

Mediating Role of Intellectual Capital Efficiency in Capital Structure and Financial Performance of Quoted Banks of Pakistan

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Abstract

Purpose: The main purpose of this research paper is to investigate the relationship between intellectual capital, capital Structure and corporate financial performance in banks listed at KSE (Karachi stock exchange) and also to find the impact of capital structure and intellectual capital efficiency on financial performance of quoted banks in Pakistan.

Design/methodology/approach: Structural Equation Modeling (SEM) is applied to find the association between latent constructs and to find their impact of financial performance of the banks in Pakistan. For this study required data is obtained from 2006-2010 audited annual reports of the corporations.

Findings: This study empirically shows that the capital structure through intellectual capital efficiency has a significant relationship with financial performance measures of the corporations as a whole in case of the listed banks at KSE, Pakistan.

Practical implications: This empirical study gives a new insight in intellectual capital and capital structure for companies to enhance their financial performance.

Originality/value: This study is the first of its own nature that measures the relationship between capital structures, intellectual capital and corporate financial in the world of research generally and in case of banks listed on KSE Pakistan specifically.

Keywords: Capital Structure, corporate financial performance, Pakistan.

Paper Type: Research paper.

Introduction:

*Whereas at one time the decisive factor of production was the land, and later capital...
Today the decisive factor is increasingly man himself, that is, his knowledge. Pope John Paul II
(1991).centesimus Annus*

In industrial era, generally organizations counted on physical assets and natural resources as their source of wealth, land, buildings and properties were of great importance then. But now in the era of knowledge economy or new economy, knowledge has become the most critical resource for an organization. Intellectual capital in today's economic reality has become a very powerful factor because it is the core part of knowledge worker. Pulic (2004) highlighted the basic issue in most economic and financial models is that they take their employees as cost not as an asset for their business which is the major knowledge carrier. The major confront faced by the companies in the 21st century is to obtain finest out of its intellectual assets and view corporate knowledge as being the only sustainable foundation of competitive gain in business. This prototype change from manufacturing era to knowledge economy necessitates corporations to capitalize on value creation from its intellectual capital to succeed in this global world (Roos et al. 2005).

Before moving further it is essential to define the new standing of employees. Now a day's employees and their intellectual level have taken the status of key value added resource for the organization. Intellectual capital is an individual's complementary capability to produce added value and thus generate wealth argued Nerdrum and Erikson, (2001). Bontis *et al*, (2000) explained the term IC by giving the views of different

authors; IC is the term specified to collective intangible assets of – market, intellectual property, human-centered and infrastructure – which facilitate the company to function (Brooking, 1996); According to the views of Roos *et. al.*, (1997) IC includes all the procedures and the assets which are not usually exposed on the balance sheet and all the intangible assets (trademarks, patents and brands) which contemporary accounting techniques deem. It contains the sum of the knowledge of its affiliates and the realistic conversion of his/her knowledge.

When we look back to see the origin of the term intellectual capital we find that he was Tom Stewart Fortune, who has used the term "Intellectual Capital" in a letter to economist Michael Kalecki 1969, (Sveiby,1998). Sveiby (1998) further argue that Stewart in 1991 brought the term IC to the agenda of management firmly. Knowledge-based organizations to achieve sustainable competitive advantage need to identify their intellectual capital as well as its proficient management. In new strategic business environment, the intellectual capital management permits the administrators to create, develop, manage and maintain a strapping competitive advantage; that competitors will not easily incarcerate. (Chegini and Yousefi, 2011)

After knowing the importance of IC in this era the question arises how to measure it, Karl-Erik Sveiby was the former to emphasize the need to compute human capital. He lead the way to accounting practices for intangible assets, and in 1989 bring out the results of the Konrad working group in the book "The Invisible Balance Sheet", in which he has proposed a theory for measurement of knowledge capital by separating it into three categories: customer capital, individual capital, and structural capital. Numerous contributors have provided diverse classification of different elements of intellectual capital, hence, according to the most theoretical proposals, three main components can be found: (1) Human capital, (2) Structural capital and (3) Customer or relational capital (Ramezan, 2011). Specifically for this study, definition of IC given by Pulic (1998) has been considered all through the research, according to pulic (1991) IC is a sum of human capital (HC), structural capital (SC) and capital employed (CE).

