Abstract

Introduction

Both the terms financial performance appraisal and financial statement analysis are often interchangeable. It is actually the process of evaluating the overall financial position of an organization and the evaluation can be done by analyzing the financial statements. Hence the financial appraisal includes the systematic assessment of financial data which is available in the financial statements (Kennedy & McMullen, 1973).

The financial performance appraisal gives the facts about the, profitability, productivity, strengths, weaknesses, solvency and many other dimensions related to financial position of an organization. It is also relevant in analyzing about the safety of the investments in a particular company, profit adequacy and solvency of an organization, reserves & surpluses in a company. On the basis of past financial performance the future of the organization can also be predicted with the same assumption that it will grow in the same way (Foulke, 1957).

Knowledge, information, experience etc. which are collectively termed as intellectual capital, constitute the foundation for success in the twenty-first century. In conventional management tangible assets were used as the basis for improving the performance but when these resources became harder to obtain, managers started finding new ways of gaining competitive advantage even when they have less physical capital at their disposal. We can say that the managers started working smarter and this how the knowledge based economy came into existence. The knowledge-based economy supports a business model that relies mainly on wealth creation through development, deployment, and utilization of companies’ intangible assets or intellectual capital (IC) (Stevo & Bontis, 2016).

Mainly the importance of IC grew during the 1980s when the number of knowledge-intensive industries started increasing such as computer, software, pharmaceuticals, biotechnology, etc. The term came to be particularly widely accepted after it appeared in Thomas Stewart (1991) cover article in Fortune magazine. The article addressed IC in a very broad way, as the sum of knowledge, information, intellectual property, and experience held by everybody in a company, put to use to create a competitive edge
and, ergo, the wealth of a company (Stevo & Bontis, 2016). Actually the firms face a real problem in the matter of accounting for the investment and performance of intangibles. The conventional performance measurement techniques are incapable to gauge multiple dimensions of performance because they concentrate only financial aspects of the organization. Actually the benefits of intellectual capital such as management efficiency, customer relation, research & development (R&D), innovations etc are very difficult to measure and quantify by traditional measures which suggests that these conventional accounting principles based measures may be unsuitable in the new economic world in which competitive advantage is driven by intellectual capital (Edvinson & Malone, 1997).

Firer said that the use of traditional performance measurement technique may lead investors and other stakeholders to make inappropriate decisions when companies have a large proportion of their investment in intangible assets (Firer & Williams, 2003).

It had been recognized that the intellectual capital is an important corporate asset which plays an important role for extraordinary financial performance. It forms the roots of a corporation-of a nation- that supplies the nourishment for future strength and growth and it also constitutes all factors of production which are invisible on the traditional balance sheet but decisive of a company’s long-term profitability (Mondal & Ghosh, 2012)

Thus, the main goal of the paper is to reveal the existence and nature of relationship between intellectual capital and financial performance of firms in the IT industry in India. The present analysis is based on a sample of 51 companies listed in BSE IT Index.

**Literature Review**

From the last couple of decades, both academic research and managerial practice have shown a growing interest for intellectual capital. The intellectual capital of a company basically comprise of three main components: human capital, organizational/structural capital and relational (Bontis, 1999; Edvinsson & Malone, 1997; Edvinsson & Sullivan, 1996; J. Roos et al., 1998).
At present knowledge, information and technology, whether embodied in human resources or organizational structures, are become primary production factors. Manufacturing or producing companies use these vital assets to gain superior competitive advantage. But in service companies which belong to sectors like IT, banking and finance, pharmaceutical etc, intellectual resources are the main basis of enhancing sales revenue and the profitability also. They use intellectual resources as a capital to their production system. According Bornemann, Knapp, Schneider, & Sixl (1999) enterprises, which are able to administer their intellectual capital efficiently will be in a superior position in comparison with other firms. The performance of a firm is directly proportional to the strength of its intellectual capital. Brennan & Connell (2000), stated that the long-run business performance can also be achieved by managing the intellectual capital.

Many empirical researches have been done worldwide to examine the impact of intellectual capital on the financial performance of companies. But most of these studies have been conducted on the knowledge intensive firms such as banking, information technology, and pharmaceutical.

