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IMPACT OF INTELLECTUAL CAPITAL ON FIRM'S VALUE: THE MODERATING ROLE OF MANAGERIAL OWNERSHIP

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Abstract

Rapidly changing dynamics of globalization and increasing market competition are causing the companies all around the world, to confront several new challenges and opportunities. This study proposes to inspect the impact of intellectual capital on firm's value. Further, the moderating role of managerial ownership has been evaluated with the help of regression analysis. The sample included the panel data taken from non-financial firms, listed on PSX (Pakistan Stock Exchange) over the period 2010-2015. VAIC (Value Added Intellectual Coefficient) Model was used for the calculation of intellectual capital. Tobin's Q was taken as the measure of firm's value. It is concluded that the relationship between intellectual capital and firm value was positively significant. It is also concluded that managerial ownership moderated the relationship between predictor i.e. intellectual capital and outcome variable, i.e. firm's value, negatively.

Keywords: *Intellectual Capital, Firm Value, Managerial Ownership, Tobin's Q, and VAIC*

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1. Introduction

Rapidly changing dynamics of globalization and increasing market competition are causing the companies all around the world, to confront several new challenges and opportunities **(Bchini, 2015).** In order to be competitive and successful, apart from the relative importance of physical sources, companies have to adopt modern strategies and policies regarding market flexibility and development **(Hejazi et al. 2016).** In the current global economy, intangible assets contribute approximately 80% of companies' value, through human capital development **(Vodák, 2011).** Companies' ability to use information and knowledge has become the key factor of information economics in this modern world**(Noradiva et al. 2016).** In the era of globalization, investment in intellectual capital is inevitable due to its long-term return on investment and the study of this relationship is an important research domain, which can further highlight the dynamics of financial management. Nowadays, intellectual capital has become the imperative component of the firm's value. Intellectual capital is the intangible value for the firm, which is created through structural capital, customer capital and human capital. Nowadays companies focused on intellectual capital due to increasing investors' interest. Moreover, intellectual capital can contribute to firm's value through share price **(Feimianti** and **Anantadjaya, 2014),** profitability, return on investment and return on equity **(Emamgholipour et al. 2013).**

In financial management, dynamics of investment is one of the key factors for better financial results. Higher management is one of the strongest influences on investment. Managers made investment decisions always for better financial performance (profitability) and business value, but sometimes their investment decisions were designed to achieve their personal goals rather than shareholders' goals **(Noradiva et al., 2016).** Two opposing hypotheses are found in the literature, regarding different behavior patterns of managerial ownership, which are referred to as interest-alignment and entrenchment hypotheses. According to the interest-alignment hypothesis, the interest alignment issue between managers and shareholders decreased by increasing the managerial ownership while the opposite is the case in entrenchment hypothesis **(Chen** and **Chuang, 2009).** Therefore, this study has also investigated the moderating role of managerial ownership between the dependent and independent variables i.e. intellectual capital and firm value.

2. Review of Literature

2.1 Intellectual capital (IC)

Intellectual capital was first used by Tom Stewart in 1991 **(Kalkan et al. 2014)**. According to **Stewart (2010)**,intangible assets of the firm like the experience of employees, information, knowledge, intellectual material and intellectual property, which are used to generate wealth, are called intellectual capital. Human Capital, Structural Capital, Customer or External Capital are referred as the three basic components of intellectual capital **(Clarke et al. 2011; Kalkan et al., 2014; Nuryaman, 2015** and **Noradiva et al., 2016).** Companies nowadays are in a constant race for finding the knowledge employees with some specific abilities, which can be helpful for companies to attain their financial goals and creating firm value **(Jacobsen et al. 2005).** According to **Sveiby (1998)**, the capital, which provides infrastructure support for increasing employee performance, is referred to as Structural Capital. Customer Capital can be defined as the relationship of a firm with its stakeholders **(Jacobsen et al., 2005; Kalkan et al. 2014**

and **Nuryaman, 2015).** Customer capital helps firms to maintain good relationship with their customers, consumers, government, employees, creditors, suppliers, and other parties.