Different approaches adopted by various schools of thoughts in modeling IC as described by chen *at el* (2009) and Roos *et al.* (2005) are Direct Intellectual Capital Methods, Return on Assets Methods and Scorecard Method. Beside these there is another approach introduced by Pulic (1998) that is value oriented and focuses to measure IC efficiency through value addition by human, structural capital and capital employed (Makki and Lodhi , 2008). In this study, authors have used the VAIC revised by Makki and Lodhi (2008), originally developed by pulic (1998). Shui (2006), VAIC is a consistent and standardized measure of IC to compare companies.

According to the different authors organizational performance is a subset of organizational effectiveness. The finest conception of organizational performance considers the use of financial indicators (e.g., sales growth, return on investment and return on equity) while the broader concept of organizational performance includes emphasis on indicators of operational performance (i.e., non-financial), (Cabrita and Vaz, 2006). Cabrita and Vaz, (2006) argued that, from a strategic perspective, intellectual capital is used to create and apply knowledge to enhance firm value. Value creation is at the heart of strategic management and the rationale of intellectual capital is its ability to create value. Intellectual capital is a matter of creating and supporting connectivity between all sets of expertise, experience and competences inside and outside the organization According to pulic (1991) IC is a sum of human capital (HC), structural capital (SC) and capital employed (CE).

Human capital:

Human capital can be defined as a combination of employee's competence, attitude and creativity Employees' competence is the hard part of IC. It includes employee's knowledge, skills, talents, and knack, of which knowledge and skill are uppermost. Knowledge, which consists of technical knowledge and academic knowledge, is obtained mainly through school education and is thus theoretical. Skills, the employee's capability of accomplishing practical assignments, are obtained primarily through practice, especially the tacit skills that cannot be literally expressed, even though it can also be developed through school education. Employees' attitude is the soft part of IC, including their motivation for work and satisfaction from work. It is regarded as the prerequisite for employees to give full play to their competence. Employees' creativity enables them to use their knowledge elastically and to make innovations continuously. It is therefore one of the key factors in developing the IC of an enterprise (Ramezan, 2011).

Structural capital:

Structural capital deals with the mechanisms and structures of the organization that can help support employees in their quest for optimum intellectual performance and therefore overall business performance. An individual can have a high level of intellect, but if the organization has poor systems and procedures by which to track his or her actions, the overall intellectual capital will not reach its fullest potential. Structural capital is the critical link that allows employees to innovate (Chegini and Yousefi, 2011). An enterprise with strong structural capital will create favorable conditions to utilize human capital and allow human capital to realize its fullest potential,

and then to boost its innovation capital and customer capital (Chen et al., 2005). Bontis (1998) advocates that SC is the mechanism and structure of the organization that can help the employees to increase the organizational performance by utilizing their IC.

Capital Employed:

It is the third element of IC according to Pulic (1998); capital employed means the total investment of the organization in materials or is the amount of investment in the total assets by the organization.

Capital Structure:

It is of very much importance for any organization to decide on the level of debt and equity for running their business successfully. There is a lot of work done on capital structure determination but this is relatively new dimension to relate it with IC to check its impact on value addition and valuation process of an organization. Modigliani and Miller (1985) worked on capital structure determination but in a very restricted environment.

Services sector, specifically banks are selected by authors for this study to compare them in terms of their value created by their IC efficiency, as banking sector is a knowledge-intensive sector. The Karachi Stock Exchange (KSE), Pakistan's largest stock market, is an attention-grabbing case for examining the IC efficiency in the corporate sector. A sample of KSE quoted banks was selected keeping in view that the banks with vast intellectual capital management experience are large scale organizations around the world.

The basic purpose of this study is to present the extended VAIC by Makki and Lodhi (2008) with some other relevant variables along with to add a new dimension in IC studies by relating IC with capital structure to create value in corporate global world in general and in corporate world within Pakistan specifically and also to see its impact on financial performance of KSE listed banks from 2006 to 2010. The other main objective of this study is to fill the gap in the field of intellectual capital in case of developing countries specifically.

The next section presents the review of related literature that had used the VAIC method to measure IC and to find its impact on financial performance of the corporations. In third section detailed methodology is discussed and in next section empirical results are presented and discussed. The findings of the study are concluded in the last section.

