
An Examination in the IC Management and Financial performance of Indian SMEs

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Abstract

Presently SMEs are backbone of Indian economy. To obtain competitive advantage in the knowledge economy, it is crucial for small and medium sized enterprises (SME) to utilize their knowledge efficiently and to enhance their Innovation potential. Thus, managing their Intellectual Capital is increasingly important for success and sustainability. Furthermore, reporting of those intangible assets to customers, partners and investors systematically has become a crucial factor of success in the context of the globalization.

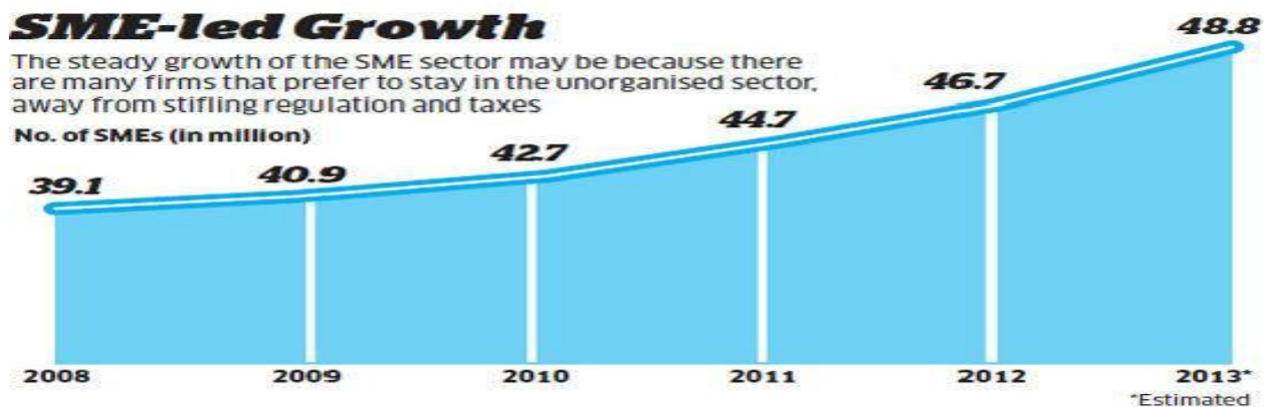
In this study an attempt is made to find the effects of intellectual assets in SME's performance. For the purpose of this study data are collected from 30 Indian SMEs which are listed in BSE sme. In our study Value creation efficiency of intellectual capital is measured by Pulic's VAIC™ model. Multiple regression analysis is used to analyze the data. The empirical results show that human capital of Indian SMEs has significant contribution towards the organizational performance and shareholders' value creation. This pilot study extend the IC research by considering Indian SMEs since Indian IC researches are conducted on large organizations ignoring small and medium size organizations.

Key Words: Intellectual Capital, SMEs, VAIC, Profitability, Productivity, India

Paper Type: Research Paper

Introduction

SMEs are considered as backbone of an economy. This sector has emerged as a highly vibrant and dynamic sector of the Indian economy. SMEs are considered as ancillary to large industries and contribute enormously to socio-economic development of the country. In India, it employs nearly 40 percent of the total work-force and contributes 45 percent to the country's manufacturing output. Till now this sector consists of 48.8 million units, contributes more than 6000 units and 40 percent to the exports from the country. SME sector has potential to increase the industrial growth and can play a major role in the process of inclusive growth. The growth rate of SMEs sector is presented below;



Source: Economics Time, 9th June, 2013.

Present economy is termed as knowledge economy where information, knowledge and information technology are considered as strategic assets. In this new economy tangible assets are fast becoming secondary assets as application of intangible assets like employee capability and competency, management philosophy, culture, innovative process and customer loyalty etc. have increased manifold to create value. All invisible assets which are employed in the business are collectively called as intellectual assets or intellectual capital. Intellectual capital is associated with the main source of individual, organizational as well as national competitiveness in today's knowledge economy (Wigg, 1997). Several empirical studies show the significance of intellectual capital at corporate level. Canadian Institute of Chartered Accountants' survey concludes that intellectual assets are crucial for firm's success (Ghosh and Wu, 2007). Effective investment in intellectual capital benefits the firm in various ways like gaining competitive advantage and enhancing corporate values and growth.

Since, intellectual capital is considered as a key driver of success of large and small firms in the present knowledge economy, it must be well managed to gain utmost benefits from such assets. SMEs are major players in the economy, therefore, it is necessary to develop and manage these soft assets to maintain their growth, competitiveness and sustainability in this knowledge economy. Pena asserts that the growth and survival of SMEs depend on the management of intellectual capital in each stage of the business cycle.

