

Intellectual Capital and its Association with Financial Performance: A Study of Indian Textile Sector

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ABSTRACT:

This study analyses the relationship of intellectual capital with financial performance measures of Indian textile sector for a period of 10 years ranging from 2002 to 2012. For the study, corporate annual reports, especially the profit and loss accounts and balance sheets of the selected companies for the relevant years have been used from CMIE prowess database. Value Added Intellectual Coefficient (VAIC) method is applied for measuring the intellectual capital of the companies. For analyzing any existing relationship between variables, correlation and OLS regression is used in this study. It has been observed that intellectual capital in textile sector has significant positive relationship only with profitability of the companies. The empirical analysis found that physical capital (VACA) was the one which was seen to have major impact on the profitability of the firms over the period of study. Results indicate that Indian investors consider only financial disclosure of the companies regarding their investment decision. The study provides useful knowledge to the researchers and managers regarding intellectual capital disclosure and its relation with financial performance.

Keywords: *Intellectual capital, Profitability, Productivity, Market valuation, Textile industry*

INTRODUCTION

Traditionally physical assets are considered as leading determinants of the economic performance of any activity. But the modern application of science and technology has altered the structure of production system. Now in new economic system, intangible assets are recognized as prominent resources. In this modern economy, intellectual capital is the most important asset for the firm (Clarke et al., 2011). Traditional financial accounting statements have failed to reflect the true value created by companies, because only tangible assets are taken into account for measuring the performance of the firm. The legitimate justification is required for the increasing gap between the market value and book value of the companies. The reason for this

gap simply may perhaps be the absence of intangible assets from financial statements of the firm. Now, the source of economic value is the creation of IC, not the production of material goods. When companies have a large proportion of their investment in intangible assets and when traditional performance measurement techniques are used, then, inappropriate decisions may be taken by investors and other stakeholders (Fier and Stainbank, 2003)

There are plenty of generic definitions of intellectual capital and till now there is no consensus over a single definition of it. Edvinsson and Malone (1997) defined IC as the knowledge which can be converted into value. Skandia (2000) defines it as “the possession of

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knowledge, applied experience, organizational technology, customer relationships and professional skills that provide Skandia with a competitive edge in the market.” Marr and Schiuma (2001) defined 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.”

Categorization of intellectual capital has been attempted by different researchers on the basis of different criteria so that its measurement may be easily carried out. Sveiby (1997) has classified IC as into three components, namely as, external structure, internal structure and employee competence. One of the most popular model for classifying intellectual capita (IC) has been offered by Saint-Onge (1996). It divides intellectual capital into three parts: human capital, structural capital, and customer capital.

Human capital is recognized as the largest and the most important intangible asset in an organization. It includes the collective knowledge, competency, experience, skills and talents of people within an organization.

Structural capital is the supportive infrastructure for human capital – it is the capital, which remains in the factory or office when the employees leave at the end of the day. It includes organizational ability, processes, data and patents.

Relational capital is a company’s relationship with its customers and with its network of suppliers, strategic partners and shareholders. The value of these assets is determined by the company’s reputation or image (MERITUM guidelines, 2002).

(Chen et al., 2005) is of the view that despite the increasing recognition of intellectual capital for measuring the true value of the firm, an appropriate measure of firms’ intellectual capital is still in infancy. (Bornemann et al., 2009) found that enterprises which have managed their intellectual capital better, had achieved stronger competitive advantage than the general enterprises. Firms, by means of managing their intellectual capital can outperform other companies (Ghosh and Mondal, 2009).

Here in this paper intellectual capital is measured through VAIC method developed by Pulic and association of intellectual capital with

financial performance indicators such as productivity, profitability and market valuation of the companies are assessed. VAIC method is used because it is easy to calculate and is more acceptable as it is based on published audited financial information of the firm and therefore the subjectivity held by other measures is reduced to a large extent by this method.