Literature Review

Intellectual capital is of great importance in this global world because this is the age of knowledge workers. IC has been documented as an imperative corporate edge which share crucial role towards astonishing financial performance. In the developed countries, the term IC is widely used by research society in their educational and professional research. Approach of Pulic seems to be more recognized in the world. VAIC has become very popular due to its straightforward calculations, availability of reliable audited data and easy in comparison across various industrial sectors (Pulic, 2004). VAIC method can be treated as part of that school of thought who concentrates on IC efficiency rather than money value of IC.

There have been a very small number of studies that have used emerging and developing economies as a case for evaluating the implications of IC at stock exchange level. Pulic (2000) used VAIC to investigate and compute performance of FTSE-250 companies of London Stock Exchange. Sveiby (2001) presented four approaches of IC measurement i.e. 1). Direct method, 2). Market capitalization, 3). Score card method, 4). Return on assets method which uses VAICTM in it. VAIC is accepted as a consistent and standardize to measure IC (Pulic, 2001). VAIC enables a firm to measure its value creation ability (Pulic 2001). It is more objective method as data used for its calculations is taken from published audited financial statements. IC has been recognized as an important corporate edge which plays vital role in extraordinary financial performance. Bontis et al (2000) study described that human capital is important regardless of industry type; human capital has a greater influence on how a business should be structured in non-service industries compared to service industries; customer capital has a significant influence over structural capital irrespective of industry; and finally, the development of structural capital has a positive relationship with business performance regardless of industry.

VAIC has been widely used in analyzing performance of different industrial sectors particularly knowledge intensive industry like banking sector, insurance sector, financial trading firms e.g. mudarba companies etc. Pulic (2000) by using VAICTM find a positive relationship between IC efficiency and financial performance. In recent studies related to VAIC and financial performance of firm, the relationship between value creation efficiency and market to book value ratios after controlling R&D and advertising expenditure which were considered as part of structural and relational capital respectively is examined by Chen et al. (2005). Goh (2005), in Malaysia from 2001 to 2003 used VAIC to rank the banks. Goh concluded that all the banks relatively have higher HCE than structural and capital employed efficiency. He further argues that domestic banks were less efficient compared to foreign banks in these three years. Their empirical investigation finds a significant positive impact of IC on firm's market value, return on equity and return on assets. Shui (2006) examines relationship between value addition efficiency and profitability (ROA), market valuation and productivity (ratio

of revenue to sales) in 80 Taiwan listed technology firms. Findings of Shui (2006) suggest significant positive relation between VAIC and profitability & market valuation but negative relation with productivity. Makki and Lodhi (2008) through multiple regression analysis found a positive and significant relationship between VAIC extended and firm's profitability. El-banany (2008) from 1999 to 2005 by applying regression analysis on data taken from sampled UK banks found that coefficients of investment in IT, bank's efficiency, barriers to entry, efficiency of investment in IC, bank's profitability and bank's risk have statistically significant impact on IC performance.

Young *et al* (2009) explored the IC performance in commercial banks of eight Asian economies by applying VAIC of public for cross country comparisons. The results of regression analysis shows that by controlling the influence of loan quality, fund utilization, and Asian financial crisis, both physical and human capital are main factors which creating value. Calisir *et al* (2010) investigated the relationship between VAIC of public and ROE and market valuation. By applying multiple regression analysis on data of Istanbul stock exchange's listed companies of IT and communication from 2005 to 2007 he concluded that firm leverage, firm size, and human capital efficiency predicted profitability well and also the capital employed efficiency significant predictor of profitability, ROE and market valuation. In Bahrain, Ismail and karem (2011) applied a regression analysis on VAIC and financial performance (ROA) of banks. They concluded that VAIC has positive and significant impact on financial performance of banks of Bahrain.

As can be seen through the literature review only a few work is done in case of Pakistan to analyze the role of IC in value creation for a specific sector like banks, Such as in banking sector of Pakistan, to our knowledge, Makki (2008), Makki and Lodhi (2008), Kamath (2010) and Rehman *et al* (2011) are of them. The mostly worked on different sectors in Pakistan, Kamath (2010) worked on banks of Pakistan. So there is still a need of serious efforts to be put in banking sector of Pakistan.