2.2 Intellectual Capital (IC) and Firm Value (FV)

Intellectual capital is recognized as a strategic asset for the sustainability of a firm in the age of high competition**(Chen et al. 2005). Mehralian et al. (2012)** found no statistically significant relationship between intellectual capital and firm value. **Shaban** and **Kavida (2013)** examined the relationship between intellectual capital and firm performance and they found no statistically significant relationship, except CEE, recording a positive relationship with the M/B ratio.

Iranmahd et al.(2014) concluded that neither intellectual capital (VAIC) nor its components have any statistically significant relationship with the firm value. **Nejati** and **Pirayesh (2015)** applied systematic removal method and concluded that there was significant relationship between applied capital, structural capital and human capital efficiency and the company's intellectual capital. **Li** and **Zhao (2018)** conducted a study on Chinese listed firms. According to **Bemby et al (2015)**, resource-based view is related to the management and utilization of a company's available strategic resources. Based on the resource-based view, intellectual capital should create value for the company. On the basis of literature reviewed, it is found that intellectual capital either has significant relationship with firm value **(Chen et al., 2005; Emamgholipour et al., 2013; Lotfi, Elkabbouri** and **Ifleh, 2016; Nejati** and **Pirayesh, 2015)** or no significant relationship at all. The mixed results motivated the Researcher to further test this phenomenon in Pakistani environment.

2.3 Role of Managerial Ownership (MO) in the relationship between intellectual capital and firm value

Brickley et al.(1988) stated that managerial ownership is the most effective part of corporate governance, which helps to resolve the conflict between managers and shareholders. Past studies have clearly demonstrated that a higher level of managerial ownership contributes towards a higher level of firm performance as well as firm value **(Sun, Ding, et al., 2016).** It is also found that managers, having higher level of ownership in the firms, tend to take such investment decisions which focus mainly on the long-term value of the business (**Mohd-Saleh et al. 2009)**. **Noradiva et al. (2016)** found no moderation while examining the moderating effect of managerial ownership on the relationship between IC and FV.The researchers stated that insignificant results are due to a higher level of managerial ownership, which leads towards entrenchment, instead of alignment. **Bemby et al. (2015)** concluded that managerial ownership negatively moderated the studied relationship. **Bohdanowicz (2014)** also concluded that managerial ownership was negatively associated with HCE (Human Capital Efficiency) and it was due to the entrenchment effect of insider ownership. **Florackis et al. (2009)** found association between managerial ownership and firm performance, at the level of 15 % or less. But no support was found in the case of holding more than 15%. According to agency theory, the conflict of interest between agents (managers) and principals (shareholders) can be mitigated with the help of managerial ownership **(Jensen** and **Meckling, 1976).** According to **Jensen** and **Ruback (1983**), the managers, in case of interest conflict, tend to utilize the available resources of the company to their benefits and ignore such investments which may increase shareholder return.

According to the agency theory, managerial ownership helps to reduce the agency problems arising from the interest alignment issues between managers and shareholders**(Jensen & Meckling, 1976).** Similar results were arrived from the studies conducted by **Sun et al. (2016).** The studies conducted by **Noradiva et al. (2016)** found non-significant moderation of managerial ownership between VAIC and firm value. This different behavior of MO supported either interest-alignment hypothesis or entrenchment hypothesis. However, the Researchers also employed the agency theory for the hypothesis development and developed the following hypothesis regarding the moderation effect of MO between intellectual capital and FV as well as FP.

3. Statement of the Problem

In literature, both significant and insignificant relationships were observed between VAIC and firm value. Few studies also recorded that not all the components of the VAIC Model recorded significant relationship with firm value. These contradictory results raise the question of the efficiency of intellectual capital. Therefore, there is an obvious need to study the relationship between VAIC components and firm value, in the Pakistani context, in order to see whether the intellectual capital investment is useful in a developing country like Pakistan or not. Moreover, **Li** and **Zhao (2018)** suggested that there is need to investigate the role of the organizational system in the causal relationship between intellectual capital and firm value. Several studies highlighted the importance of managerial ownership as well **(Noradiva et al., 2016).** Since financial performance is a strong predictor of firm value, it could affect the causal relationship between intellectual capital and firm value. Hence this study was designed to investigate empirically, the relationship between intellectual capital and firm value, through the moderating role of managerial ownership, in the context of Pakistan.

