Article can be accessed online at http://www.publishingindia.com

DETERMINANTS OF INTELLECTUAL CAPITAL DISCLOSURE PRACTICES OF INDIAN COMPANIES

Amitava Mondal*, Santanu Kumar Ghosh**

Abstract *Numerous academicians, business professionals, and consultants identified 'intellectual assets/capital' as the main factor of value creation in the present knowledge economy. Companies especially in the service sectors require maximum amount of this type of capital to maintain their existence in the competitive market, whereas empirical results show that companies disclose lesser amount of intellectual capital related information in the annual reports. In this study, we examine the factors that determine the proportion of intellectual capital disclosure in the annual reports. For the purpose of the study 30 Indian knowledge-intensive companies (software, pharmaceuticals, and finance) are selected (on the basis of highest market capitalisation) for the period 2009-2012. Content analysis of annual reports is done to prepare intellectual capital disclosure (ICD) index and efficiency of intellectual capital is measured through VAIC. Multiple regression analysis is applied to examine the relationship between dependent and independent variables. Empirical results show that audit committee's size, age, and firm size have positive relation with intellectual capital disclosure but VAIC, profitability, and leverage have negative relationship with intellectual capital disclosure. This negative association between intellectual capital efficiency and disclosure suggests that intellectually efficient companies disclose less information in the financial statement for fear of losing competitive advantage.*

The present study is the first study in the Indian context that examines the determinant(s) of intellectual capital disclosure. However, this study is confined to 30 Indian knowledge companies for the period 2009-2012.

Keyword: *IC Disclosure, Content Analysis, Indian Knowledge Companies, IC Efficiency*

INTRODUCTION

Knowledge and information are considered to be the most influential factors of value creation in the 21st century economy. In this economy firm performance not only depends on tangible or physical assets but also on intangible or intellectual assets. Companies in service sector namely, software, pharmaceutical, and finance companies primarily depend on intangible assets for value creation and to maintain their existence. A study made by Al-Ali (2003) shows that company' tangible assets can represent 20% of market value and remaining 80% is attributable to intangible capital. Under such a situation when the market value of a firm is greatly influenced by the information relating to intellectual capital (IC), it is necessary that the annual report of the company should include adequate information about the intangibles and intellectual capitals. But disclosure of intellectual capital related information in the annual report is not mandatory to any country. Such disclosure initiatives are undertaken by the companies voluntarily because many researchers, such as Thompson & Randall (2000), Scott (2000), opine that absence of adequate information on intellectual capital may create the problems of information asymmetry when traditional assets fail to explain the largest component of company's market value. Presently voluntary disclosure of intellectual and other information in the annual reports has been receiving much attention of the researchers. Most of the researches have focused on the analysis of annual reports using content analysis because annual reports are considered as the primary source of communication (Guthrie *et al*., 2004). Previous studies can be segregated into two categories, first one shows the amount of disclosure in the annual report and the other part shows the factors played behind such disclosure initiatives. Researchers like Guthire & Petty (2000), Brennan (2001), Goh & Lim(2004), Sujan & Abeysekera (2007), Yi & Davey (2010) etc. find that companies generally disclose lesser amount of IC information in the annual reports. On the other hand, industry type, size, good governance practices, accountability etc. firm specific factors play important role in this respect (e.g. Bozzolan *et al*., 2003). However, there are limited researches that examine the determinants of IC disclosure in this field. In the Indian context there is no such study that examines the relationship between the amount of IC disclosure and the organisational and governance related factors.

* Assistant Professor in Commerce, Kalna College, Burdwan,West Bengal, India. Email: a_mkolkata@yahoo.co.in

** Professor in Commerce, Department of Commerce,The University of Burdwan, Burdwan, West Bengal, India. Email: shantanu.kaizen@gmail.com

The present study examines the determinants of IC related information in the annual reports of Indian knowledge companies. More specifically, the paper investigates the factor(s) that determine the amount of IC related information in the annual reports of Indian knowledge companies. The paper is organised as follows. The next section presents a review of literature in this field. The third section presents a set of hypotheses, while the research methodology is described in the fourth section. The fifth section discusses the empirical results emerging from the empirical analysis. The sixth section presents some concluding remarks.