As far as the simultaneous role of capital structure and VAIC is concerned, to our knowledge, there is very negligible work is done in Pakistan. So can be the pioneering study in this field of its own type specifically in Pakistan and perhaps in world also.

Methodological framework:

I. Sample

All the listed banks are selected as a sample initially for this study to increase the generalizability of the study, which includes commercial banks with conventional banking and with Islamic banking practices but the sample reduced to 21 banks after excluding some banks due to non-availability of longitudinal data. KSE is selected for this study because it is the main and large stock exchange in terms of listed companies and in terms of trading activities in Pakistan.

II. Data Collection procedure

Data used in this study is secondary in nature which is collected from different data bases like the bank's annual reports are collected from their own websites and from KSE's web site. Market capitalization of companies is taken from business recorder's web site. Data collected is of five years from 2006 to 2010. Data is taken from audited annual reports of the banks.

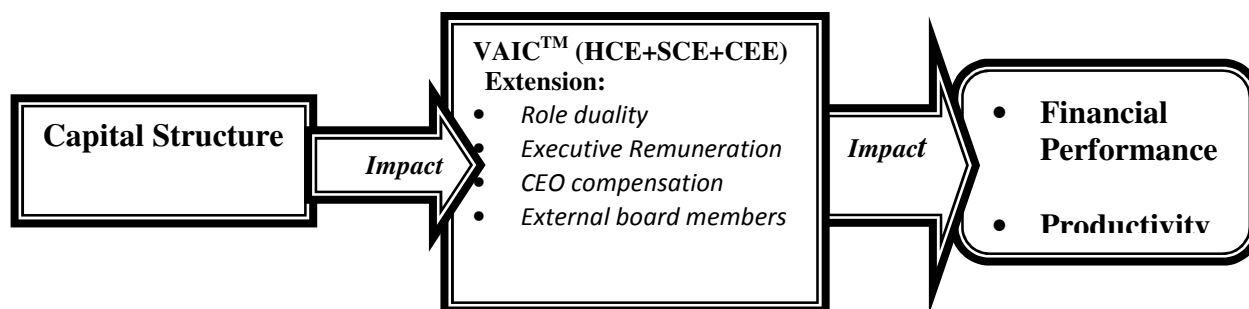
III. Quantitative Measures of Variables

Variables	Quantitative Measures
<i>Intellectual Capital</i>	
Intellectual capital Efficiency (VAIC)	=CEE+HCE+SCE
Management Remuneration(MR)	=Amount of total remuneration
Role Duality(RD)	=1 if yes, =2 if no
No. of external board members(XBM)	=Total no. of external board members
CEO Compensation(CEOC)	=Amount of total compensation
<i>Capital Structure</i>	
Debt to equity(DTE)	=Total debt/Total equity
Leverage(TD)	=Total debt
Debt to Capital(DTC)	=Total Debt/Total capital
Debt Ratio(DR)	=Total debt/Total Assets
<i>Financial Performance</i>	
Profitability(NP)	=Net/Total Profit
Return on equity(ROE)	=total profit /Total shareholder's equity
Return on Assets(ROA)	=Total profit/Total assets
Earnings per share(EPS)	=EBIT/ no. of outstanding shares
Productivity(PRO)	=total revenue/book value of total assets

Table # 1

IV. Conceptual Model

The model proposed for the implementation of the technique is as follows;



Figure#1; Proposed Conceptual Model

V. Hypotheses

H₁: All else being equal, capital structure with higher amounts of debts tend to have significant negative relation with IC efficiency.

H₂: All else being equal, IC efficiency, by mitigating the impact of CS over burdened with debt, tend to have higher financial performance and productivity.

