational capital: Relationship with staff, customers, suppliers, industry associations, stakeholders, management, shareholders, public institutions (Bueno et al., 2004).
- d) Social Capital: relationships within the organization and with external entities that helps in riveting knowledge and gaining access to resources (Nahapiet & Ghoshal, 1998). The organization can accumulate this resource by a stable network of intra organizational relationships (Bourdieu and Wacquant, 1992). Inkinen (2016) explains that relational capital can be split into internal dimension related to the value embedded within the organization, and external dimension related to the relationships with different stakeholders.
- e) Technological capital: Knowledge associated with innovation in production techniques, products technology (Fernandez et al., 2000).

- f) Spiritual capital: Intangible knowledge, employees' faith and emotions guided by vision, direction, principles, values and culture. (Ismail, 2005).
- g) Renewal capital: how can the organization, through learning and creativity, renew its products, services, processes, strategies, management activities.
- h) Trust capital: Attribute of trust from different stakeholders (Mayer et al, 1995).
- i) Entrepreneurial capital: The independent people who are ready to take decisions and can calculate the risks. (Hughes & Morgan, 2007; Cesaroni, Del Baldo, Demartini, & Paoloni, 2015).

Even though the debate on the essential components of IC is still ongoing, most researches (Sullivan, 1999; Brennan and Connell, 2000; Roos et al., 2001; Kaufmann and Schneider, 2004; Musteen and Ahsan, 2013; Dhar, 2019) share the idea that IC main components are: human, relational, and structural capital.

### **2.1.3 Models for measuring IC:**

After reviewing the literature addressing IC, the study can summarize the models that dealt with IC and shareholders' wealth through Table No (1)

**Table (1): measuring IC**

Model Name	Study/ Studies
<b>Tobin's q Model</b>	<b>Tobin, 1969</b>
<i>Economic Value Added</i>	<b>Chen and Dodd, 1997; Mouritsen, 1998</b>
<i>Calculated Intangible Value CIV</i>	<i>Stewart, 1997; Luthy, 1998</i>
<i>Knowledge Capital Earnings KCE</i>	<b>Lev and Mintz, 1999</b>
<i>Market to Book Value Ratio</i>	<b>Stewart, 1997</b>
<i>The Invisible Balance Sheet</i>	<b>Sveiby, 1990</b>
<i>Citation Weighted patents</i>	<b>Trajtenberg, 1990</b>
<i>Balanced Scorecard</i>	<b>Kaplan and Norton, 1992</b>
<i>Technology broker</i>	<b>Brooking, 1996</b>
<i>Skandia Navigator</i>	<b>Edvinson and Malone, 1997</b>
<i>Holistic Accounts</i>	<b>Ross et al., 1997</b>
<i>IC-Index</i>	<b>Roos, Roos, Edvinsson, and Dragonetti, 1997</b>
<i>Intangible Asset Monitor</i>	<b>Sveiby, 1997</b>
<i>Value Added Intellectual Capital Coeff. VAICC</i>	<b>Pubic, 2000</b>
<i>Intellectual Asset Valuation</i>	<b>Sullivan, 2000</b>
<i>Total Value Creation</i>	<b>Anderson and Mclean, 2000</b>
<i>Value Creation Index VCI</i>	<b>Baum, 2000</b>
<i>Danish guidelines</i>	<b>Bukh, Larsen, &amp; Mouritsen, 2001</b>
<i>Inclusive Valuation Methodology IVM</i>	<b>McPherson, 2001</b>
<i>Value Chain Scoreboard</i>	<b>Lev, 2001</b>
<i>Financial Method of Intangible Assets Measurement FiMIAM</i>	<b>Rodov and Leliaert, 2002</b>
<i>Human resource costing and accounting HRCA</i>	<b>Flamholtz, Bullen, and Wei, 2002</b>
<i>Meritum Guidelines</i>	<b>Meritum, 2002</b>
<i>Knowledge Asset Map</i>	<b>Marr, B., Schiuma, G., and Neely, A. 2004</b>
<i>National intellectual capital index</i>	<b>Bontis, 2004</b>
<i>IC Rating</i>	<b>Jacobsen et al., 2005</b>
<i>IC-DVAL</i>	<b>Bounfour and Edvinsson, 2005</b>
<i>The Value Explorer</i>	<b>Andriesson, 2005</b>

The study observed that in the previous models IC components interacts with each other's. They also interact with

other factors like financial capital and physical capital in order to maximize utility. Unfortunately these models don't use clear data and information from financial statements. In addition, they don't put in consideration the dynamic nature of human capital (knowledge, skills, networks, relationship with the organization) which the corporation uses to create value. That agrees with Demartini, and Trucco (2016).

