# Intellectual Capital and Firm Performance: An Indian Evidence

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**Abstract**

The rapidly changing world economies from industrial and manufacturing sector to knowledge based service sector has shifted the focus of investors more towards the reporting of intangible assets like intellectual capital. This phenomenon has got wide attention in developed countries but a very slight attention in developing countries. The basic purpose of this paper is to investigate the nature and extent of intellectual capital disclosure in the Top 30 companies (as per market capitalization) listed on the Bombay Stock Exchange over a period of 5 years i.e. 2010-2014and to analyze the relationship of intellectual capital with the firms' financial performance. The study uses content analysis of annual reports of these 30 companies over the study period to investigate pattern of disclosure practices of companies. The results of content analysis revealed that the disclosure of intellectual capital by the Indian Companies is very low (i.e. 20%). The External Structure is the most reported category with an intellectual capital disclosure of almost 46% in this category. There is slight but not significant increase in the disclosure rate of the companies over the years. Most of the intellectual capital information disclosed in annual reports of the companies is in qualitative form (i.e. 77%). The study uses VAIC method to measure intellectual capital and further uses panel regression analysis incorporating Fixed Effects to find the association of intellectual capital with the firms' performance using market value as the financial indicator. The results of the regression analysis reveal that there is a significant positive impact of intellectual capital on the firms' financial performance.

**Keywords:** Intellectual Capital Disclosure, Indian Companies, Longitudinal Study, Internal Structure, External Structure, Employee Competencies, Financial Performance.

## Introduction

The world economies are changing expeditiously. This agile change is validated by a transition from the industrial and manufacturing economy to the service and knowledge based economy (Joshi &Ubha, 2009). India's developing knowledge sector has attracted the attention of the entire globe. In such knowledge-driven global marketplace, intangible 'invisible' assets such as intellectual property, brands, customer relationship and talent hold much more value than the tangible 'visible' assets such as capital, land, buildings, machinery etc. There were eras when the imperative factors of production were land and capital, but now there is a rapid shift to man and his knowledge.

India being a developing economy has been using the traditional methods of accounting to record its assets to determine the value of performance of its companies. But the shift from the manufacturing to the service sector has increased the amount of intangible assets in the organizations. Thus, now it has become must for the developing economies like India to disclose the amount of its intangible assets like the intellectual capital, the human capital, the customer capital, etc. to reach the real value of the firm's performance.

The concept of intellectual capital gained momentum in the 1990s with the rapid emergence of information and communication technologies in the world (Joshi & Ubha, 2009; Damirchi, Amiri & Rezvani, 2012). Since then many researchers have worked in this field. They gave their own definitions of intellectual capital but there has been no unanimity over a single definition of it. Edvinsson and Malone (1997) defined intellectual capital as "the possession of knowledge, applied experience, organizational technology, customer relationships and professional skills that provide an Organization with a competitive edge in the market". Marr and Schiuma (2001) explained intellectual capital as "the group of knowledge assets that are attributed to an organization and most significantly contribute to an improved competitive position of the organization by adding value to defined key stakeholders". One of the most brief and concise definition of intellectual capital is given by Stewart (1997) i.e., "packaged useful knowledge." According to him the intellectual capital includes an organization's processes, technologies, patents, employee skills, and information about customers, suppliers, and stakeholders. These researchers have categorized intellectual capital on different bases, based on their different theories and perspectives. Sveiby (1997) has classified IC into three components i.e., external structure, internal structure and employee competence. Where external structure comprises of the customer and relational capital, internal structure contains the organizational and structural capital and the employee competence consists of the human or the employee capital. Another model which is considered as one of the most popular models for classifying intellectual capita (IC) has been propagated by Saint-Onge (1996) which divides intellectual capital into three parts i.e., human capital, structural capital, and customer capital.