VI. Structural Equations

The first hypothesis (H₁), impact of latent exogenous variables, CS measures (ξ) on latent endogenous variables, Intellectual capital efficiency (η^2) would be measured through:

$$\eta_2 = \beta_1 \xi_1 + \zeta \quad (H_1)$$

In this way, last hypothesis (H₃) impact of IC efficiency (η^1) on financial performance (η^2) would be calculated through:

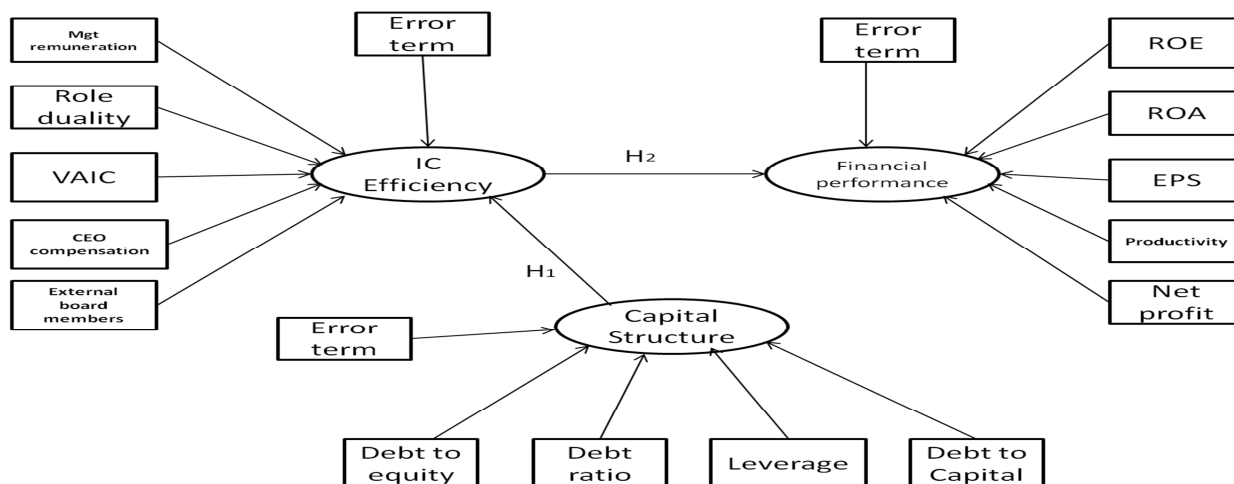
$$\eta_2 = \gamma_1 \eta_1 + \zeta \quad (H_2)$$

Proxy measures for exogenous and endogenous variables are given in the following Table # 2.

No.	Symbol	Abbreviation	Description
1	ξ	CS	Latent Exogenous Variable, Capital Structure Measures
2	η_1	ICE	Latent Endogenous Variable 1, Intellectual Capital Efficiency
3	η_2	FP	Latent Endogenous Variable 2, Financial Performance
4	ζ		Random Disturbance Term

Table # 2; Description of Exogenous and Endogenous Variables and Symbols

VII. Proposed Structural Model



Figure#2; Proposed Structural Model

VIII. Statistical Technique

SEM is applied to find the simultaneous relationship between the variables of this study. SEM technique allows researchers to examine series of relationships simultaneously. It attempts to minimize between the sample covariance and the reproduces covariance matrix of observed measures. That's why it follows the assumptions of normality and independence. Partial Least Square is a non parametric SEM technique described as second generation multivariate analysis (Fornell, 1987). It is useful when theoretical knowledge is scarce and theory confirmation is the objective. It is quit suitable for this study because in this study the author's objective is to confirm the newly proposed relationship by extended VAIC and capital structure with financial performance and productivity.

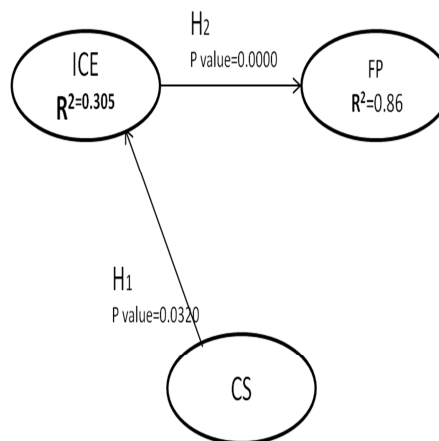
Results and Discussion

Reliability and Validity

Straub et al. (2004), Diamantopoulos and Sigauw (2006) and Rossiter (2002) are of the view that no dimensionality and reliability test are performed on formative indicators because of factorial unity and internal consistencies are not relevant thus composite reliability measure Cronbach's Alpha is not desirable. Validity is addressed as the operational constructs and their respective indicators are extracted on the basis of extensive literature review.