### **3. Study Design**

The study measured IC (independent variable) based on FINANCAIL REP. Shareholders' wealth (dependent variable) was measured according to the modified value added intellectual capital (MVAIC) model.

#### **3.1 Proposal of conceptual Intellectual capital (independent variable) within Shareholders' wealth (dependent variable)**

According to Burksaitiene (2009); the corporate can create a value, it has to do through four mechanisms; (1) boost the cash flows by assets under corporate's hold, (2) accelerate the pace of predicted profit growth, (3) lengthen the time of corporate's growth with high rate, and (4) reduce the weighted average cost of capital. The study believes that IC achieves this, but with a different framework.

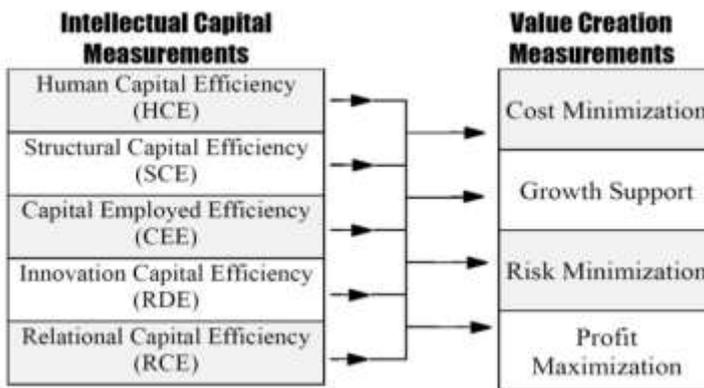
The current study presents a proposed framework for analyzing the role of IC in maximizing the shareholders' wealth. In international markets test that, but there were no appropriate tests in

emerging markets. The current study argues in four pillars of value creation through IC, which are: (1) cost minimization, (2) growth support, (3) risk minimization, and (4) profit maximization. On the other hand, there are five measurements for estimating IC according to Chang (2007) and Ulum (2014). So, the study can express this through function no. (1).

$$\text{Value Creation} = \int \text{Human Capital Efficiency (HCE)} + \text{Structural Capital Efficiency (SCE)} + \text{Capital Employed Efficiency (CEE)} + \text{Innovation Capital Efficiency (RDE)} + \text{Relational Capital Efficiency (RCE)}$$

Function No.1

It is not possible to classify which part of IC is the cause of value creation for any of the four indicators, there is a dynamic relationship between the five components of IC and value creation.



**Figure no. 1: relationship between the five components of intellectual capital and value creation.**

### 2.1.3.1 The Value Added Intellectual Capital (VAIC) Model:

The Value Added Intellectual Capital model was created by (pubic,2000) to overcome these weak points (Clarke et al. 2011). It uses clear data and information available in the financial reports (Ulum, 2014). The Value Added Intellectual Capital model aims at measuring IC through three factors: human capital efficiency, capital employed efficiency, and structural capital efficiency (Ståhle el al., 2011; Xu and Wang, 2018).

VAIC relies on these equations:

$$\begin{aligned} \text{Value Added Intellectual Capital (VAIC)} = \\ \text{Intellectual Capital Efficiency (ICE)} + \text{Capital Employed} \\ \text{Efficiency (CEE)} \\ \text{Equation No.1} \end{aligned}$$

$$\begin{aligned} \text{Intellectual Capital Efficiency (ICE)} = \\ \text{Human Capital Efficiency (HCE)} + \text{Structural Capital} \\ \text{Efficiency (SCE)} \\ \text{Equation No.2} \end{aligned}$$

$$\begin{aligned} \text{Human Capital Efficiency (HCE)} = \text{Value Added (VA)} / \\ \text{Human Capital (HC)} \\ \text{Equation No.3} \end{aligned}$$

$$\text{Structural Capital Efficiency (SCE)} = \frac{\text{Structural Capital (SC)}}{\text{Value Added (VA)}}$$

Equation No.4

$$\text{Capital Employed Efficiency (CEE)} = \frac{\text{Value Added (VA)}}{\text{Capital Employed (CE)}}$$

Equation No.5

Where:

- Value Added (VA) : Operating Profit (OP) + Employee Costs (EC) + Depreciation (D) + Amortization (A)
- Capital Employed (CE): Total Assets – Total Liabilities
- Human Capital (HC): Employee expenses. Human Capital (HC) is equivalent to Employee costs (HC = C)
- Structural Capital (SC): The difference between value added (VA) and human capital (HC)

The model was altered by (Chang, 2007) to include another factor which is Innovation Capital Efficiency (RDE);

Where:

$$\text{Innovation Capital Efficiency (RDE)} = \frac{\text{Research \& Development expenditure (R \& D)}}{\text{Book value of common stock}}$$

Equation No.6

The model has been used in several researches (e.g. Sardo, and Serrasqueiro, 2018; Smriti and Das, 2018). But although of

its advantage the model has a weak point. It relies on historical data in the financial reports which might not help in assessing whether the company can create a future value or not. (Chiu et al, 2011). In addition it didn't mention relational capital as part of the model. The model was altered by (Ulum, 2014) to overcome these weak points. And thus the researcher will rely on MVAIC Model in measuring IC.

### **2.1.3.2 The Modified Value Added Intellectual Capital (MVAIC) Model:**

Modified VAIC is a measure of IC based on VAIC™ model (Chang, 2007; Ulum, 2014). It has the same four factors:

$$\text{Human Capital Efficiency (HCE)} = \frac{\text{Value Added (VA)}}{\text{Human Capital (HC)}}$$

Equation No.7

$$\text{Structural Capital Efficiency (SCE)} = \frac{\text{Structural Capital (SC)}}{\text{Value Added (VA)}}$$

Equation No.8

$$\text{Capital Employed Efficiency (CEE)} = \frac{\text{Value Added (VA)}}{\text{Capital Employed (CE)}}$$

Equation No.9

$$\text{Innovation Capital Efficiency (RDE)} = \frac{(\text{R \& D}) \text{ expenditure}}{\text{Book value of common stock}}$$

Equation No.10

While in this MVAIC, Ulum (2015) adds another component of IC, i.e. relational capital efficiency (RCE). RCE illustrates the efficiency of investment in relational aspect, i.e. marketing costs.

$$\text{Relational Capital Efficiency (RCE)} = \frac{\text{Relational Capital (RC)}}{\text{Book value of common stock}}$$

Equation No.11

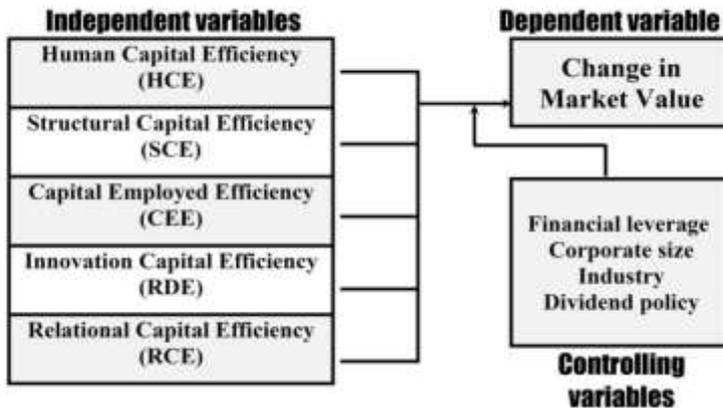
Thus, the final equation is:

$$\text{MVAIC} = (\text{HCE}) + (\text{SCE}) + (\text{CEE}) + (\text{RDE}) + (\text{RCE})$$

Equation No.12

## 2.2 Study variables:

Independent variables of study based on the MVAIC model (Chang, 2007; Ulum, 2014). It has five factors: human capital efficiency (HCE), structural capital efficiency (SCE), capital employed efficiency (CEE), innovation capital efficiency (RDE), and relational capital efficiency (RCE). But the dependent variable was the shareholder's wealth based on the change in market value as measured to value creation according to current return and capital return. Study variables are represented in Figure no. (2):



**Figure 2: Study Variables**

Figure no. (2) classifies three groups of study variables. The control variables are the variables that may change the relationships between the independent variables - IC - and the dependent variable - the change in market value -. The current study includes four control variables. Controlling variables was financial leverage (FL), corporate size (CZ), industry (I), and dividend policy (DP) (Fama and French, 2015; Wagdi et al., 2021).