Literature Review

The increasing importance of intangible assets in the emerging knowledge economy is undisputable in recent years. There are many firms which have started measuring, managing and reporting their intangibles. However, the complete intellectual capital (IC) disclosure is still in its infancy stage. There are few studies which analyzes intellectual capital disclosure and its association with financial performance of firms. A brief description of relevant studies is presented here to provide a glance on the existing literature.

International Studies

Mehralian et al. (2012) carried out a study on pharmaceutical industry of Iran to find association between intellectual capital (IC) components with the traditional measures of performance and found that company’s IC can explain profitability but not productivity and market valuation in Iran. Study also found that physical capital was the one which was having major impact on the profitability of the firms.

Komnencic and Pokrajcic (2012) investigated if intellectual capital (IC) has an impact on organizational performance of MNCs in Serbia. The study revealed that human capital was positively associated with all three corporate performance measures. The study also observed that the structural capital was having significant positive relationship with return on equity.

Ahangar (2011) analyzed the association of intellectual capital with financial performance components. He found that human capital was significantly associated with company’s financial performance. IC efficiency was significantly related with profitability and productivity of the firm. Rehman et al. (2011) carried out a study on Modaraba sector in Pakistan to examine impact of IC on corporate performance. He concluded that human capital efficiency (HCE) and structural capital efficiency (SCE) was positively

associated with financial performance variable namely, return on equity (ROE) and earnings per share (EPS) respectively.

Clarke et al. (2011) examined the effect intellectual capital has on firm performance of Australian companies and found that direct association was there between VAIC and performance of firms, particularly with CEE and lesser association with HCE. It was also observed that current year performance was positively associated with prior year performance of HCE and SCE. Maditinos et al. (2011) in a study took four different economic industry of Greek, concluded that financial performance was only significantly associated with the human capital efficiency (HCE) of the company.

Sharabati et al. (2010) conducted a survey on the pharmaceutical industry of Jordan and observed that firms were successfully managing the intellectual capital and business performance was influenced in a positive manner. The study found that IC components were positively associated with business performance. Zeghal and Maaloul (2010) carried out a study on 300 UK companies and found that IC was having a positive impact on economic and financial performance of the companies. However, the association between IC and stock market performance was significant only for high-tech industries.

Chan (2009a, 2009b) carried out a study in Hong Kong stock exchange and no significant association was found between intellectual capital and four financial performance measures namely ROA, ATO, ROE and MB. Physical capital was found to be the most significant factor improving profitability, productivity and market valuation of the firms.

Ting and Lean (2009) examined the intellectual capital performance and its association with financial performance of financial institutions in Malaysia. The study revealed that intellectual capital and profitability was positively related among Malaysia's finance industry.

Razafindrambinina and Anggreni (2008) investigated the association between intellectual capital and corporate financial performance of Indonesian listed companies from 2003 to 2006 by using VAIC model. It was found that intellectual capital was positively associated

with financial performance with the exception of revenue growth. It was also found that physical/financial capital and structural capital were the most significant components in increasing the corporate performance.

Tan et al. (2007) investigated the association between intellectual capital (IC) and financial performance in listed companies on Singapore exchange. The results revealed that IC and company performance was positively correlated to future company performance. The study also found that the contribution of IC to company performance was different from industry to industry.

Chen et al. (2005) investigated the relationship value creation efficiency has with firms' market valuation and financial performance in Taiwan stock exchange. It was found that Intellectual capital had a positive impact on financial performance and market valuation of the firm. Goh (2005) measured intellectual capital performance of commercial banks in Malaysia. He found that all banks were having relatively higher human capital efficiency than structural and physical capital efficiency. It was also revealed that domestic banks were generally less efficient in intellectual capital performance compared to foreign banks.

Mavridis (2005) in a study of the Japanese banking industry observed that best performing banks were having more usage of intellectual capital than physical capital. The contribution of intellectual capital was significant in corporate success of the banks.