In this study an attempt is made to examine effectiveness of those intellectual assets in the performance of Indian SMEs. In other words, how efficient are Indian SMEs in creating value

from their intellectual capital base?

Intellectual Capital

Various definitions of intellectual capital have been offered by academicians and practitioners. There is no precise agreement on definition of intellectual capital. From the accounting point of view intellectual capital is the difference between the book value and market value of companies (Edvinsson, L. 1997). From the managerial perspective it is the intellectual material which is knowledge, information, intellectual property and experience that can be put to use to create wealth (Stewart, 1997). Generally, the term “intellectual capital (IC)” is used to refer to intangible assets or intangible business factors of the company, which have a significant impact on its performance and overall business success, although they are not explicitly listed in the balance sheet (if so, then under the term goodwill). Cohen and Kaimenakis (2007) believe that intellectual capital in large organization and in SMEs is not same and differ on the basis of employed resources.

Intellectual capital can be traced in the organization as human capital, structural capital and customers or relationship capital.

Human Capital: Human capital includes the knowledge and efficiency that employees take with them when they leave the firm. It encompasses knowledge, skills, experience and ability of people. Human capital in SMEs behaves quite differently as compared to large companies (Desouza & Awazu, 2006). Since SMEs are entrepreneurship oriented, entrepreneurial orientation that is, aggressiveness, imitativeness and pro-activeness should be considered as human capital (Keskin, 2006; Hult et al. 2003). Entrepreneurial orientation is the managerial capability and innovativeness of SMEs which help to sustain in the competitive world. According to Hessels and Terjesen (2008), Entrepreneurial human capital is substantial and consequential for SMEs growth. It comprises of entrepreneur’s knowledge, skills and experiences linked to entrepreneurial activity.

Structural Capital: From the organizational perspective structural capital includes all non-human resources of knowledge like, data bases, organizational charts, executive instructions of the processes, strategies, administrative programs etc. Structural capital is that part of intangible assets that stays within the firm at the end of the working day. Therefore, development and use of such structural components such as information and information technology it is possible to reduce costs and enhance profitability.

Relation Capital: Relation capital includes all resources that linked to the external relationships of the firm with customers, suppliers or other stakeholders. In case of SMEs, it is important to maintain the relationship with customers and other parties and maintaining market orientation is important for survival and competitiveness. It is a vital asset for SMEs because relation capital negotiates with other stakeholders such as suppliers, partners, customers and community and to make concrete agreements.

Intellectual Capital and Organizational Performance

Research results have shown that intellectual capital increasingly recognized as an important

strategic assets for sustainable corporate competitive advantages. Following table (Figure-1) depicts various studies conducted in different countries to find intellectual capital and company

Study	Source / Sample	Important Findings / Significant Relationships	Conclusions
Bontis et al., (2000)	Malaysian Firms	+ relationship between business performance and SC + relationship between SC and Relational Capital + relationship between Relational Capital and HC + relationship between SC and HC, only in non-service firms	Investment in IC, specifically SC, can result in greater competitive advantage. Investment in either HC or Relational Capital will cause flow-on effects to performance through SC
Bollen et al., (2005)	41 German pharmaceutical companies	+ relationship between all 3 IC components and Intellectual property + relationship between Performance and Intellectual Property	IC and each component (SC, HC and Relational Capital) have at least an indirect impact on performance, through Intellectual Property.
Tovstiga and Tulugurova (2007)	20 Russian SIEs	HC is the most important IC component for competitive advantage; External Environment is less important in determining competitiveness	IC is the most important factor in determining competitive advantage in Russian SIEs and can overcome external influences.
Cohen and Kaimenakis (2007)	52 Greek SMEs	+ relationship between Hard IC and Profits + relationship between Functional IC and Sales per Employee No relationship between Soft IC and Performance	Whilst there may be a time-lag between Soft IC and performance, the results show that Hard and Functional IC are both related to performance.
Mavridis (2004)	141 Japanese banks between 2000 and 2001 Performance = (VAIC - SCE) and VA	+ relationship between VA, and Physical Capital and HC Banks with highest performance have high HC but not high Physical Capital	HC is important for a bank's performance; however physical assets are less important.
Al-Twaijry (2009)	384 listed Japanese Manufacturers	Investments in intangibles don't necessarily lead to future growth. Investments in intangibles are effected by a number of factors, including size, dividends, cash flows, and growth, but not company age. Investments in intangibles grew between 2001 and 2005.	Whilst investing in intangible assets doesn't lead directly to future growth, these investments are effected by a number of variables.

performance.