LITERATURE REVIEW

Intellectual capital (IC) is considered as intangible assets or knowledge resources which can create value for firms and maintain a competitive edge for them (Stewart, 1997; Sveiby, 1997). It is widely believed by researchers in the field (e.g. Sujan & Abeysekera, 2007; Guthrie &Petty, 2000; Sveiby, 1997) that IC is composed of three elements:

(1) Internal capital or Structural capital;

(2) External capital or Relationship capital; and

(3) Human capital.

Structural capital refers to the knowledge embedded in the organisational structure, processes, databases, procedures, routines, systems, and culture, which is created by employees or brought in, but which stays in the organisation when employees go home after work (Guthrie *et al*., 1999; Pablos, 2003; Wong & Gardner, 2005). Relationship capital refers to the knowledge embedded in the relationships external to the organisation, such as suppliers, customers, business partners, etc. (Wong &Gardner, 2005). Human capital refers to the individual's knowledge such as qualifications, skills, efficiencies, values, and experiences within an organisation, which goes home with employees after work(Guthrie *et al.*, 1999).

Large number of empirical research reveals that IC is a key component that enhances corporate performance. Riahi-Belkaoui (2003) mentioned that intellectual capital is the only resource that satisfies the characteristic of strategic assets like valuable, rare, imperfectly imitable, hardly substitutable, and capable of generating sustainable competitive advantage. Last few years several empirical studies are conducted to find out the strategic importance of intellectual capital on corporate financial performance. Hitt *et al.*, (2000) proved that the role of intangible capital is more dominant as compared with tangible capital.Teece (2000) states that intangible assets of the firm and its IC are the keys to gaining sustainable competitive advantage and considered as the drivers of the economic growth. Researchers like D.G. Marvidis (2004), S. Najibullah (2005),Ming-Chin Chen *et al.* (2005),Hong Pew Tan *et al*., (2008), K.H.Chan (2009), Cheng *et al*. (2010), K.H. Samuel (2011), Komnenic&Pokrajcic (2012) etc. have reported a positive association between intellectual capital of the firms and their respective financial performances. P.Kujansivu&A. Lonnquist (2007)'s study show that value of intellectual capital and value creation efficiency of intellectual capital of Finnish companies are somehow related.

Reporting of IC resources in the corporate annual report started in the middle of 90s, primarily in the Scandivian countries where companies started to publish IC reports as a supplement to their annual reports. Subsequently, companies all over the world started to publish IC reports or adopt new forms of disclosure and valuation of intangible assets (Ismail, 2008).

In the meantime several empirical studies have been conducted in various countries to examine the extent of intangible assets reporting in the corporate annual reports. Guthrie &Petty (2000), for example, examine the intellectual capital reporting practices of top 20 Australian companies (in terms of size). They have employed content analysis of the published annual reports using Sveiby (1997) developed IC framework to determine the extent of intellectual capital disclosure (ICD). In their study, they have found that the key components of IC are poorly understood, inadequately indentified, inefficiently managed, and inconsistently reported in the Australian context. In another study, Oliveras *et al*. (2008) have analyzed the annual reports of 14 listed companies over a time period from 1998 to 2002 in Spain. Their empirical results show the decreasing trend in the hidden value (difference between market value and book value) of Spanish companies and the level of disclosure of intellectual capital items in the annual reports is low. However, they find increasing trend in the reporting of intellectual capital and the style of reporting is 'narrative'. April *et al*. (2003) conducted an empirical analysis of intellectual capital measurement, management, and reporting of South African mining companies. They also have employed 'content analysis' technique to analyze the annual reports of 20 listed mining companies besides collecting necessary data through interviews with senior officials. They use 24 intellectual capital indicators covering main three categories of human, internal, and external capital for data analysis. Empirical results show that South African mining companies report low amount of intellectual capital information in their annual reports and external intellectual components like business collaborations, favourable contracts comprise the major part of IC disclosure. They conclude that South African mining companies rate IC highly but due to non-existence of proper reporting systems and structures companies are lacking in measurement and reporting of intellectual capital. In another study Guthrie *et al*. (2006) investigate the reporting of intellectual capital items by the listed companies in Australia and Hong Kong.