Many companies have started reporting the intellectual capital information to its various groups of external stakeholders in order to improve their understanding about the firm's various competitive positions and to reduce the scope of insider trading which earlier used to create a greater disadvantage for the smaller shareholders having very less amount of shares in the company. Despite of the increasing demand of intellectual capital reporting the prior research witnessed a very low amount of disclosure of intellectual capital in the annual reports of the companies. Researchers have examined the nature and extent of the intellectual capital disclosure in the corporate annual reports using content analysis; (for example, Abeysekera; 2008, Abeysekera& Guthrie; 2005, Bhasin; 2012, Bozzolan, Favotto, &Ricceri; 2003, Bontis; 2003, Brennan & Niamh; 2001, Guthrie; 2001, Guthrie & Petty; 2000, Joshi &Ubha; 2009, Pablos; 2003, Petty & Cuganesan; 2005, Seetharaman, Sooria, & Saravanan; 2002, Sonnier; 2008, Striukova, Unerman, & Guthrie; 2008, Sujan & Abeysekera; 2007, Vandemaele, Vergauwen, & Smits; 2005, Vergauwen&Alem; 2005, Wagiciengo & Belal; 2012). The purpose of this paper is to contribute to this strand of intellectual capital disclosure literature. Most of the previous studies have been piloted in developed countries but only a minor attention has been given to developing economies like India; (for example, Abeysekera; 2008, Abeysekera& Guthrie; 2005, Joshi &Ubha; 2009, Wagiciengo & Belal; 2012). Also only a few researches have been found which emphasize on finding a long term relationship of the Intellectual Capital with the firms' performance (for example, Deep &Narwal; 2014, Gruian; 2011, Chen, Cheng & Hwang; 2005 and Bontis, Keow& Richardson; 2000). The current study is conducted with a purpose to examine the nature and extent of intellectual capital reporting practices in the 'Top 30' companies listed on the 'Bombay Stock Exchange' and to determine the long term impact of intellectual capital on the financial performance of these companies. The intellectual capital is calculated through the Value Added Intellectual Coefficient (VAIC) method given by Public and then its association with the firm's performance is analyzed using Market Valuation as the financial indicator. The current study provides a longitudinal perspective of intellectual capital reporting over a period of 5 years rather than concentrating on a single sector for a single year. Moreover, only a hand full of studies has been carried out in India for examining the association between the intellectual capital and the financial performance measures of the firm. Thus, the present study measures the intellectual capital and analysis its impact on the financial performance of the 30 companies (as per market capitalization), which Indian managers may use in order to assess the company performance and benchmark it with the worldwide standards.

**Prior Literature**

Table 1exhibits the prior literature which indicates that the studies conducted on Intellectual Capital disclosure have been carried out from a developed country perspective (for example, Canada, Australia, Ireland, United Kingdom, and other European countries). Most of the studies are cross-sectional and country specific in nature and have used

content analysis as a technique to measure the intellectual capital disclosure practices in various companies; (for example, Abeysekera& Guthrie; 2004, Abeysekera; 2008, Brennan & Niamh; 2001, Bontis; 2003, Bozzolan, Favotto&Ricceri; 2003, Joshi and Ubha; 2009, Sujan & Abeysekera; 2007, Wagiciengo and Belal; 2012). Majority of the prior studies reveal that the external capital is the most reported category followed by the other two categories; (for example, Abeysekera & Guthrie; 2004, Bontis; 2003, Bozzolan, Favotto & Ricceri; 2003, Sujan & Abeysekera; 2007). It has also been observed that the level of intellectual capital disclosure being reported by the companies is very low. The empirical evidence shows that this subject has only been investigated in qualitative form and quantitative reporting of intellectual capital is very less (for example, Brennan & Niamh; 2001, Bontis; 2003, Joshi and Ubha; 2009). If we talk about the available literature on the relationship of the Intellectual Capital with the firms' performance then a very few studies have been conducted (for example, Deep & Narwal; 2014, Gruian; 2011, Chen, Cheng & Hwang; 2005 and Bontis, Keow& Richardson; 2000) which revel that there is a positive impact of the Intellectual Capital on the performance of the companies.

**Table 1: Review of Literature**

| Author and Year | Country | Sample | Study Period | Methodology | Findings |
|---|---|---|---|---|---|
| Deep &Narwal (2014) | India | 100 | 2002 - 2012 | • VAIC<br>• Correlation<br>• OLS Panel Regression Analysis | • IC has a significant positive relation only with the profitability of the company<br>• Physical Capital has a major impact on the profitability |
| Wagiciengo and Belal (2012) | South Africa | 20 | 2002 - 2006 | Content Analysis using Abeysekera and Guthrie (2005) framework | • Proportion of Human Capital increased to 69%<br>• Out of 15 sub categories Equity issues attracted the top rank<br>• Proportion of External Capital Disclosure was 22%<br>• Proportion of Internal Capital Disclosure was 9% |
| Gruian (2011) | Romania | 41 | 2007 - 2009 | • VAIC<br>• Multiple Linear Regression Analysis | • Capital Employed was the main factor that affected the firm's performance<br>• Influence of human & structural capital was not that strong |
| Joshi and Ubha (2009) | India | 15 | 2007 & 2008 | Content Analysis using 39 items summarized by world congress on IC | • Infosys Technologies ltd disclosed maximum number of IC items followed by Tata Consultancy Services and Satyam computers<br>• Disclosure items were scattered in the annual reports with mean disclosure of 3.9 items<br>• Negligible disclosure of IC in IT Cos. |
| **Author and Year** | **Country** | **Sample** | **Study Period** | **Methodology** | **Findings** |
| Abeysekera (2008) | Sri Lanka & Singapore | 20 | 1998 – 2000 | • Content Analysis using an Index containing 45 intellectual capital items | • Upward trend in the intellectual Capital disclosure in both Sri Lankan firms and Singaporean firms<br>• Human Capital was the most disclosed Category |
| Sujan&Abeysekera (2007) | Australia | 20 | 2004 | Content Analysis of annual reports | • IC reporting practices were not structured and systematic, rather were inconsistent<br>• 73% of the IC reported was in qualitative nature<br>• External Capital was the most reported category |
| | | | | | (48%)<br>• Internal Capital disclosure was 31% of the total disclosure<br>• Human Capital disclosure was 21% of the total disclosure |
| Chen, Cheng & Hwang (2005) | Taiwan | 4254 | 1992 - 2002 | • VAIC<br>• Panel Regression Analysis | • Firms' IC has a positive impact on the market and financial Performance |
| Vandemaele, Vergauwen& Smits (2005) | Netherlands, Sweden & UK | 20 | 1998, 2000 & 2002 | Paired Sample tests conducted to determine the significant differences in the IC disclosure | • Swedish sample companies disclosed more IC information than the Dutch and UK companies<br>• Upward trend in IC disclosure |