From the results of the above table it can say that prior studies find a positive relationship between intellectual capital and business performance and they all agreed that intellectual capital constitutes very vital strategic assets to the company for building competitive advantages.

Figure: 1; Empirical studies investigating the relationship between IC and Company Performance.

Last few years several empirical studies are conducted to find out the strategic importance of intellectual capital on corporate financial performance. These studies are mainly concentrated on the large business houses neglecting the SMEs. In any country, especially in the developing countries SMEs are considered as engine of growth because of their contribution to economic growth, employment generation and reduction of poverty (Ayyagari *et al.*, 2007). SMEs are more productive because they are flexible and innovative which enable them to adapt to the changes in the market. Innovation activities are about introducing new ways for products, services, production, marketing and administration, which are difficult to imitate (Konsti-Laakso *et al.*, 2012). Various empirical research show the strong relationship between innovation and organizational performance (Hurley & Hult, 1998; Kohli & Jaworski, 1993). Research results also show strong and influential impact of innovation in SMEs performance (Wolff & Pett, 2006). According to Man *et al.* (2002) the competitiveness of SMEs depends on their internal factors, external environment and the influence of the entrepreneur. Factors which affect the performance of SMEs are entrepreneur's demographic, psychological and behavioral characteristics plus managerial and technical skill (Man *et al.*, 2002). Therefore, entrepreneur plays a crucial role in managing the SMEs and success and failure of SMEs depends on the role played the entrepreneur.

For the purpose of the study the research hypotheses are as follows.

H₁: Value creation efficiency of intellectual capital (VAIC) impacts on the financial performance in Indian SMEs

H₂: Human Capital has influence to the financial performance in Indian SMEs

H₃: Structural Capital has influence to the financial performance in Indian SMEs

H₄: Physical Capital has influence to the financial performance in Indian SMEs

VAIC™, Value Added Intellectual Capital

The Value Added Intellectual Coefficient™ (VAIC™) methodology developed by Ante Pulic (2000) forms the underlying measurement basis for the independent variable in the present study. In his words VAIC™ is an analytical procedure designed to enable management, shareholders and other relevant stakeholders to effectively monitor and evaluate the efficiency of VA by a firm's total resources and each major resource component. VAIC™ is the sum of two indicators. These are: (i) Capital Employed Efficiency (CEE) – the indicator of VA efficiency of capital employed; and (ii) Intellectual Capital Efficiency (ICE) – the indicator of VA efficiency of company's Intellectual Capital base. Intellectual Capital Efficiency, on the other hand, is composed of (a) Human Capital Efficiency (HCE) – the indicator of VA efficiency of human capital; and (b) Structural Capital Efficiency (SCE) – the indicator of VA efficiency of structural capital.

Following equation (1) formalizes the VAIC™ relationship algebraically:

$$VAIC^{TM}_i = CEE_i + HCE_i + SCE_i$$

Where:

VAICTM_i = VA intellectual coefficient for company *i*;

CEE_i = capital employed efficiency coefficient for company *i*; calculated as

follows

$$CEE_i = VA_i / CE_i$$

HCE_i = human capital efficiency coefficient for company *i*; calculated as follows

$$HCE_i = VA_i / HC_i$$

SCE_i = structural capital efficiency for company *i*. calculated as follows SCE_i = SC_i

/ VA_i

Where, VA = VA for firm *i*; CE_i = book value of the net assets for firm *i*; HC_i = total salary and wage costs for firm *i*. : SC_i = Structural capital for company *i*; calculated as SC_i = VA_i – HC_i

Pulic (2000) states that higher the VAIC™ coefficient, the better will be the efficiency of VA by a firm's total resources. The first step in calculating CEE, HCE and SCE is to determine a firm's total VA.

This computation may be done with the help of the following algebraic equation:

$$VA_i = I_i + DP_i + D_i + T_i + M_i + R_i + WS_i$$

Where: VA for firm *I* is computed as the sum of interest expenses (I_i); depreciation expenses (DP_i); dividends (D_i); corporate taxes (T_i); equity of minority shareholders in net income of subsidiaries (M_i); and profits retained for the year (R_i) and the wages and salaries (WS_i).

Alternatively VA can be calculated by deducting operating expenses (materials, maintenance , other external costs) from operating revenues.(Pulic, 2000).

Pulic (2000) proposes a firm's total 'VA less its human capital' is an appropriate proxy of a firm's SC. Based on prior empirical research findings, Pulic (2000) argues that there is a proportionate inverse relationship between HC and SC in the value creation process. According to him, the less Human Capital participates in value creation, the more Structural Capital is involved.