4. Need of the Study

The finding of this study could benefit non-financial sector in multiple ways. The causal relationship between IC and FV could provide insights into investment in certain areas like human capital etc. Moreover, the findings of this study could also help to improve the financial policies regarding budget, resource allocation, R&D and HRD policies in multiple ways. This study could provide valuable details to improve financial decision making, regarding intellectual capital, firm performance and managerial structure, which is ultimately helpful to gain higher firm value in this highly competitive knowledge era. Since this study empirically investigated the moderating effect of MO between IC and FV, the findings of this study could contribute to literature on the component of MO, moderating the relationship between IC and FV. Moreover, this study remains one of the earliest studies to investigate the moderating role of MO between the relationship of IC and FV, in the context of Pakistan. Hence this study can be used as a base study to follow in future research works on similar topics.

5. Objectives of the Study

To analyze the impact of intellectual capital on firm value and to analyze the moderating role of managerial ownership, between the relationship of intellectual capital and firm value.

6. Hypotheses of the Study

NH-1: There is no significant relationship between Intellectual Capital and Firm Value,

NH-2: Managerial Ownership does not moderate the relationship between Intellectual Capital and Firm Value.

7. Research Methodology

7.1 Sample Selection

Purposive Sampling Technique was followed for the selection of firms, having complete data regarding study variables. The sample size was taken by fulfilling the criteria presented by **Hair, Anderson, Black, and Babin (2016).** A sample of 79 firms, out of 384 firms, was selected with the help of a purposive sampling technique. VAIC (Value Added Intellectual Coefficient) Model was used for the calculation of intellectual capital. Tobin's Q was taken as a measure of firm value.

7.2 Sources of Data

79 PSX listed non-financial firms, out of 384, with a total observation of 474 (79 x 6), were selected to collect the data from annual reports, official websites of the firms of respective companies, regulating authority websites such as SBP, SECP, and PSX.

7.3 Period of the Study

This research was conducted and panel data were extracted, for a period of six years (2010-2015)

7.4 Tools Used in the Study

Extracted data were organized in excel and statistically analyzed in E Views 9.0. Statistical tools like descriptive, correlation, regression and moderation analyses were also applied. Panel data were referred to such data, which had a mixture of two types of data set i.e. time series and cross-sectional. Appropriate models, related to panel data included common-effect model, fixed-effect model, and random-effect model. For an appropriate selection of effect model, Redundant Test (Likelihood Ratio Test) and Hausman Test were used. According to **Olson et al. (2007)**, a moderating variable can be defined as a factor or process that changes the impact of an independent variable on the dependent variable. The change occurs in the form of either strength or direction.

7.4.1 Relationship among study variables

7.4.1.1 Intellectual Capital-Independent variable

VAIC Model, developed by **Pulic (1998),** was followed for the calculation of intellectual capital.Value addition was calculated through the following formula.

VA = OUT – IN – D

VACA is referred to as the measure of value addition, obtained through one unit of physical capital.

VACA = VA / CE ____eq 1

VAHU shows the value addition with respect to unit amount of investment in human capital.

VAHU=VA/HC ____eq 2

STVA is used to measure the amount of structural capital investment for firm value generation.

STVA = SC / VA ____eq 3

Finally,

VAIC = VACA + VAHU + STVA ____eq4

Where,

OUT = Total Sales Revenue

IN = Total Cost of Sales excluding Personnel Expenses

VA = Value Addition

CE = Capital employed (Total Assets – Intangible Assets)

HC = Human Capital (Salaries and benefits of a firm's employees)

VAHU = Value Added Human Capital

SC = Structural Capital (VA – HC)

STVA = Structural Capital Value Addition

7.4.1.2 Firm Value-Dependent variable

Tobin's Q (TQ) was used for the measurement of firm value **(Maditinos et al. 2011).**

Tobin's Q = Total Market Value of the Company / Total Book Value of the Company

7.4.1.3 Managerial Ownership-Moderating variable

Equity holding of top executives in a firm is referred to as managerial ownership **(Bemby et al., 2015; Noradiva et al., 2016).** It is normally presented in percentage.