### **3. Sample and data analysis**

#### **3.1 Study sample**

The study sampled 24 corporates listed on the Egyptian Stock Exchange during the period 2014 to 2021, see in table no. (2).

**Table (2): Study sample**

Corporates Name	Reuters	ISIN Code	Listing Date
Acrow Misr	ACRO.CA	EGS3E071C013	15/09/1982
Alexandria Pharmaceuticals	AXPH.CA	EGS38341C011	27/02/1995
Arab Pharmaceuticals	ADCI.CA	EGS38321C013	06/02/1996
Cairo Oils & Soap	COSG.CA	EGS30581C010	05/05/1999
Cairo Pharmaceuticals	CPCI.CA	EGS38391C016	09/04/1996
Cairo Poultry	POUL.CA	EGS02051C018	05/11/1995
Delta Sugar	SUGR.CA	EGS30201C015	07/04/1992
Eastern Company	EAST.CA	EGS37091C013	27/09/1995
Egyptian International Pharmaceuticals (EIPICO)	PHAR.CA	EGS38081C013	27/09/1995
El Ezz Porcelain (Gemma)	ECAP.CA	EGS3C071C015	09/12/1998
Electro Cable Egypt	ELEC.CA	EGS3G231C011	30/03/1995
El-Nile Co. For Pharmaceuticals And Chemical Industries	NIPH.CA	EGS38331C012	27/02/1995
Elswedey Electric	SWDY.CA	EGS3G0Z1C014	18/05/2006
Ezz Steel	ESRS.CA	EGS3C251C013	25/05/1999
Glaxo Smith Kline	BIOC.CA	EGS38171C012	23/10/1985
Ismailia Misr Poultry	ISMA.CA	EGS02021C011	07/06/1995
Lecico Egypt	LCSW.CA	EGS3C161C014	07/04/1992
Memphis Pharmaceuticals	MPCI.CA	EGS38351C010	27/09/1995
Minapharm Pharmaceuticals	MIPH.CA	EGS380G1C011	11/01/2004
Misr Cement (Qena)	MCQE.CA	EGS3C391C017	24/05/2000
October Pharma	OCPH.CA	EGS380R1C018	23/02/2005
Rubex International for Plastic and Acrylic Manufacturing	RUBX.CA	EGS3A221C018	01/04/1997
Sinai Cement	SCEM.CA	EGS3C401C014	03/07/2000
Telecom Egypt	ETEL.CA	EGS48031C016	29/12/1999

### 3.2 Data Analysis

After winsorization and stationary of data and removed the outliers using winsorization at 1% for the continuous variables. , The study used a panel data analysis within 24 cross-sectional units for the period 2014 to 2021 based on Weights based on per-unit error variances.

**Table (3): The first round of inferential analysis**

Model 1: WLS, using 192 observations

Included 24 cross-sectional units

Dependent variable: CV

Weights based on per-unit error variances

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
Const.	-38.3979	1.68525	-22.78	<0.0001	***
HCE	5.40874	1.61059	3.358	0.0010	***
SCE	10.5014	2.25759	4.652	<0.0001	***
CEE	8.37501	1.23968	6.756	<0.0001	***
RDE	0.315903	0.585180	0.5398	0.5900	
RCE	1.01226	0.689163	1.469	0.1436	
FL	4.90076	0.0936849	52.31	<0.0001	***
CS	0.155489	0.0122805	12.66	<0.0001	***
I	-0.0143136	0.187547	-0.07632	0.9392	
DP	-0.761528	0.577028	-1.320	0.1886	
Statistics based on the weighted data					
Sum squared resid	105.2791	S.E. of regression		0.760563	
R-squared	0.978345	Adjusted R-squared		0.977275	
F(9, 182)	913.6339	P-value(F)		2.1e-146	
Log-likelihood	-214.7516	Akaike criterion		449.5033	
Schwarz criterion	482.0783	Hannan-Quinn		462.6964	
Statistics based on the original data					
Mean dependent var	10.13983	S.D. dependent var		7.418019	
Sum squared resid	2165.528	S.E. of regression		3.449421	

**Source: Gnu Regression, Econometrics and Time-series Library**

The statistical results showed in table No.3 that there was an impact of three components of the corporation's IC under two of the controlling variables on value creation, and this was significant at the 0.01 level. But both innovation capital efficiency (RDE), relational capital efficiency (RCE), industry

(I), and dividend policy (DP) don't have a significant impact on value creation. Therefore, the study tends to conduct a second round of inferential analysis, with the deletion of insignificant variables.