| Author and Year | Country | Sample | Study Period | Methodology | Findings |
|---|---|---|---|---|---|
| Abeysekera& Guthrie (2004) | Sri Lanka | 30 | - | Content Analysis of annual reports using a framework of 45 IC items | • External Capital was most reported followed my Human Capital<br>• Most of the reporting was in qualitative form<br>• Sri Lankan companies are more active in IC reporting than other developing nations |
| Bozzolan, Favotto&Ricceri (2003) | Italy | 30 | 2001 | • Content Analysis of annual reports<br>• OLS regression | • Disclosure of External Capital was 49% of the total disclosure<br>• Internal Capital was 30% of the total disclosure<br>• Human Capital was 21% of the total disclosure<br>• High profile companies show a higher level of disclosure |
| Brennan & Niamh (2001) | Ireland | 11 | 1999 | • Content Analysis using the framework of 24 variables of Guthrie et.al (1999)<br>• Comparison of market and book values taken from co websites and annual reports respectively | • Significant differences in the market values and book values were found out in 9 out of the 11 companies<br>• Low amount of disclosure of IC that too in qualitative form |
| Bontis, Chua Chong Keow& Richardson (2000) | Malaysia | 107 Respondents | - | • Questionnaire containing 63 statements on a 7–point Likert Scale developed by Bontis in 1997 | • Human Capital is important regardless of the industry type<br>• Customer Capital has a significant impact on the Structural Capital<br>• Structural Capital has a positive relationship with the financial performance regardless of the industry. |

**Research Methodology**

The objective of the current study is to examine the nature and extent of the Intellectual Capital disclosure in the Indian Companies over a period of 5 years i.e. 2010-2014. Further it also measures the Intellectual Capital and analyses the impact of Intellectual Capital on the financial performance of the companies over a period of 5 years i.e. 2010-2014.

To determine the nature and extent of the Intellectual Capital disclosure, a sample consisting of the 30 companies(as per market capitalization) listed on the Bombay Stock Exchange for a period 2010-2014 were considered. The list of companies was extracted on October 20, 2014 from the official website of Bombay Stock Exchange. The current study used the Annual Reports of the sampled companies as a source of raw data. The reason behind choosing annual reports as a source of data collection was that, the annual reports are regularly produced and widely distributed documents. As validated by Lang and Lundholm (1993) the reporting level in the annual reports is positively correlated with the amount of corporate information communicated to the market and to the stakeholders using other media. Moreover, annual reports offer an opportunity for a comparative analysis of management attitudes and policies across the reporting periods (Niemark (1995), Guthrie et al. (2004), Sujan and Abeysekera (2007)). This means it can act as a parameter to measure the attitude of a company towards corporate reporting as what to report and what not to report is in the control of the company itself. For the current study, the annual reports of 30 companies for a period of 5 years were obtained from the official websites of the companies and from the website report.capitaline.com. For analyzing the nature and extent of the Intellectual Capital in the annual reports of the selected companies, Content Analysis of annual reports was conducted which involves reading each annual report and recording the desired attributes on the coding sheets as per the pre-specified coding scheme. The framework used in the current study is similar to that used by Guthrie et al. (1999). This instrument of content analysis includes 24 intellectual capital items divided into three broad categories i.e. Internal Structures (or Organizational Capital), External Structures (or Customer/ Relational Capital) and Employee Competence (or Human Capital). Table 2displays the list of Intellectual Capital items as per the Guthrie et al. (1999) framework.

**Table 2: List of Intellectual Capital Items**

| |
|---|
| **Internal Structures (Organisational Capital)** |
| **Intellectual Property** |
| Patents |
| Copyrights |
| Trademarks |
| **Infrastructure Assets** |
| Management Philosophy |
| Management process |
| Corporate Culture |
| Information System |
| Networking System |
| Financial Relations |
| **External Structures (Customer/Relational Capital)** |
| Brands |
| Customers |
| Customer Loyalty |
| Company Names |
| Distribution Channels |
| Business Collaborations |
| Licensing Agreements |
| Favorable Contracts |
| Franchising Agreements |
| **Employee Competence (Human Capital)** |
| Know-how |
| Education |
| Vocational Qualification |
| Work-related Knowledge |
| Work-related Competencies |
| Entrepreneurial Spirit |

A four-way numeric coding scheme was employed to record each attribute. For each firm a value of zero was used to indicate that the attribute did not appear in the annual report; a value of one indicated that the item appeared only in qualitative form; a value of two denoted that the item appeared in quantitative/numeric form, whereas a value of three indicated that the item appeared in the annual report in both qualitative and quantitative (or numeric) form.