Sample

The data used in this empirical study are collected from published annual reports of respective SMEs. The study confined to 30 small and medium enterprises (SMEs) for the period 2013 to 2015. These SMEs are selected on the basis of their listing status in the Indian stock market particularly in Bombay stock exchange.

Measures of Dependent variables

For the purpose of conducting the analysis in the present study measures of financial performance are used as dependent variables. Following two commonly used proxy measures of financial performance are applied in this study.

1) Profitability (ROA): - Profitability of sample SMEs is measured through return of assets (ROA). It shows the degree to which a firm's revenues exceed over cost. It is the ratio of the net income (less preference dividends) divided by the book value of total assets as reported in the annual reports; (Williams and Firer,2003; Chen, Cheng and Hwang ,2005;).

2) Productivity (POD): It is a ratio of employee cost to sales. This ratio shows the operating performance of employees.

In conducting the liner multiple regressions analyses one control variable namely, size of the sample SME is used to segregate the influence of intellectual capital. Size of the SME is measured by the natural log of total assets is used to control for the impact of size on wealth creation through economies of scale, monopoly and bargaining power (Riahi-Belkaoui, 2003).

Empirical Models

Following two regression models are used in this study to examine above mentioned hypothesis empirically.

$$ROA_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 CEE_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \quad (\text{Model 1})$$

$$ROA_{it} = \beta_0 + \beta_1 VAIC_{it} + \beta_2 SIZE_{it} + \varepsilon_{it} \quad (\text{Model 1A})$$

$$POD_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 CEE_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \quad (\text{Model 2})$$

$$POD_{it} = \beta_0 + \beta_1 VAIC_{it} + \beta_2 SIZE_{it} + \varepsilon_{it} \quad (\text{Model 2A})$$

Where,

ROA_{it} means Return on Assets of i th company for the period t ;

POD_{it} means productivity of i th company for the period t ;

$VAIC^{TM}_{it}$ = VA intellectual coefficient for company i for the period t ; HCE_{it} = human capital efficiency coefficient for company i for the period t ; SCE_{it} = structural capital efficiency for company i for the period t ; CEE_{it} = capital employed efficiency coefficient for company i for the period t ; $SIZE_{it}$ = size of i th SMEs for the period t ; β_0 = Constant and ε_{it} is the error term.

Results

The objective of this empirical study is to examine the impact of intellectual capital management on the performance of SMEs. Empirical results of the study are presented in three parts namely descriptive statistics, correlation and multiple regression results as follows. Table 1 below presents the descriptive statistics of all variables i.e. HCE, SCE, CEE, VAIC, ROA, SIZE and POD (productivity).

Table 1: Descriptive Statistics of all variables

	N	Minimum	Maximum	Mean	Std. Deviation
HCE	90	0.549	76.600	9.049	14.173
SCE	90	-0.093	6.547	0.953	1.143
CEE	90	0.009	0.742	0.246	0.211
VAIC	90	0.228	82.491	10.186	15.295
ROA	90	0.02	0.350	0.059	0.072
POD	90	2.526	712.875	99.104	172.698
SIZE	90	0.113	2.120	1.369	0.511
Valid N (listwise)	90				

From the table it is seen that VAIC of sample SMEs varies from 0.228 to 82.491 with a mean value of 10.186. Therefore, it seems that intellectual capital efficiency of SMEs is moderate. The average profitability of SMEs is 6%. Productivity (POD), which is measured as a ratio of employee cost to sales, of Indian SMEs show high variation (172.7) from the mean value. Among the components of intellectual capital, mean values of HCE is highest (9.05) as compared to other

components of VAIC. It indicates that human capital of sample SMEs is efficient enough compared to the other two types of capital. From the table it is also seen that CEE is lowest than HCE and SCE which means that physical capital is least contributing. However, standard deviation of CEE (0.211) shows that there is no much variation among the values of CEE. Average structural capital efficiency of selected SMEs is 0.953 though there is negative value.

The correlation results are presented in Table 2. The correlation between independent variables is nearer to 0.50 and in some cases they are significant either 1% or 5% level of significance. In two cases the correlations of HCE & VAIC and CEE & ROA are as high as 0.605 and 0.627 respectively. Since it is less 0.80 the problem of multi-collinearity may not arise. According to Kennedy (1985) the correlation among explanatory variables exceeds 0.80, and then the problem of multi-collinearity may arise.