7.4.2 Econometric Models

On the basis of the research question, objectives and hypothesis, different models were used in this research study for estimation purpose.

7.4.3 Testing of the First Hypothesis

$$TQ_{it} = \beta 0 + \beta 1 (VAIC)_{it} + \varepsilon_{it} \quad \text{____ Model 1}$$

$$TQ_{it} = \beta 0 + \beta 1 (VACA)_{it} + \beta 2 (VAHU)_{it} + \beta 3 (STVA)_{it} + \varepsilon_{it} \quad \text{____Model 2}$$

Testing of Second Hypothesis

$$TQ_{it} = \beta 0 + \beta 1 (VAIC)_{it} + \beta 2 (MO)_{it} + \beta 3 (VAIC \times MO)_{it} + \varepsilon_{it} \quad \text{____ Model 3}$$

8. Data Analysis

Table-1 indicates that managerial ownership recorded the highest standard deviation in current sample data i.e. 27.4763% and range 97.4792, as compared to other study variables. **Table-2** shows that VAIC, STVA, VACA, and VAHU exhibited positive correlation with Tobin's Q. Hence **NH-1: There is no significant relationship between Intellectual Capital and Firm Value,** was rejected. But MO recorded negative correlation with Tobin's Q i.e. -0.220. In other words, increase in managerial ownership resulted in decrease in firm value, which was in accordance with the entrenchment effect. Moreover, it is clear that all studied variables were free from multi-collinearity, except the VAHU and VAIC, due to high correlation i.e. 0.954. But VAHU was a component of VAIC, which means that both were not used in any of regression model together and hence no multicollinearity issue could exist in our data and hence regression analysis can be proceeded.

According to **Table-3**, it is clear that under Model 1, the coefficient of VAIC was positive i.e. 0.14761 and it reported significant relationship with dependent variable i.e. Tobin's Q at 1% significance level. Under model 2 the impact of the components of VAIC and Tobin's Q was evaluated. According to Model 2, it is clear that STVA was positive i.e. 0.14368 and it reported significant relationship with the dependent variable i.e. Tobin's Q at 5% significance level. Under Model 2, VACA was also positive i.e. 4.49027 and it also reported significant relationship with the dependent variable at 1% significance level. Further, VAHU was negative i.e. -0.01703 and there was no significant relationship with the dependent variable at 5% significance level. Under model 3, interaction term (MO × VAIC) was added to check the moderation. According to Model 3, it is clear that the coefficient of VAIC was positive i.e. 0.17599 and there was significant relationship with the dependent variable i.e. Tobin's Q at 1% significance level. But MO was negative i.e. -0.00273 and its relationship with the dependent variable was insignificant at 5% significance level. But here the significance of the individual variables did not concern the Researcher. Rather the Researcher was concerned with the significance of interaction term and it is clearly seen that Interaction Term (VAIC x MO) was negative i.e. –0.00218 and there was significant relationship with dependent variable. In other words, moderation effect of managerial ownership was negative between

independent variable and dependent variable. These results were also in accordance with correlation analysis results, where managerial ownership was negatively correlated with Firm Value (Tobin's Q). Finally, the finding showed that VAIC and its two components, STVA and VACA reported positive significant relationship with Tobin's Q. But the third component of VAIC i.e. VAHU, reported insignificant results. On the other hand, managerial ownership showed a negative significant relationship with Tobin's Q and also showed the same behavior in the presence of VAIC. Moreover, managerial ownership also negatively moderated the relationship between intellectual capital and firm value. Hence **NH-2: Managerial Ownership does not moderate the relationship between Intellectual Capital and Firm Value**, was accepted. These findings would be helpful for the stakeholders and policy makers of the nonfinancial sector of companies, listed on Pakistan stock exchange, to improve the investment in intellectual and earn more return on investment.