The annual report was considered as an all-inclusive reporting document for the purpose of content analysis, thus, if reporting of an identical attribute was repeated in the annual report, it was recorded only once. Which means if the same intellectual capital item had a frequency of more than one, then also it was recorded only once in the coding sheet. Moreover, for each intellectual capital item reviewed, the highest order of reporting was recorded. That means if an item is reported under numeric code 2 in one place and under numeric code 3 at another place in the annual report, then it will be allotted 3 as its code. This approach followed in the present study is similar to the approach followed by Guthrie et al. (1999), Guthrie and Petty (2000) and Sujan and Abeysekera (2007). The total score of all the items was 72 (24*3; where, 24 is the total number of intellectual capital items and 3 is the highest numeric code in the coding scheme), for one company for a single year.

As far as the reliability of the coding instrument is concerned, an instrument which has already been used and tested by various other researchers in their respective studies (for example; Guthrie et al.; 1999, Brennan and Niamh; 2001, Sujan and Abeysekera; 2007) has been used in the present study to determine the nature and extent of intellectual capital reported by the Indian companies. Moreover, to minimize any error due to the researchers' bias, intellectual capital attributes were pre-defined before

undertaking the content analysis. Moreover, for intra-coder reliability the annual reports were re-examined after a certain time interval to confirm a consistent identification of the content in the annual reports.

As far as the impact of intellectual capital on the firm's performance is concerned, the following hypothesis has been constructed:

H0: There is no association between Value Added Intellectual capital Coefficient (VAIC) and Market Value of the company.

For the purpose of measuring Intellectual Capital, VAIC method has been used and its association with the financial performance has been assessed using Market to Book Value of the companies as the performance indicator. VAIC method has been used as it is easy to calculate and is more acceptable as it is based on the published audited financial information of the firm therefore the subjectivity is reduced to a large extent by this method (Deep &Narwal, 2014). Further, for analyzing the impact of intellectual capital on financial performance of the companies Panel Data Regression has been used. Data has been collected from the Ace Equity database, which is maintained by Accord FinetechPvt Ltd Co. Top 30 companies (as per market capitalization) listed on the Bombay Stock Exchange as on October 20, 2014, (except for the 4 Banking Companies i.e. Axis Bank, HDFC Bank, ICICI Bank and State Bank of India) for a period of 5 years i.e. 2010-2014 have been chosen for the study.

**Variable definition**

**Independent Variables**

In this study, value added intellectual coefficient (VAIC) is used as independent variable. Intellectual Capital has been defined in a different ways, but the most commonly accepted definition categorizes it into human, structural and customer capital, so these three components were used as intellectual capital in this paper. The value added intellectual coefficient (VAIC) is used as a degree to reflect the intangible assets of the firm. The detailed analysis of the concept is as follows:

Value added is the difference between the output and input in the organization.

Value Added = Output - Input

Outputs are products and services of the organization while inputs are all the expenses which are incurred in producing the products or services.

It is also expressed as

$$\mathbf{VA = I + DP + D + T + M + R + W}$$

$$\mathbf{Or\ VA = W + I + T + NI}$$

Where, I = Interest expenses;

DP = Depreciation expenses;

D = Dividends;

T = Taxes paid;

M = Equity of minority shareholders in net income of subsidiaries;

R = Retained profits;

W = Wages and salaries; and

NI = Profits after taxes.

The first step was to determine the efficiency of the human capital on the value creation of the firm. This was obtained by estimating the ratio VAHU; this is the ratio of VA of the firm to the expenses made by the firm on its human capital. These expenses are reflected in the salaries and wage cost of the firm in their annual reports:

$$\mathbf{VAHU = VA / HC}$$

Where, VA = Value added for the firm;

HC = Total wages and salary costs for the firm and

VAHU = Human capital coefficient for the firm.

The next measure determines the efficiency of the structural capital on the VA by the firm. This is the ratio of structural capital (SC) and value added of the firm represented as SCVA. The SC was calculated as follows:

SC = VA – HC

Where, SC = Structural capital for the firm;

VA = Value added for the firm and

HC = Total wages and salary costs for the firm.

Then the relationship is shown as:

$$\mathbf{SCVA = SC / VA}$$

Where, VA = Value added for the firm;

SC = Structural capital for the firm and

SCVA = Structural capital VA for the firm.

The next measure was used to measure the efficiency of the capital employed (VACA). This is the ratio of the value added to the total capital employed by the firm;

$$\mathbf{VACA = VA / CA}$$

Where, VA =Value added of the firm and;

CA = Capital employed of the firm and

VACA=Value added capital coefficient of the firm.

The sum of these three ratios produced a value, which was denoted as VAIC – an indicator of the firms' intellectual ability and performance. If the VAIC of any firm is higher than others it means that the Intellectual Capital efficiency of this firm is higher (Deep and Narwal, 2014).