Firer and Williams (2003) investigated association between the intellectual capital and corporate performance in South African firms. The Study observed that association between intellectual capital with profitability, productivity and market valuation were generally limited and mixed. Physical capital remained the most significant underlying resource of corporate performance in South Africa.

Indian Studies

Mondal and Ghosh (2012) investigated relationship between intellectual capital and financial performances of Indian banks and found that relationship between intellectual capital and financial performance indicators namely profitability, productivity and market valuation was varied. The results also suggested

that intellectual capital worked as major factor for competitive advantage.

Pal and Soriya (2012) compared intellectual capital performance between Indian pharmaceutical and textile industry. The Study found that profitability and intellectual capital were positively associated but no significant relationship was observed between intellectual capital with productivity and market valuation in both industries. In another study Pal and Soriya (2011) examined the relationship between Intellectual Capital and Company's Performances in Indian IT industry. The result found that intellectual capital of the company was having positive association with the profitability, but not with productivity and market capitalization of the company.

Ghosh and Mondal (2009) analyzed relationship of intellectual capital with conventional financial performance measures of Indian software and pharmaceutical companies. The study observed that the performance of a company's intellectual capital explained profitability but not productivity and market valuation of the companies.

Kamath (2008) examined relationship between intellectual capital (IC) with traditional measures of performance of top 25 firms in the drug and pharmaceutical industry in India and found that domestic firms seem to be performing well and efficiently utilizing their IC. It was revealed that human capital was having major impact on profitability and productivity of the firms. The utilization of intellectual recourses in Indian pharmaceutical companies was missing.

Research Gap

Only a few studies have been carried out in India for examining the association between intellectual capital and financial performance measures of the firms. Intellectual capital is interested to numerous parties, e.g. shareholders, managers, researchers and policy makers. Present study finds intellectual capital disclosure in the long run. This study will measure intellectual capital performance and its association with financial performance in Indian Textile industry, which Indian managers may use in order to evaluate the corporate performance and benchmark it with global standards.

Research Objectives and Hypotheses

The objective of this paper is to measure intellectual capital and empirically analyze its impact on financial performance measures namely as productivity, profitability and market valuation of the firm.

For achieving the above mentioned objectives, following hypotheses has been constructed:

H01: There is a positive association between "value added intellectual capital coefficient (VAIC)" and productivity of the company.

H02: There is a positive association between "value added intellectual capital coefficient (VAIC)" and profitability of the company.

H03: There is a positive association between "value added intellectual capital coefficient (VAIC)" and market value of the company.

RESEARCH METHOD

Today intellectual capital is a critical success factor, not only for knowledge-intensive organizations, but also for most of the other types of organizations. The measurement of intellectual capital is of vital importance for knowing the financial position of the company.

Intellectual capital will be measured using Value Added Intellectual Coefficient (VAIC) method and its association with financial performance indicators, such as assets turnover, return on assets and market to book value of the companies will be assessed. Firstly, the correlation analysis will be done to find out whether there is any correlation between financial performance measures (dependent variables) and VAIC (independent variable) and then OLS regression analysis will be run to determine the influence of intellectual capital on profitability, productivity and market valuation of firms.

VAIC is an standardized method to measure the IC performance of the firm as it is based on published audited financial information of the firm (Chan, 2009). This method is considered good as it is suitable to measure the IC performance and it has been widely used in the recent research studies. The main limitation of this method is its inability to measure IC in companies with negative book value or negative operating profit of the firm (Chu et al. 2011).

Sample and Data Collection

Data have been collected from the Prowess database, which is maintained by Centre for Monitoring Indian Economy (CMIE). Indian textile industry has been chosen for the study. Time period of the study is 10 years starting from 2002-03 to 2012-13. Sample has been taken on the basis of market capitalization of the companies in the year 2012. Selected companies are listed on both NSE and BSE. Following selection criteria were then applied to the original data sample:

Following Firer and Williams (2003) and Shiu (2006), companies with negative human capital or structural capital values were excluded from the sample.