Research Gap

The importance of intellectual capital varies with the nature of firms e.g. Human capital efficiency is not as much important in a hardware industry as important it is in software industry. With the help of existing literature, it can be said that the intellectual capital research is not very much developed in India especially in context of information technology (IT) sector. Being a developing country India has a large potential of human capital efficiency and structural capital efficiency along with the physical capital efficiency. A study on the relationship between intellectual capital and financial performance of IT sector in India would be helpful in analyzing the impact of intellectual capital in the performance of IT sector.

Development of Hypothesis

The present study explores this issue empirically by analyzing the impact of intellectual capital (IC), which has been measured through VAIC™ whereas the financial performance have been measured by ATO, ROE, ROA & MB which represents productivity, profitability and market valuation, respectively.
In this study a positive relationship between the financial performance and intellectual capital performance of Indian information & technology sector has been assumed by the authors.

**H1. The VAICT™ is positively associated with productivity as measured by ATO.**

H1a. The CEE is positively associated with productivity as measured by ATO.
H1b. The HCE is positively associated with productivity as measured by ATO.
H1c. The SCE is positively associated with productivity as measured by ATO.

**H2. The VAICT™ is positively associated with profitability as measured by ROA.**

H2a. The CEE is positively associated with profitability as measured by ROA.
H2b. The HCE is positively associated with profitability as measured by ROA.
H2c. The SCE is positively associated with profitability as measured by ROA.

**H3. The VAICT™ is positively associated with profitability as measured by ROE.**

H3a. The CEE is positively associated with profitability as measured by ROE.
H3b. The HCE is positively associated with profitability as measured by ROE.
H3c. The SCE is positively associated with profitability as measured by ROE.

**H4. The VAICT™ is positively associated with market valuation as measured by MB.**

H4a. The CEE is positively associated with market valuation as measured by MB.
H4b. The HCE is positively associated with market valuation as measured by MB.
H4c. The SCE is positively associated with market valuation as measured by MB.

**Sample & Regression Models**

The sample has been drawn from Indian Information & Technology sector for which the sectoral index of BSE namely BSE IT was selected. In all 51 companies of Information Technology (IT) sector for financial years ranging from 2006 to 2016 have been taken. The data which have been used in the analysis was extracted from the CMIE’s Prowess.
Model 1 to Model 8 examines the relationship between ATO, ROA, ROE & MB and the components of VAIC\textsuperscript{TM}. Physical Capacity & Log of Total Assets have been taken as control variables. These following regression equations depict the models:

<table>
<thead>
<tr>
<th>Model</th>
<th>Regression Equations</th>
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<tbody>
<tr>
<td>1.</td>
<td>ATO = α + β1 VAIC\textsuperscript{TM} + β2 PC + β3 log total assets + µ</td>
</tr>
<tr>
<td>2.</td>
<td>ATO = α + β1 CEE + β2 HCE + β3 SCE + β4 PC + β5 log total assets + µ</td>
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<tr>
<td>3.</td>
<td>ROA = α + β1 VAIC\textsuperscript{TM} + β2 ATO + β3 PC + β4 log total assets + µ</td>
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<tr>
<td>4.</td>
<td>ROA = α + β1 CEE + β2 HCE + β3 SCE + β4 PC + β5 log total assets + µ</td>
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<tr>
<td>5.</td>
<td>ROE = α + β1 VAIC\textsuperscript{TM} + β2 ATO + β3 PC + β4 log total assets + µ</td>
</tr>
<tr>
<td>6.</td>
<td>ROE = α + β1 CEE + β2 HCE + β3 SCE + β4 PC + β5 log total assets + µ</td>
</tr>
<tr>
<td>7.</td>
<td>MB = α + β1 VAIC\textsuperscript{TM} + β2 ATO + β3 PC + β4 log total assets + µ</td>
</tr>
<tr>
<td>8.</td>
<td>MB = α + β1 CEE + β2 HCE + β3 SCE + β4 PC + β5 log total assets + µ</td>
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**Conclusion**

The concept of Intellectual Capital is over two decades old and in all these years, the rich IC literature has explored various dimensions of intellectual capital. The main points of these writings are conceptualization, classification and measurement of intellectual capital along with its reporting and relationship with financial performance.