**VAIC = VAHU + SCVA + VACA**

Where, VAIC = Value added intellectual coefficient for the firm;

VAHU = Human capital coefficient for the firm;

SCVA = Structural capital value added for the firm and

VACA = Value added capital coefficient for firm.

**Dependent Variables**

For testing the association between intellectual capital and financial performance Market to book value (MB) of the firm has been used as the performance indicator.

- Market to book value (MB): It reflects the market valuation of the companies. It is the ratio of Market capitalization of the given year to capital employed of the firm.

**MB = Market Capitalization / Book Value of Total Assets**

**Control Variables**

For the purpose of examining the relationship, this paper used Panel regressions as the underlying statistical tool. In conducting regression analysis, following control variables were included:

- Size of the firm (SALES): Size of the firm as measured by the natural log of total sales, used here to control for the impact of size on wealth creation.
- Physical capacity (PC): This ratio measures physical intensity i.e. how much fixed assets are there in proportion to total asset, calculated as:

**PC = Fixed Assets / Total Assets**

**Panel Regression Model**

Since the data was of panel nature consisting of both time series and cross sectional data, panel regression was used for the purpose of analysis.

The regression model developed for carrying out the analysis of the panel data was:

$$MB_{it} = \alpha_{it} + \beta 1_{it} VAIC_{it} + \beta 2_{it} PC_{it} + \beta 3_{it} SALES_{it} + \varepsilon_{it}$$

Where, $\alpha it$ = Constant term;

VAIC = Value Added Intellectual Co-efficient;

PC = Physical capacity;

SALES = Market Capitalization;

MB = Market to book value and

$\varepsilon it$ = Error term.

**Results and Findings**

**Nature and Extent of the Intellectual Capital disclosure**

The overall results reported in Table 3 indicate that there is an increase in the amount of intellectual capital disclosure in the Indian companies over the study period. Over the period of 5 years, the disclosure of intellectual capital increased from 410 in year 2010 to 473 in the year 2014, though the increase is not that significant with the reference to a 5 year period. If we talk about the disclosure of each individual category of intellectual capital over the study period, there is an increase in the reporting of the External Structure (or customer capital) throughout the period of 5 years i.e. a score from 182 in year 2010 to 216 in year 2014. In case of Internal Structure (or organizational capital) also there is an increase in the disclosure practices i.e. froma score of 137 in year 2010 to 163 in the year 2014.But as far as the third category i.e. the Employee Competence (or human capital) is concerned there is not much change in the disclosure practice. Rather it has decreased after 2010 from a score of 91 in 2010 to 72, 73, and 76 in 2011, 2012, 2013 respectively. But there is an increase in the reporting of human capital to a score of 94 from 73 after the year 2013.

**Table 3: Intellectual Capital Disclosure Categories**

| | 2010 | % | 2011 | % | 2012 | % | 2013 | % | 2014 | % |
|---|---|---|---|---|---|---|---|---|---|---|
| **External Structure** | 182 | 44% | 188 | 47% | 199 | 47% | 204 | 48% | 216 | 46% |
| **Internal Structure** | 137 | 34% | 138 | 35% | 148 | 36% | 148 | 34% | 163 | 34% |
| **Employee Competence** | 91 | 22% | 72 | 18% | 73 | 17% | 76 | 18% | 94 | 20% |
| **Total** | 410 | | 398 | | 420 | | 428 | | 473 | |

Category-wise results also validate that the most reported category is the external structure with a total disclosure of almost 46%. This validates that the companies prefer reporting those intellectual capital items which are related to the customer and supplier capital. This is in line with the findings of various other researchers (for example, Abeysekera & Guthrie; 2004, Bontis; 2003, Bozzolan, Favotto & Ricceri; 2003, Sujan & Abeysekera ; 2007). The second most reported category is the internal structure, with a total disclosure of almost 35%. The least reported category is employee competence (i.e. 19%) which indicates that Indian companies are least interested in reporting information related to the human resource, their knowledge and skills.

The total intellectual capital Disclosure of the top 30 Indian companies is less than 20%. The total disclosure score obtained by the companies is 2129 out of a total score of 10800, which is too low. This low level of disclosure score indicates that the Indian Companies are not bothered about disclosing information related to the disclosure of their intellectual capital in their annual reports. From the analysis it can be observed that the Intellectual Capital reporting is very less in the Indian Companies. Moreover the intellectual capital information reported in the annual reports by the companies is mostly in qualitative form (i.e. 77.28%), whereas the information being reported in quantitative (or numeric) form is as less as 22.83%.

Table 4 validates the total score obtained by each intellectual capital item throughout a period of 5 years along with the ranks obtained by each item after combining the disclosure of the total 5 year period. As depicted in the table, 'Customers' was the most frequently reported intellectual capital item followed by 'Patents', 'Favorable Contracts' and 'Employee Knowhow'.