- ✓ Companies for which some data were missing (unavailability of annual reports in consequence of merger and delisting) were excluded.
- ✓ After fulfilling the criteria, 100 companies were selected for studying the intellectual capital performance and its relationship with financial performance.

Variable definition

Independent Variables

In this paper, value added intellectual coefficient (VAIC) is used as independent variable. IC has been defined variedly, but the most commonly accepted definition classifies it into human, structural and customer capital. These three components would be used as IC in this study. The value added intellectual coefficient (VAIC) is used as a measure to reflect the intangible assets of the firm. The detailed analysis of the concept is given below:

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

$$\text{Value Added} = \text{Output} - \text{Input}$$

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

It is also expressed as

$$VA = I + DP + D + T + M + R + W = W + I + T + NI \dots \dots \dots (1)$$

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 is to determine the efficiency of the human capital efficiency on the value creation of the firm. This is obtained by estimating the ratio VAHU; this is the ratio of VA of the firm to the expenditure 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:

$$VAHU = \frac{VA}{HC}$$

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 captures the efficiency of the structural capital on the VA by the firm. This is the ratio of structural capital and value added of the firm represented as SCVA. The SC is 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:

$$SCVA = \frac{SC}{VA}$$

Where,

- VA = Value added for the firm;
- SC = Structural capital for the firm and
- SCVA = Structural capital VA for the firm.

Pulic (2000) argues that there is a proportionate inverse relationship between HC

and SC, in the value creation process attributable to the entire IC base. Therefore, the measure of SCE is slightly different from other ratios.

The next measure is 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;

$$VACA = \frac{VA}{CA}$$

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 would generate a value, which can be 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 IC efficiency of this firm is higher:

$$VAIC = VAHU + SCVA + VACA$$

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 IC and financial performance, three traditional accounting performance measures are used as dependent variables namely, profitability (ROA), productivity (ATO) and Market to book value (MB) of the firm.

- ✓ Return on assets (ROA): It measures the profitability of the companies and calculated as:

$$ROA = \frac{\text{Operating income}}{\text{Total assets}}$$

- ✓ Assets turnover ratio (ATO): it reflects

the productivity of the firm. It is the ratio of total revenue to total assets. It is calculated as:

$$ATO = \frac{\text{Revenue}}{\text{Total assets}}$$

- ✓ 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.

$$MB = \frac{\text{Market capitalisation of 365 days}}{\text{Book value of total assets}}$$

Control Variables

For the purpose of examining the association, this study uses correlation and OLS regressions as the underlying statistical tests. In conducting the liner multiple regression analysis, following control variables have been 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.
- ✓ Leverage (DER): Financial leverage as measured by total debt divided by total equity used to control for the impact of debt servicing on corporate performance and wealth creation. It is calculated as follow:

$$DER = \frac{\text{Total debt}}{\text{Total equity}}$$

- ✓ Physical capacity (PC): This ratio measures physical intensity i.e. how much fixed assets are there in proportion to total asset, calculated as:

$$PC = \frac{\text{Fixed assets}}{\text{Total assets}}$$

OLS Regression Model

Since the data is of panel nature consisting of both time series and cross sectional data, Ordinary Least Square (OLS) panel regression is used for the purpose of analysis.