9. Findings of the Study

Investigation of the relationship between independent variable i.e. intellectual capital and the dependent variable i.e. firm value, was the first objective of this study and it was achieved fully i.e. VAIC influenced the firm value significantly and the relationship was found positive. The results were in accordance with resource-based theory as well as with the studies of **Chen et al. (2005); Nejati and Pirayesh (2015); Noradiva et al. (2016)** and **Nuryaman (2015).** In the case of component-wise analysis, it is concluded that two of three components of VAIC i.e. VACA and STVA were positively as well as significantly related to dependent variable i.e. firm value, among which VACA was more prominent due to a higher positive value of its coefficient while VAHU recorded an insignificant relationship with the firm value.

10. Conclusion

Investigation of the role of managerial ownership between independent variable i.e. intellectual capital and dependent variable i.e. firm value, was the second objective of this study. More specifically, the moderating role of managerial ownership between the independent and dependent variable was tested. A negative and significant moderation effect of managerial ownership was observed between independent and dependent variables. The negative relationship indicated that managerial ownership followed the entrenchment effect instead of interest-alignment effect, as concluded by **Noradiva et al. (2016)** and **(Chen** and **Chuang (2009)** as well.

11. Suggestions

It is strongly recommended that managers should take initiatives to invest their resources more in intellectual capital because it has proved to be positively affecting firm value. This study has also shown an inverse relationship between managerial ownership and firm value, supporting the entrenchment effect and therefore, the role of the board of directors become crucial and they must take steps to either lower the level of managerial ownership in order to mitigate the entrenchment effect or they should monitor their performance to ensure the alignment of interest between managers and shareholders.

12. Limitations of the study

Only the non-financial sector was selected. However, the study can be done in the financial sector also. Other probability sampling method could have been used instead of purposive sampling, to enhance the generalizing ability of the results obtained. A quantitative approach was followed. However, qualitative approach can also be applied.

13. Scope for Further Research

Future researchers must evaluate the other parameters of corporate governance as well, which can provide more insight into the negative behavior of managerial ownership. It is also recommended to conduct a sector-wise analysis, in order to check which sectors of our industry need more concentration, regarding the effective resource allocation towards decision making.

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Table-1: Descriptive Analysis for Sample Variables on Intellectual Capital and Firm Value

	Min	Max	Range	Mean	Median	Std. Dev.	N
VAIC	-6.8819	14.7807	21.6626	2.9675	2.6350	2.9237	474
STVA	-3.7974	4.2053	8.0027	0.4637	0.5515	0.8821	474
VACA	-0.2827	0.8841	1.1668	0.1845	0.1518	0.1720	474
VAHU	-7.9138	13.7426	21.6564	2.3193	1.8298	2.5809	474
TQ	0.2737	9.7553	9.4816	1.4218	0.9357	1.3777	474
MO	0.0001	97.4792	97.4791	26.5109	14.7002	27.4763	474

Source: Data extracted from annual reports and computed using E Views 9.0

Table-2: Correlation Analysis for Sample Variables on Intellectual Capital and Firm Value

	TOB_Q	VAIC	STVA	VACA	VAHU	MO
TOB_Q	1					
VAIC	0.284	1				
STVA	0.071	0.418	1			
VACA	0.533	0.547	0.034	1		
VAHU	0.261	0.954	0.129	0.541	1	
MO	-0.220	-0.267	-0.139	-0.209	-0.241	1

Source: Data extracted from annual reports and computed using E Views 9.0

Table-3: Regression Summary for Sample Variables on Intellectual Capital and Firm Value

	Model 1	Model 2	Model 3
VAIC	0.14761***		0.17599***
STVA		0.14368***	
VACA		4.49027**	
VAHU		-0.01703	
MO			-0.00273
VAIC x MO			-0.00218***
R^2	0.12337	0.33149	0.13561
Adj- R^2	0.11211	0.31999	0.13009
F-Statistic	10.95389***	28.82156***	24.57819***

*** Significant at Level 1% ** Significant at Level 5%
Source: Data extracted from annual reports and computed using E Views 9.0