**Table 4: Year-Wise Intellectual Capital Disclosures' Ranking**

| | 2010 | Rank 2010 | 2011 | Rank 2011 | 2012 | Rank 2012 | 2013 | Rank 2013 | 2014 | Rank 2014 | Total | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Internal Structures (Organisational Capital)** | | | | | | | | | | | | |
| **Intellectual Property** | | | | | | | | | | | | |
| Patents | 34 | 3 | 38 | 2 | 36 | 2 | 38 | 2 | 41 | 2 | 187 | 2 |
| Copyrights | 2 | 24 | 1 | 24 | 7 | 21 | 8 | 20 | 13 | 17 | 31 | 21 |
| Trademarks | 14 | 13 | 14 | 11 | 19 | 9 | 15 | 13 | 21 | 8 | 83 | 10 |
| **Infrastructure Assets** | | | | | | | | | | | | |
| Management Philosophy | 30 | 5 | 30 | 4 | 30 | 5 | 30 | 4 | 30 | 4 | 150 | 5 |
| Management process | 12 | 15 | 12 | 14 | 12 | 15 | 10 | 18 | 10 | 21 | 56 | 18 |
| Corporate Culture | 15 | 10 | 14 | 11 | 16 | 12 | 18 | 9 | 19 | 13 | 82 | 11 |
| Information System | 13 | 14 | 10 | 18 | 10 | 18 | 11 | 16 | 14 | 15 | 58 | 16 |
| Networking System | 4 | 22 | 4 | 23 | 5 | 23 | 2 | 24 | 2 | 24 | 17 | 24 |
| Financial Relations | 13 | 14 | 15 | 10 | 13 | 13 | 16 | 11 | 13 | 17 | 70 | 15 |
| **External Structures (Customer/Relational Capital)** | | | | | | | | | | | | |
| Brands | 12 | 15 | 13 | 13 | 17 | 11 | 15 | 13 | 20 | 9 | 77 | 12 |
| Customers | 42 | 1 | 42 | 1 | 40 | 1 | 44 | 1 | 44 | 1 | 212 | 1 |
| Customer Loyalty | 3 | 23 | 5 | 22 | 10 | 19 | 9 | 19 | 12 | 20 | 39 | 20 |
| Company Names | 20 | 7 | 20 | 8 | 21 | 7 | 20 | 8 | 20 | 9 | 101 | 8 |
| Distribution Channels | 20 | 7 | 21 | 7 | 22 | 6 | 25 | 7 | 25 | 6 | 113 | 7 |
| Business Collaborations | 25 | 6 | 22 | 6 | 21 | 7 | 26 | 6 | 23 | 7 | 117 | 6 |
| Licensing Agreements | 15 | 10 | 18 | 9 | 20 | 9 | 18 | 9 | 20 | 9 | 91 | 9 |
| Favorable Contracts | 35 | 2 | 36 | 3 | 36 | 3 | 36 | 3 | 38 | 3 | 181 | 3 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Franchising Agreements | 10 | 19 | 11 | 15 | 12 | 15 | 11 | 16 | 14 | 15 | 58 | 16 |
| **Employee Competence (Human Capital)** | | | | | | | | | | | | |
| Know-how | 33 | 4 | 28 | 5 | 31 | 4 | 29 | 5 | 30 | 4 | 151 | 4 |
| Education | 7 | 21 | 7 | 20 | 6 | 22 | 6 | 22 | 7 | 22 | 33 | 22 |
| Vocational Qualification | 17 | 9 | 11 | 15 | 12 | 15 | 13 | 15 | 20 | 9 | 73 | 13 |
| Work-related Knowledge | 15 | 10 | 11 | 15 | 13 | 13 | 16 | 11 | 18 | 14 | 73 | 13 |
| Work-related Competencies | 8 | 20 | 7 | 20 | 2 | 24 | 5 | 23 | 6 | 23 | 28 | 23 |
| Entrepreneurial Spirit | 11 | 18 | 8 | 19 | 9 | 20 | 7 | 21 | 13 | 17 | 48 | 19 |

Whereas the least reported item in the annual reports of the Indian companies was the 'Networking System' followed by the 'Work-related Competencies', 'Employee Education' and 'Copyrights'. It also represents the ranks of each year along with its total score. Most reported item was 'Customers' in all the 5 years followed by 'Favorable Contracts' in the year 2010 and 'Patents' in the years 2011-2014. The least reported category in the year 2010 and 2011 was 'Copyrights', in the year 2012 was 'Work-related competencies' and 'Networking System' in the year 2014, followed by 'Customer Loyalty' in 2010, 'Networking System' in 2011 and 2012 and 'Work-related Competencies in the year 2013 and 2014.

As far as the company ranking is concerned, Table 5 indicates the total consolidated score obtained by each company over a period of 5 years i.e. 2010-2014 and the respective rank obtained by each company. As per the observations of table 5, 'ITC' is the best performing company, reporting the maximum information about the intellectual capital in its annual reports followed by 'Tata Steel' and 'HUL'. Whereas, the worst performing company in terms of reporting of intellectual capital information is 'Coal India' followed by 'Dr. Reddy's' and 'ICICI Bank'.