Given below are the regression models developed for carrying out the analysis of the panel data:

$$ATO_{it} = \alpha_{it} + \beta_1 VAIC_{it} + \beta_2 DER_{it} + \beta_3 PC_{it} + \beta_4 SALES_{it} + \epsilon_{it} \dots \dots \dots (2)$$

$$ROA_{it} = \alpha_{it} + \beta_1 VAIC_{it} + \beta_2 DER_{it} + \beta_3 PC_{it} + \beta_4 ATO_{it} + \beta_5 SALES_{it} + \epsilon_{it} \dots \dots \dots (3)$$

$$MB_{it} = \alpha_{it} + \beta_1 VAIC_{it} + \beta_2 DER_{it} + \beta_3 PC_{it} + \beta_4 ATO_{it} + \beta_6 ROA_{it} + \beta_7 SALES_{it} + \epsilon_{it} \dots (4)$$

Where,

- α_{it} = Constant term;
- VAIC = Value Added Intellectual Co-efficient;
- DER = Debt Equity Ratio;
- PC = Physical capacity;
- ATO = Assets turnover ratio;
- ROA = Return on Assets;
- SALES = Market Capitalization;
- MB = Market to book value and
- ϵ_{it} = Error term.

RESULTS AND DISCUSSION

Descriptive Statistics and Correlation Analysis

Table 1 presents the means, medians, minimum, maximum and standard deviations values of all the variables. The mean VAIC is about 4.38, indicates that Indian textile companies created 4.348 Rupees for each One Rupee employed. The MB is about 0.47 indicating that investors do not value the sample

companies in excess of the book value of total assets. The ROA and ATO are about 0.016 and 1.036 respectively.

To have an initial analysis whether there exist any relation between the independent and dependent variables, correlation coefficient is estimated along with its significance level and the same is depicted in table 1. Results indicate that VAIC is significantly and positively associated with ROA (at 1% significance level), MB (at 1% significance level), and SALES (at 5% significance level) and negatively correlated with DER (at 1% significance level). The results imply that intellectual capital efficiency is showing positive association with profitability and market valuation of the company.

To determine the absence of multicollinearity problems, the Pearson’s correlation coefficients were tested. If the correlation coefficient between explanatory variables is more than 0.8, then multicollinearity shall be considered as a serious problem (Kennedy, 1985). As shown in table 2, the correlation coefficients between explanatory variables are not high (from -0.326 to 0.423). So there is no concern of any multicollinearity problems.

Table 1: Descriptive statistics for all variables

	VAIC	ROA	ATO	SALES	PC	DER	MB
Mean	4.385	0.016	1.036	2.330	0.628	1.998	0.472
Median	3.584	0.011	0.928	2.274	0.646	1.480	0.228
Minimum	0.025	-0.468	0.158	0.531	0.066	0.010	0.020
Maximum	22.490	0.450	4.170	4.086	0.919	82.370	20.131
Std. Dev.	2.806	0.080	0.521	0.537	0.140	3.389	1.147
Observations	986	990	994	994	992	986	791

Table 2: Correlation matrix for all variables

	VAIC	MB	ROA	ATO	DER	PC	SALES
VAIC	1.000						
MB	0.106*	1.000					
ROA	0.423*	0.223*	1.000				
ATO	-0.028	0.107*	0.205*	1.000			
DER	-0.108*	-0.074**	-0.257*	-0.065***	1.000		
PC	0.050	0.172*	-0.110*	-0.326*	-0.058	1.000	
SALE	0.082**	-0.070	-0.009	-0.100*	-0.062***	0.254*	1.000

Note: *, ** and *** represents level of significance at 1 percent, 5 percent and 10 percent respectively.

OLS Regression Analysis

For taking in-depth view on the relationship between intellectual capital and financial performance measures, OLS regression has been applied. Both Fixed effect and Random effect model has been applied on panel data. Hausman specification test has been used to check which model should be used for analysis. In case, if Hausman X^2 result found significant, then fixed effect model is used and when it is found insignificant then Random effect model is used for the analysis. Table 3, 4 and 5 represents the results taking into account H01, H02 and H03 respectively.

Table 3 presents the results of OLS panel regression, where productivity (ATO) is taken as dependent variable. Assessment of the table reveals that adjusted R^2 of the model is 66.2 percent (in case of fixed effect) and 15.6 percent (in case of Random effect) indicates that the

model has good explanatory power for fixed effect model but not for Random effect model. These numbers indicate that the fixed effect and random effect model is able to explain about 66 and 16 percent of the variance in the dependent variable for the whole sample. Result of Hausman test accepts the hypothesis of the test; hence random effect model is more appropriate than fixed effect model in estimating the results of productivity.