Table-2: Simple Correlation among Variables

HCE	SCE	CEE	ROA	POD	SIZE	VAIC	
HCE	1	0.336*	0.564**	0.207	0.271	0.198	0.605**
SCE	1	0.141	-0.143	0.520**	0.177	0.363*	
CEE		1	0.627**	-0.163	-0.117	0.566**	
ROA			1	0.346*	-0.234	0.006	
POD				1	0.446**	0.282	
SIZE					1	0.199	
VAIC						1	

Here, * denotes significance at 1% level and ** denotes significance at 5% level

The table shows that HCE has positive and significant relation with SCE (0.336), CEE (0.564) and VAIC (0.605). Structural capital efficiency (SCE) and productivity has positive and significant relationship and capital employed efficiency (CEE) has positive correlation with profitability and VAIC only. Table also shows that productivity (POD) has positive correlation with profitability (ROA) and size (SIZE) of SMEs.

Followings tables (3 to 6) show the empirical results of multiple regression equations of our

study.

Statistical results of model 1 and model 1A are presented in table 3 and 4 respectively. Table 3 shows that all independent variables collectively explain 54% variance in profitability measured through return on assets (ROA) where as Table 4 reveals that only 8% variance in profitability is explained by VAIC, aggregate measure of intellectual capital efficiency. From the empirical results it is clear that components of VAIC have more explanatory power on the dependent variables than VAIC. Statistical results also reveal that physical capital and human capital are major determinants of profitability of sample SMEs than structural capital. Therefore, study results of Table 3 and 4 accept hypotheses 2 and 4.

Empirical results of model 2 and 2A are presented in table 5 and 6 respectively. Study results again confirmed that components of intellectual capital better explain the organizational performance of SMEs measured through productivity. Statistical results accept the hypotheses 1, 2 and 3. Therefore, it is seen that size and intellectual capital efficiency (human capital and structural capital efficiency) play significant role for enhancing SME productivity.

Table-3 shows the regression results of regression model 1

	Depended Variables (ROA)	
	BETA VALUES	t-VALUES
constant	NA	0.597
HCE	0.460	3.389*
SCE	0.113	1.029
CEE	0.901	6.978*
SIZE	0.17	0.158
Adjusted r ²	0.540	
F-Value	13.932*	

Here, * denotes significance at 5% level and ** denotes significance at 10% level

Table-4 shows the regression results of regression model 1A

	Depended Variables (ROA)	
	BETA VALUES	t-VALUES
constant	NA	3.016*
VAIC	0.055	0.355
SIZE	-0.245	-1.601
Adjusted r ²	0.078	
F-Value	1.282	

Here, * denotes significance at 5% level and ** denotes significance at 10% level

Table-5 shows the regression results of regression model 2

	Depended Variables (POD)	
	BETA VALUES	t-VALUES
constant	NA	-5.88
HCE	0.263	1.727**
SCE	0.430	3.508*
CEE	-0.340	-2.346**
SIZE	0.278	2.266**
Adjusted r ²	0.422	
F-Value	9.022*	

Here, * denotes significance at 5% level and ** denotes significance at 10% level

Table-6 shows the regression results of regression model 2

	Depended Variables (POD)	
	BETA VALUES	t-VALUES
constant	NA	-1.391
VAIC	0.205	1.463**
SIZE	0.406	2.952*
Adjusted r ²	0.201	
F-Value	6.550*	

Here, * denotes significance at 5% level and ** denotes significance at 10% level

Discussions and Conclusion

In the knowledge economy intellectual capital is considered as important strategic assets to large as well as small companies. Organizations are investing enormous sums of money for building such intellectual assets base for value creation. . But, there is no well accepted model to measure intellectual capital in the accounting and finance literatures. In this situation Pulic's VAIC model gives an idea about the value creation efficiency of company's intellectual capital and the model is widely applying in the empirical researches. The main advantage of this model is the simplicity and based on the audited financial information. Empirical researches are conducted on large organizations and limited studies are conducted on SMEs. In India there are

no such studies that examine the impact of IC on the SME performance. Present study is conducted to examine the impact of value creation efficiency of intellectual capital on the financial performance of SMEs. The empirical examination is based on data of 30 SMEs of various sectors for the period 2013 to 2015.

The empirical results show that VAIC in the two models is significant in one case. But the explanatory power of the first model is greater than second model. In the first model Independent and control variables explain 54% and 8% variation in dependent variable respectively. In the second model the explanatory power of two equations are 42% and 20%. Therefore, components of intellectual capital have better explanatory power than the aggregate. The findings of this study shows that human capital and structural capital are important for the productivity of SMEs but contribution of human capital and physical capital are important for maintaining and enhancing profitability of sample SMES. Therefore, human capital of SMEs is vital for maintaining the SME performance. However, before generalization about the findings of this study more detailed study is required on large sample size covering longer study period.

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