**Table No.4 : The second round of inferential analysis**

Model 2: WLS, using 192 observations

Included 24 cross-sectional units

Dependent variable: CV

Weights based on per-unit error variances

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
Const.	-37.0796	0.659042	-56.26	<0.0001	***
HCE	4.84258	1.56926	3.086	0.0023	***
SCE	10.7776	2.44047	4.416	<0.0001	***
CEE	8.35048	1.30314	6.408	<0.0001	***
FL	4.93516	0.0601203	82.09	<0.0001	***
CS	0.158482	0.0116425	13.61	<0.0001	***
Statistics based on the weighted data					
Sum squared resid	106.2016	S.E. of regression		0.755630	
R-squared	0.980029	Adjusted R-squared		0.979492	
F(5, 186)	1825.508	P-value(F)		5.8e-156	
Log-likelihood	-215.5892	Akaike criterion		443.1783	
Schwarz criterion	462.7233	Hannan-Quinn		451.0942	
Statistics based on the original data					
Mean dependent var	10.13983	S.D. dependent var		7.418019	
Sum squared resid	2199.155	S.E. of regression		3.438519	

**Source: Gnu Regression, Econometrics and Time-series Library**

The statistical results showed in table No.4 that there was an impact of three components of the corporation's IC under two of the controlling variables on value creation, and this was significant at the 0.01 level. Human capital efficiency (HCE),

structural capital efficiency (SCE), capital employed efficiency (CEE) under financial leverage (FL) and corporate size (CZ), affected (97.9%) of value creation for shareholders.

#### **4. Conclusions: Discussion and Recommendations**

Today, knowledge, rather than physical assets, promotes innovation, revenue and profit growth, and fosters competitive advantages for corporations in the knowledge economy (Seetharaman et al, 2002). In other words, the values of IC exist in the relationship between the corporation and the environment and with their staff (Özer et al., 2015). According to inferential analysis under a panel data analysis within 24 cross-sectional units for the period 2014 to 2021 in Egyptian exchange based on Weights based on per-unit error variances, there was an impact of three components of the corporation's IC under two of the controlling variables on value creation, and this was significant at the 0.01 level. Human capital efficiency (HCE), structural capital efficiency (SCE), capital employed efficiency (CEE) under financial leverage (FL) and corporate size (CZ), affected (97.9%) of value creation for shareholders.

These results assert what have been settled now that, knowledge, rather than physical assets, promotes innovation, revenue and profit growth, and fosters competitive advantages for corporations in the knowledge economy (Seetharaman et al, 2002). In other words, the values of IC exist in the relationship

between the corporation and the environment and with their staff. (Özer et al., 2015)

The results of the current study as all agree with both Tunc Bozbura (2004) when test IC in Turkey and Swartz et al., (2006) when test IC in South African.

The results of the study explain that IC and its components affected positively on Shareholders' wealth of firms. This result matches with the conclusion of Özer, G., Ergun, E., & Yilmaz, O. (2015) which argued that the effect of IC is more dominant in qualitative performance.

Although most of the components of IC are accepted as value creators in the Egyptian Exchange, the refusal to include both innovation capital efficiency (RDE), and relational capital efficiency (RCE) back to the characteristics of Egyptian corporates and the characteristics of the Egyptian business environment, the study believes that these results may differ in other emerging markets. Therefore, the study recommends re-testing the relationships presented by the study variables using other emerging equity markets. On the other hand, professional associations (such as ECMA - Egyptian Capital Market Association; and CFA Society Egypt) should support efforts to increase the knowledge of investors, especially individuals, about the role of IC in maximising wealth for stockholders. The study suggests that this be done through social marketing campaigns, in

addition to holding workshops and conferences. However, the regulatory and supervisory authorities (such as EGX- the Egyptian Exchange, and FRA-Financial Regulatory Authority) should develop the legislative framework so that disclosure of IC is an obligation and not an optional.

According to the results of the analysis of the sample data, there was no significance for both the industry and the policies of dividend distribution on value creation on the Egyptian Exchange. This can be justified, respectively, in light of the narrow sample range (24 corporates only) in addition to the short time series (8 years only). Therefore, the study recommends re-testing the relationships presented between the study variables with their three classifications through a comparative analysis that includes emerging equity markets instead of a longer time series.

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