From the table 3, it is clear that intellectual capital is not playing any significant role for productivity of the companies. Hence, in the light of the result, H01 is rejected, indicating that textile companies do not have positive association with intellectual capital and productivity. Present study is consistent with (Firer and Stainbank, 2003) and (Pal and Soriya, 2012) concluded that intellectual capital has negative association with productivity of the firm.

Table 3: OLS regression results for productivity (ATO) of the companies

Textile Industry		
Fixed Effect		Random Effect
Intercept	2.015* (16.766)	2.015* (17.431)
VAIC	-0.001 (-0.167)	-0.002 (-0.345)
DER	-0.007 (-1.950)	-0.007 (-2.196)
PC	-1.527 (-13.042)	-1.485 (-13.392)
SALES	-0.002* (-0.059)	-0.010* (-0.301)
Adjusted R²	0.662	0.156
F-Statistic	19.567*	46.114*
Hausman test	$X^2(4)$ 4.114	

Note: * represents level of significance at 1 percent respectively. Values of t-statistics are provided in parenthesis below the coefficient estimates.

Table 4: OLS regression results for profitability (ROA) of the companies

Textile Industry		
Fixed Effect		Random Effect
Intercept	0.022 (-1.128)	-0.008 (-0.497)
VAIC	0.013* (18.353)	0.012* (18.353)
DER	-0.002* (-3.963)	-0.002* (-4.735)
PC	-0.029 (-1.573)	-0.036** (-2.203)
ATO	0.029* (6.055)	0.028* (6.427)
SALES	0.003 (0.534)	0.001 (0.312)
Adjusted R ²	0.583	0.310
F-Statistic	14.111*	88.689*
Hausman test	X ² (5) 20.933*	

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

Table 4 shows the results of the model, where profitability (ROA) is taken as dependent variable. Result shows that, Intellectual capital is positively affecting the profitability of the companies. The adjusted R² is 58.3 and 31.0 percent for fixed effect and random effect respectively, indicating a reasonably good explanatory power for fixed effect model but not for random effect model. Results of Hausman specification test imply that fixed effect model is appropriate for the analysis.

Result indicates that intellectual capital is significantly and positively explaining the profitability of the companies. Result show that profitability is increased by 0.013 percent, when intellectual capital efficiency increased by 0.010 percent. Hence, in the light of the results, H₀₂ is accepted, showing that Textile companies have positive association between intellectual capital and Profitability. Present study is consistent with Firer and Stainbank (2003), Tan et al. (2007), Chen et al. (2005), Yalama and Coskun (2007) and Pal and Soriya (2012) revealed that

intellectual capital has positive association with profitability of the firm.

Table 5 shows results of the model where market valuation (MB) is taken as the dependent variable. Adjusted R² was 35.8 percent for fixed effect and 8.6 percent for random effect respectively, indicating poor explanatory power for random effect model. Result of Hausman specification test implies that fixed effect model is more appropriate for the analysis. Result indicates that IC is not playing any significant role for increasing the market value of the companies. It indicates that investors do not consider the value of intellectual capital regarding their investment decisions. As pointed out by Kamath (2008) that Indian stakeholder still perceive the performance of the firm in terms of tangible assets and less in terms of intangible assets. H₀₃ stands to be rejected, implies that intellectual capital is not associated with MB of the companies. Kamath (2008), Ghose and Mondal (2009) and Pal and Soriya, (2012) also observed the same results.