The use of information, information technology in business management has led to the rise of knowledge economy. In this new economy, knowledge intensive companies have gained impetus. Intellectual capital is considered as the main value driver and plays an important role to increase the corporate financial performance as well as impacts on the market value of knowledge intensive companies (Bozbura, 2004; Brennan & Connell, 2000; Petty & Guthrie, 2000). Few researchers have termed it as the fourth factor of production in addition to land, labor and financial capital (Chen Goh, 2005; Gu & Lev, 2001; Guthrie, 2001; Guthrie & Petty, 2000).
Research on intellectual capital efficiency and its relationship with the corporate financial performance shows the impact of intellectual capital on the financial aspects of organizational performance. Alternatively, it examines whether traditional corporate performance measurement techniques are influenced by the intellectual capital performance or not. Earlier the measures to calculate the company performance were based on conventional accounting principles and are unsuitable in the new knowledge economy. But such measures are the main bases of decision making.

Initially it was being perceived that the intellectual capital and all its components play a major role in measuring the financial performance of knowledge driven sector but the results have shown that the concept of intellectual capital or value creation by knowledge is not being valued or given importance by IT industry in India. Among all the components of intellectual capital, CEE is found to be the most significant. CEE has a statistically significant positive relationship with all the three variables of financial performance (Gan & Saleh, 2008; Kai Wah Chu, Hang Chan, & Wu, 2011; Mondal & Ghosh, 2012). The HCE is positively significant with ROA and MB (Gan & Saleh, 2008; Mondal & Ghosh, 2012) while it is insignificant with ATO & ROE (Maria Morariu, 2014). The SCE has a significant relationship with MB (Chu et al., 2011) while it has an insignificant relationship with ATO, ROE, ROA (Chu et al., 2011; Mondal & Ghosh, 2012).

The Indian IT sector more importance is being given to physical capital assets rather than the intellectual ones. This is absolutely against the argument of many scholars that the intellectual capital is more important for knowledge driven enterprises which help them in acquiring competitive advantage.

The positive significant relationship of CEE with all the financial performance measures shows that it is the most significant component of VAIC™ and the performance of a firm is still being perceived in terms of tangible assets, even in case of IT industry which is a knowledge based industry. It means that any increment in physical capital will lead towards the betterment of profitability of Indian IT sector.

The insignificant impact of HCE on profitability and productivity may be because of the traditional accounting practices which don’t give due consideration in measuring the value created by human capital. Another reason is the inability of the companies
to extract full potential of their employees due to the lack of employees training, the regular training program is very important for the performance of employees and managers. The absence of working relationship between the industry and academic centers should also be removed to improve the human capital efficiency.

It has been expected and proved by many previous studies that human capital efficiency should be higher than the physical and structural capital efficiency. The human capital plays a pivotal role in creating the efficient structural and relational capital (Bontis, 2004). The competence and adroitness own by the employees are directly proportional to the structural and relational capital (Bollen, Vergauwen, & Schnieders, 2012). It has been proved that the nurturing of human capital seems to be of vital importance to Indian IT sector.

Although the structural capital always plays a pivotal role especially in case of knowledge driven industries, it is not performing well in case of Indian IT industry. The insignificant impact of SCE on productivity & profitability signifies that the managers are not utilizing the structural resources in order to achieve desired profitability and productivity. The sample companies found unable to utilize their structural capital. The insignificant relationship between SCE and profitability shows that the utilization and deployment of structural capital is growing rapidly and become very important for achieving profitability.

The important thing is to know, among the technologies or routines and procedures which are the major structural capital in Indian IT industry and about its impact on the financial performance of Indian IT industry. Managing the structural capital is also an expensive process as it requires lot of resources and none of them are visible in balance sheets. The absence of reporting the structural capital in accounting books makes it difficult for the stakeholders to assess the fall benefits of managing structural capital.

The significant impact of SCE with MB shows that the pivotal role is being played by the structural capital in generating profit in comparison with other VAICT™ components. The Indian IT sector is getting significantly improved by an effectively managed structural capital.
This study also shows that the individual components of VAIC™ show different values as opposed to the aggregate measure of VAIC™. The significant impact of VAIC™ on profitability signifies that improved intellectual capital efficiency leads to better profitability and revenue growth and the IT sector generates profit from every single units of share holder’s equity. The importance of intellectual capital in improving the firm’s profitability and growth of the companies is evident from the results.

The VAIC™ has no impact on market valuation because Indian investors do not consider the share of intellectual capital while taking decision regarding investments. The current reporting system, which fails to capture the information on IC, is also an important reason for the failure of MB to explain the efficiency of IC. There are other factors which are more significant and relevant as compared to intellectual capital performance.