Table 5 further digs the details of the best and the worst performing companies in terms of intellectual capital disclosure as per the total disclosure of intellectual capital of the companies every year. If we consider the year 2010, 'ITC' is the best performing company. It maintains its rank in the year 2011, 2013 and 2014. But in 2012 it falls to a rank 6 with 'NTPC' taking its place. 'NTPC' shares the position of the best performing company with 'ITC' in the year 2010 and 2011 too. But if we see the results of the year 2013 and 2014, 'NTPC' has shown a negative shift in the reporting. We can clearly analyze it from the table that NTPC's performance in the year 2013 and 2014 was bad as compared to the previous years.

**Table 5: Company Ranking as per the Total Intellectual Capital Reported (year-wise)**

| Companies | 2010 | Rank 2010 | 2011 | Rank 2011 | 2012 | Rank 2012 | 2013 | Rank 2013 | 2014 | Rank 2014 | Total IC Reported | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Axis Bank** | 10 | 21 | 10 | 21 | 10 | 23 | 11 | 21 | 10 | 25 | 51 | 23 |
| **Bajaj Auto** | 10 | 21 | 11 | 19 | 15 | 9 | 12 | 18 | 14 | 17 | 62 | 19 |
| **Bharti Airtel** | 22 | 3 | 19 | 4 | 20 | 4 | 19 | 5 | 20 | 8 | 100 | 4 |
| **BHEL** | 15 | 10 | 14 | 12 | 13 | 16 | 14 | 13 | 14 | 17 | 70 | 13 |
| **CIPLA** | 9 | 23 | 8 | 26 | 8 | 27 | 16 | 10 | 7 | 28 | 48 | 26 |
| **Companies** | **2010** | **Rank 2010** | **2011** | **Rank 2011** | **2012** | **Rank 2012** | **2013** | **Rank 2013** | **2014** | **Rank 2014** | **Total IC Reported** | **Rank** |
| **Coal India** | 4 | 29 | 8 | 26 | 7 | 29 | 11 | 21 | 10 | 25 | 40 | 30 |
| **Dr. Reddy** | 15 | 10 | 7 | 29 | 6 | 30 | 7 | 30 | 7 | 28 | 42 | 29 |
| **GAIL** | 11 | 18 | 11 | 19 | 10 | 23 | 8 | 29 | 20 | 8 | 60 | 20 |
| **HDFC** | 9 | 23 | 9 | 23 | 8 | 27 | 12 | 18 | 12 | 21 | 50 | 24 |
| **HDFC Bank** | 18 | 8 | 15 | 9 | 17 | 8 | 18 | 8 | 18 | 11 | 86 | 7 |
| **Hero Honda Motocorp** | 4 | 29 | 8 | 26 | 11 | 22 | 10 | 26 | 17 | 13 | 50 | 24 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hindalco** | 16 | 9 | 9 | 23 | 13 | 16 | 11 | 21 | 18 | 11 | 67 | 16 |
| **HUL** | 22 | 3 | 22 | 3 | 20 | 4 | 19 | 5 | 21 | 6 | 104 | 3 |
| **ICICI** | 7 | 28 | 5 | 30 | 13 | 16 | 11 | 21 | 10 | 25 | 46 | 28 |
| **Infosys** | 19 | 7 | 17 | 6 | 19 | 6 | 21 | 3 | 23 | 3 | 99 | 6 |
| **ITC** | 23 | 1 | 23 | 1 | 19 | 6 | 25 | 1 | 25 | 1 | 115 | 1 |
| **Larsen & Turbo** | 15 | 10 | 14 | 12 | 14 | 12 | 14 | 13 | 15 | 16 | 72 | 12 |
| **Mahindra & Mahindra** | 14 | 15 | 13 | 14 | 12 | 21 | 12 | 18 | 14 | 17 | 65 | 17 |
| **Maruti** | 11 | 18 | 12 | 17 | 14 | 12 | 13 | 16 | 19 | 10 | 69 | 14 |
| **NTPC** | 23 | 1 | 23 | 1 | 23 | 1 | 15 | 12 | 16 | 14 | 100 | 4 |
| **ONGC** | 11 | 18 | 10 | 21 | 13 | 16 | 19 | 5 | 21 | 6 | 74 | 11 |
| **Reliance Industries** | 20 | 5 | 16 | 6 | 15 | 9 | 16 | 10 | 16 | 14 | 83 | 10 |
| **SBI** | 15 | 10 | 13 | 14 | 9 | 25 | 11 | 21 | 12 | 21 | 60 | 20 |
| **Sesa Sterlite Limited** | 14 | 15 | 15 | 9 | 14 | 12 | 14 | 13 | 12 | 21 | 69 | 14 |
| **Sun Pharma** | 13 | 17 | 13 | 14 | 13 | 16 | 13 | 16 | 13 | 20 | 65 | 17 |
| **Tata Motors** | 8 | 26 | 12 | 17 | 23 | 1 | 18 | 8 | 23 | 3 | 84 | 9 |
| **Tata Power** | 8 | 26 | 9 | 23 | 9 | 25 | 9 | 27 | 12 | 21 | 47 | 27 |
| **Tata Steel** | 20 | 5 | 18 | 5 | 23 | 1 | 20 | 4 | 24 | 2 | 105 | 2 |
| **TCS** | 15 | 10 | 15 | 9 | 14 | 12 | 9 | 27 | 7 | 28 | 60 | 20 |
| **Wipro** | 9 | 23 | 16 | 6 | 15 | 9 | 23 | 2 | 23 | 3 | 86 | 7 |