Table 5: OLS regression results for market value (MB) of the companies

Textile Industry		
Fixed Effect		Random Effect
Intercept	7.257* (7.179)	3.279* (4.724)
VAIC	0.042 (1.027)	0.057 (1.672)
DER	0.019 (0.862)	-0.001 (-0.044)
PC	-3.524* (-3.749)	-2.601* (-3.666)
ATO	1.342* (5.278)	0.594* (3.072)
ROA	1.170 (0.727)	3.226** (2.330)
SALES	-2.467* (-8.317)	-0.822* (-4.209)
Adjusted R ²	0.358	0.086
F-Statistic	5.112*	13.115*
Hausman test	X ² (6) 71.452*	

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

Hypothesis Testing and Validation

The purpose of this study was to investigate the association between intellectual capital and three dimensions of financial performance namely; productivity, profitability and market valuation. Three control variables leverage (DER), physical capacity (PC) and size (SALES) were considered for the analysis. Intellectual capital performance of companies was measured by using VAIC model developed by Pulic. Present analysis was conducted on data of a sample of 100 Indian textile companies. Because data was of panel nature, OLS regression has been applied to analyze the relationship between intellectual capital and conventional financial performance measures of the firm.

The first hypothesis investigated, whether there was any association between IC and productivity of the firm. The hypothesis got rejected, indicated that IC has no explanatory power for increasing productivity in the firm. This result is consistent with Mehralian et al.

(2012), Ting and Lean (2009), Karampal and Soriya (2012) concluded that intellectual capital has no positive relationship with productivity of the firm.

The second and third hypothesis was formulated to analyze whether intellectual capital has any positive association with profitability and market valuation of the firm. Results revealed that intellectual capital worked an important determinant of profitability of the firm. It means that profitability can be increased if intellectual capital is utilized in effective and efficient manner. Previous empirical findings showed that there exists significant positive relationship between the firm's performances in terms of profitability with the independent variable VAICTM. Same result was found by Firer and Williams (2003), Ting and Lean (2009), Maditinos et al. (2011), Mehralian et al. (2012) and Pal and Soriya (2012) concluded that IC has positive association with profitability of the firm. In this study it was also found that

Market valuation was not associated with intellectual capital performance of the firm. So in the light of above result, H03 is rejected.

Result of third hypothesis provides a keen insight regarding the perception of the investors of India. It means Indian investors consider only financial disclosure of the companies regarding their investment. Same results are found by Firer and Williams (2003), Ghosh and Mondal (2009), Maditinos et al. (2011), Mehralian et al. (2012) and Pal and Soriya (2012) concluded that intellectual capital disclosure does not increase market value of the firms.

CONCLUSION

Despite the fact that intellectual capital is increasingly recognized as important strategic intangible asset for competitive advantage, but the results do to support such claim. Empirical results verified only one hypothesis which found positively significant association between intellectual capital and profitability of the firm. The study observed no direct relationship of intellectual capital with productivity and market valuation of the firm. The result clearly reveals the importance of intellectual capital in enhancing the profitability of the company. This study provides important insights to researchers and managers to give due consideration to intellectual capital for increasing productivity and market valuation of the firm.

In conclusion, it has been seen that Indian textile sector is emphasizing more on Physical assets rather than intellectual capital. India being a developing and 2nd most populated country in the world has much potential for growth if intellectual capital is appropriately utilized for competitive advantage. At macro level, Government can boost its initiatives to increase the understanding of IC and its importance among the investors at large. At micro level, companies in their balance sheet should provide voluntary non-financial information to the investors, so that knowledge of investors is increased. As in this era of globalization, investors need non financial disclosures along with financial measures to help in decision making. This study indicates that intellectual capital management may be improved in business environment for increasing the market value of the companies.

This study is not without its limitations. The main limitation of this study is the use of Intellectual capital measurement model. Its basic advantage (simplicity and ease of use) is also its main limitation. The main problem is measuring the contribution of something which is not physical and can't be easily quantified. The key issue is that the value created by IC is indirect. However at present no perfect solution is available for intellectual capital measurement as the area is still exploring the best possible solutions.

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