Their results reveal that voluntary IC disclosure is low and qualitative rather than quantitative in both countries. Olsson (2001) has examined the annual reports of 18 Swedish companies having highest market capitalisation in the Swedish stock market. His study considers only human capital aspect of IC disclosure and level of human capital reporting has been ascertained on the basis of five criteria namely, education and development, equality, recruitment, selection of employees, and CEO's comments about personnel. The study has found that none of the 18 sample companies reported more than 7% of human resource information of the total information reported in 1998 annual reports. He finds that reported information differ in terms of quality and the extent of disclosure. Williams (2001) investigates annual reports of 31 FTSE 100 listed companies over a period 1996 to 2000. In his study he investigates the relationship between ICD and IC performance and corporate specific factors. The empirical results show a negative association between level of IC disclosure and IC performance. However, leverage, industry exposure, and listing status influence the IC disclosure positively. Brennan (2001) examines, using the framework of Guthrie & Petty (2000), the intellectual capital reporting practices of 11 knowledge-based Irish companies. She finds that there is no statutory IC reporting framework in Ireland and companies express their IC information in qualitative form in annual reports. Replicating the framework of Guthrie & Petty (2000), Bozzolan *et al*. (2003) have examined voluntary IC disclosure in Italian annual reports of 2001. They have reported that Italian companies mainly report with regard to external capital only. They also have found that industry type and size are relevant factors in explaining the differences in reporting behaviour amongst Italian companies.

Singh & Kansal (2011) investigate inter firm intellectual capital (IC) disclosures and its variations in top 20 listed pharmaceutical companies in India and they find that IC disclosure of sample companies are low, narrative and varying significantly among companies. Chander & Mehra (2011) examine the extent of intangible asset disclosure by 243 companies in India. To examine the level of disclosure of intangible asset information they analyze the annual reports of these companies using content analysis and study results show that the overall disclosure of intangible assets is low in India. Bhasin (n.d.) makes a survey about IC reporting practices of 16 Indian IT companies in their annual reports. He concludes that IC reporting of these companies is 'almost negligible and ithad not received any preference from the mentors of these corporations'. In another study (Mondal and Ghosh), we find that Indian knowledge companies disclose lesser amount of IC information in their annual reports and the most reporting items are external capital.

PURPOSE OF THE STUDY

Therefore, above literature review presents that in the knowledge economy, intellectual capital is considered as strategic assets but companies are not interested to disclose much about them. In many countries there is no guideline about disclosure of intellectual capital. In India till date no such guideline has been developed. Companies voluntarily disclose such information but research results show that such disclosure is not sufficient. Companies in service sector, where intellectual capital plays a vital role as compared to tangible assets, also report low amount of information about their important assets. The present study is the modest attempt of the researchers to find the determinants of IC disclosure (to be mentioned as ICD hereafter) in the annual report of Indian leading knowledge companies. In other words, we try to examine what firm-specific factor(s) influence the level of IC disclosure.

HYPOTHESIS DEVELOPMENT

Intellectual Capital Efficiency

Being intangible, IC components fail to meet the accounting criteria required for inclusion in the financial reports as they are not measured in financial terms (van der Meer-Kooistra & Zijlstra, 2001). On the other hand, Williams (2001) argues that companies frequently report information about their activities than mandated by regulatory authorities. According to stakeholder theory, stakeholders have a right to get information about how the organisation's activities affect them (Deegar, 2000; Vergauwen & Van Alem, 2005) and organisation's management will report activities that are expected by the organisation's stakeholders (Clarkson, 1995; Guthrie *et al.*, 2004). Thus, stakeholders require information about important corporate assets those are important for value creation (Whitting & Miller, 2008). In case of knowledge-based companies like software, finance, pharmaceutical where intellectual capital is primary capital (compared to physical assets) and research (Ghosh & Mondal, 2009; Mondal & Ghosh, 2012) shows that intellectual capital impacts the corporate financial performance significantly, the annual reports must contain information about the said assets. Such IC disclosure (voluntarily) may enable investors and other stakeholders to better assess the organisation's future wealth creation capabilities (Botosan, 1997; Edvinsson & Malone, 1997). Therefore, the management of knowledge-intensive companies with high level of IC efficiency signals to the market through their annual reports with positive information about IC. On the basis of the above discussion we draw the following hypothesis,

H_1: There is a positive relationship between the level of IC disclosure and IC efficiency.