As far as the worst performing companies are concerned, 'India Limited' and 'Hero Honda Motocorp' performed very bas in the year 2010, thus fetching the lowest rank and reporting the least amount of intellectual capital information in their annual reports. No much improvement can be observed in the reporting practices of 'Coal India Limited' in the following years also. Whereas, a little improvement can be seen in the reporting practices of 'Hero Honda Motorcorp' with a positive shift of its rank from 29 in the year 2010 to 10 in the year 2012 and 13 in the year 2014. 'ICICI Bank' is another least reporting company with its rank varying from 25-30 over the study period. 'Dr. Reddy's' is also a worst performing company with its rank varying from 28-30 over the study period. This indicates that Indian companies are not active in disclosing intellectual capital information to its stakeholders.

**Intellectual Capital and its Impact on Firms' Performance**

For determining the relationship between the Intellectual Capital and the Financial Performance, panel regression has been used. Both Fixed and Random effect models have been applied on the data. Table 6 represents the results of the regression, where Market to Book value is taken as the dependent variable. The table reflects that the Adjusted R2 of the pool model is 1.9% where as that of the fixed effect model and Random effect is 77.2% and 0.2% respectively, which clearly shows that the fixed effect model is the best among all and is able to explain 77.2% of the variation in the dependent variable. Moreover Likelihood Ratio is found to be 17.640, significant at 1 percent level of significance which means that fixed effect model will be used. Further, Hausman test of specification has also been conducted to find out whether fixed effect model is useful or the random effect model is useful. The test result reveals that the chi-square value at 3 degrees of freedom is 9.597, significant at 5 percent level of significance.

**Table 6: Panel Regression Results for Market Value (MB) of the Companies**

| | Pool Model | Fixed Effect Model | Random Effect Model |
|---|---|---|---|
| **Intercept** | 4922.960 * | -9550.698 ** | -1899.760 |
| | (2.876) | (-2.646) | (-0.734) |
| **VAIC** | 6.212 | 56.941 *** | 30.064 |
| | (0.488) | (1.683) | (1.474) |
| **PC** | 479.713 | 61.956 | 338.595 |
| | (0.493) | (0.046) | (0.316) |

| | | | |
|---|---|---|---|
| **SALES** | -386.830 ** | 1025.658 * | 277.129 |
| | (-2.120) | (2.808) | (1.055) |
| **Adjusted $R^2$** | 0.019 | 0.772 | 0.002 |
| **F - Statistics** | 1.848 | 16.602 * | 1.125 |
| **Likelihood Ratio** | **Cross Section F Statistics 17.640 *** | | |
| **Hausman Test** | | **$\chi^2$ (3) = 9.597 **** | |

Note: *, **, *** represents level of significance at 1 percent, 5 percent and 10 percent respectively. Values of t-statistics are provided in parenthesis below the co-efficient estimates.

This means that the fixed effect model is more appropriate than the random effect model in estimating the results of the market valuation. The results reveal that the H0 i.e. there is no association between the value added intellectual capital and the market value is rejected. Hence, the Intellectual Capital is having a significant positive impact in increasing the market value of the companies and thus having a positive impact on the financial performance of the companies. Though the impact is significant at a 9.5 percent level of significance but the results can be surely improved by taking a larger sample of companies. Thus, it is observed that the investors are interested in the intangible intellectual information of the companies as well along with the tangible information.

## Conclusion

It is evident from the above results and findings that the intellectual capital reporting has not received much preference among the Indian companies so far. Moreover it is also clear from the results that the reporting is not uniform in all the companies. As per the findings, the disclosure of intellectual capital in the annual reports of the Sensex companies is very less, although it has shown a slight increase as compared to the previous years. Similar to a few of the prior studies, the external capital is the most reported category followed by the other two. Human capital has come out to be the least popular category of reporting among the Indian companies. It has also been seen that the companies are making only a little progress towards the intellectual capital disclosure practices and even when it is reported, it is mostly in the qualitative form. Moreover it has been observed that there is a significant impact of the Intellectual Capital on the financial performance of the companies though it is loosely significant. Better results can be attained if the sample is large. The current study provides an insight into the intellectual capital reporting practices of the Indian companies from a longitudinal perspective. Though, it suffers from a few limitations like; the subjectivity involved in the coding procedure used, but every effort has been made to ensure the reliability of the coding process and to reduce all sorts of bias and errors. Moreover, the sample used in the study is quite small; therefore, the results cannot be generalized to the intellectual capital annual reporting practices of all the Indian companies. Also only one financial performance indicator i.e. market value has been considered in the current study. Other performance indicators like profitability and productivity can also be taken into account to attain a clear picture of the association of intellectual capital with the firms' financial performance.

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