Analysis of Structural Model

Table # 3 presents the analysis of structural model for all the five years. Beta coefficients are also known as regression coefficients, it shows the amount of variation in dependent construct caused by the variation in independent constructs. For the year 2006 beta path coefficient for the path CS to ICE is -0.553 which means that CS construct caused 55.3% variation in ICE construct and in case of ICE and financial performance path coefficient is 0.933 which shows that 93.3% of variation in FP is caused by ICE. According to chin (1998), path coefficient should be at least 0.20 and should ideally exceed 0.30 and in table it can be seen that all path coefficients in all five years are above this standard. For this path the value of R square is 0.305 which is above standard. According to Cohen (1998), R square equals 10% is small, 25% is medium and R square equals 36% is large. It means that the overall model is fit enough to proceed further. It can also be seen from the table that all five year's R-square vales are above the standard set by Cohen (1998).



Structural Model with latent constructs for the year 2006

Items	Path Description	Path coefficient(β)	Goodness of fit(R^2)
For the Year 2006			
H ₁	CS → ICE	-0.553	0.305
H ₂	ICE → FP	0.927	0.869
For the Year 2007			
H ₁	CS → ICE	-0.550	0.695
H ₂	ICE → FP	0.933	0.704
For the Year 2008			
H ₁	CS → ICE	-0.563	0.317
H ₂	ICE → FP	0.854	0.730
For the Year 2009			
H ₁	CS → ICE	-0.955	0.203
H ₂	ICE → FP	0.875	0.910
For the Year 2010			
H ₁	CS → ICE	-0.706	0.388
H ₂	ICE → FP	0.869	0.797

Table # 3

* Significance at 10% (1.645); ** Significance at 5% (1.96); *** Significance at 1% (2.576)

Correlation of Latent Constructs

Table # 4 shows correlation and its significance between different construct. All relationships among three constructs; CS measures, IC efficiency and financial performance remain significant in all five years 2006-2010. These relationships support the theory presented in the study regarding the impact of CS measures on IC efficiency and financial performance.

Correlation Matrix For Five Years			
Correlations of latent variables 2006			
	ICE	FP	CS
ICE	1.000		
FP	0.927***	1.000	
CS	-0.553**	-0.443**	1.000
Correlations of latent variables 2007			
	ICE	FP	CS
ICE	1.000		
FP	0.840***	1.000	
CS	-0.833***	-0.802***	1.000
Correlations of latent variables 2008			
	ICE	FP	CS
ICE	1.000		
FP	0.854***	1.000	
CS	-0.563	-0.370	1.000
Correlations of latent variables 2009			
	ICE	FP	CS
ICE	1.000		
FP	0.875***	1.000	
CS	-0.629***	-0.427**	1.000
Correlations of latent variables 2010			
	ICE	FP	CS
ICE	1.000		
FP	0.893 ***	1.000	
CS	-0.623***	-0.432**	1.000

Table # 4

* Significance at 10% (1.645); ** Significance at 5% (1.96); *** Significance at 1% (2.576)

Results of Hypotheses Test

In PLS based SEM, strength of hypotheses formulated in the research is generally measured through analyzing path coefficients (β). Standardized path coefficients permit the fulfillment of the proposed hypotheses (Saenz et al. 2007; Serrano-Cinca et al. 2009). In order to have the statistical significance of path coefficients (β) a bootstrapping technique through 100 resamples with replacement was applied.

Table # 5 lists the t values including their level of significance from the year 2006 to 2010. In the year 2006, we find strongly significant path coefficients between CS and ICE ($\beta = -0.5530$, t-value = 2.2821, $p = 0.0320$) successfully. This path coefficient remains significant in all five years period. ICE also exerts significant impact on financial performance ($\beta = 0.927$, t-value = 17.2956, $p = 0.0000$). Overall 2006-10 results support the basic premise of the study that CS negatively influence financial performance directly rather ICE mitigate this negative impact by acting as a strong mediator. All path coefficients of the impact of CS on ICE ($\beta = -0.5530$, $\beta = -0.5500$, $\beta = -0.563$, $\beta = -0.955$, $\beta = -0.7060$) and ICE on financial performance ($\beta = 0.927$, $\beta = 0.933$, $\beta = 0.854$, $\beta = 0.0.875$, $\beta = 0.869$) remained much higher than ideal meaningful limit of 0.30.

Results in the table below shows that the CS with huge amounts of debts has significant negative impact on ICE in all years 2006-2010. Further ICE exerts significant positive impact on financial performance in all five years.

The hypothesis H_1 suggests that highly leveraged CS has negative impact on IC efficiency of organizations. This indicates good support for H_1 relating to the impact of CS on IC efficiency. It proves that CS construct is relevant antecedent and exerts significant impact on IC efficiency of business enterprises, thus H_1 is supported.

The second proposition of the study is that IC efficiency in ultimately increases the financial performance by removing the negative impact of leveraged CS by working as a strong mediator (H_2). This relationship remained significant in all five years. It proves that IC efficiency is an important factor that stimulates the financial performance of business enterprises, hence H_2 is supported.

Given the above analyses and results, the study supports the acceptance of H_1 and H_2 . It further supports the overall model proposed in the study that highly leveraged CS negatively impact directly to financial performance rather it positively impacts the financial performance through IC efficiency as a mediator.

Hypothesis	Significance	T-Value	Result
For the year 2006			
H_1 : All else being equal, capital structure with higher amounts of debts tend to have significant negative relation with IC efficiency.		0.0320**	2.2821 Accepted
H_2 : All else being equal, IC efficiency, by mitigating the impact of CS over burdened with debt, tend to have higher financial performance and productivity.		0.0000***	17.2956 Accepted
For the year 2007			
H_1 : All else being equal, capital structure with higher amounts of debts tend to have significant negative relation with IC efficiency.		0.0000***	7.4857 Accepted
H_2 : All else being equal, IC efficiency, by mitigating the impact of CS over burdened with debt, tend to have higher financial performance and productivity.		0.0000 21.4149	*** Accepted
For the year 2008			
H_1 : All else being equal, capital structure with higher amounts of debts tend to have significant negative relation with IC efficiency.		0.0000 5.9699	*** Accepted
H_2 : All else being equal, IC efficiency, by mitigating the impact of CS over burdened with debt, tend to have higher financial performance and productivity.		0.0000*** 3.1075	Accepted
For the year 2009			
H_1 : All else being equal, capital structure with higher amounts of debts tend to have significant negative relation with IC efficiency.		0.0001 4.6297	*** Accepted
H_2 : All else being equal, IC efficiency, by mitigating the impact of CS over burdened with debt, tend to have higher financial performance and productivity.		0.0048 3.1131	*** Accepted
For the year 2010			
H_1 : All else being equal, capital structure with higher amounts of debts tend to have significant negative relation with IC efficiency.		0.0000 10.8084	*** Accepted
H_2 : All else being equal, IC efficiency, by mitigating the impact of CS over burdened with debt, tend to have higher financial performance and productivity.		0.0027*** 3.3600	Accepted

Table # 5

* Significance at 10% (1.645); ** Significance at 5% (1.96); *** Significance at 1% (2.576)

Conclusion

The main research issue of this study was to determine the structural links and resulting impacts of CS measures on IC efficiency and IC efficiency on firm's financial performance. The study was positioned to conclude that CS – IC – Financial Performance relationship through empirical research. The path coefficient values (β) confirm the premise that there is a high negative correlation between leveraged CS measures, IC efficiency and high

positive correlation between IC efficiency and financial performance. Enough empirical support has been provided to accept H_1 and H_2 . Results of H_1 are not supported by the previous studies as it entirely a new dimension being developed by this study up to the best knowledge of authors. While results of H_2 are in consistent with the literature, such as Chen et al. (2005); Tseng and Goo (2005); Tan et al. (2007); Makki and Lodhi (2008) and Sharbati et al. (2010).

In this way, study provides first ever empirical evidence that a firm with good IC efficiency ultimately generates more return on investment, return on equity and net profit by reducing the negative impacts exerted by high level of leverage in their capital structure. In the next phase of this ongoing research authors will use the same methodology with a different set of sample drawn from various sectors and countries.

As it is the first ever study up to the knowledge of authors regarding this dimension of capital structure and intellectual capital so there is a need to put serious effort in confirmation and generalization of this dimension around the globe. The findings entirely based on one sector in a single country have limited the scope of the study. Time and span expansion of the study is also a key factor of concern for future avenues.

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