Audit Committee Size

The roles of audit committees become crucial over the years due to the need to meet the changing business, economic and social environment (Vanasco, 1994). Audit committees ensure that the interest of shareholders is properly protected in relation to financial reporting and internal control (The Smith Report in UK, 2003). Generally, audit committees review the significant financial reporting issues and judgments made in connection with the preparation of the company's financial statements, interim reports, preliminary announcements and related formal statements (Li, Pike & Haniffa, 2007). Therefore, large audit committee may be more effective because it includes members with more experience and knowledge (Ghosh & Nandi, 2012). So, large audit committees can be expected to have an impact on voluntary disclosure of relevant information including IC related issues in the annual reports. Therefore, we hypothesize that:

H_2: There is a positive relationship between the level of IC disclosure and audit committee size.

Farm Size

According to Roberts *et al.* (2005), firm size plays an important role in determining the extent of information disclosure in annual reports. Ousama & Fatima (2010) explain the relationship between firm size and the extent of disclosure. Inchausti (1997) explains that agency cost will increase due to conflicts between the company's managers and their stakeholders and the source of such conflicts in large companies is the complex relationships of the managers with the stakeholders. In order to mitigate agency costs burden, large companies voluntarily disclose more information. Guthrie *et al.* (2006) argue that large companies are more progressive and innovative because they have the financial resources that enable this type of behaviour. Since intellectual capital is considered as vital assets, information about those assets also is to be disclosed. Prior studies by Guthrie *et al.* (2006), Bozzolan *et al*. (2003), Garcia-Meca *et al*. (2005) find significant positive relationship between size and IC disclosure. However, Bontis (2003) reports insignificant results in the said relationship. Hence, we hypothesize that;

H_3: There is a positive relationship between the level of IC disclosure and firm size.

Profitability

Large numbers of empirical studies have been conducted to examine the relationship between profitability and the disclosure level and results are mixed. Research results of Singhvi & Desai (1975), Wallace & Naser (1995), Alam & Deb (2010) reveal a positive association between them, while Brammer & Pavelin (2006), Hossain & Hammami (2009) report insignificant relationship between profitability and level of disclosure.

According to Watts & Zimmerman (1986) highly profitable companies are more vulnerable to regulatory authority and disclose more detailed information in their annual reports to justify their financial performance and to reduce political costs also. Jindal & Kumar (2012) explain, based on agency theory, that managers of large profitable companies may choose to disclose more to take personal advantage like higher managerial compensation. Another opinion is that profitable companies signal that theyare better companies and the contributory factor for the huge profitability of these companies could be due to their intellectual capital (Ousama *et al.*, 2012). Therefore, profitable companies will disclose more IC related information in their annual reports. Thus, we hypothesize that,

H_4: There is a positive relationship between the level of IC disclosure and profitability.

Leverage

According to agency theory highly levered company have high agency costs because of high financial distress (Jensen & Mecckling, 1976). Therefore, external parties like creditors, debt holders demand more information to reduce information asymmetry (Arvidsson, 2003). Thus, companies with high leverage are expected to disclose more information voluntary to reduce agency costs. Researchers also argue that disclosures reduce the cost of equity of a firm (Botosan, 1997). The voluntary disclosures include not only financial information but also IC information to convince external parties that the company is strategically competent. Based on the above discussion following hypothesis is formulated.

H_5: There is a positive association between the level of IC disclosure and leverage

Age

Age is included in this study as a proxy measure of risk. Research shows that there is a positive relationship between risk and information disclosure by a firm (Cormier *et al*., 2005). The more years a company has been in business the less risky to the investors (Bukhe *t al*., 2005; Cordazzo &

Vergauwen, 2012). Researchers also agree that investors of higher risk firms can reduce their information cost if they are given additional information (Lang & Lundholm, 1993). According to Kim & Ritter (1999) younger companies need to disclose more non-financial information than older companies for their valuation. Therefore, older firms will disclose less than the younger one, which is considered as risky firm (Whiting & Woodcock, 2011). Bukh *et al*., (2005), White *et al*. (2007) use company age to explain voluntary IC disclosure in their studies but they find that age is not an explanatory factor for firm's IC disclosure. The above discussion leads to the development of the following hypothesis:

H_6: Age has negative association with the level of IC disclosure.

RESEARCH METHOD

Sample Selection and Data Sources

For the purpose of this study annual reports are collected from the respective company's website or from the database maintained by BSE. For this study 30 knowledge intensive companies are selected on the basis of market capitalisation from the BSE 'A' category listed companies. These include 11 pharmaceutical companies, 10 banking and finance companies and 9 software companies. Annual reports of the sample companies for the year 2009, 2010, 2011, and 2012 are taken for content analysis to determine the average intellectual capital disclosure index (ICD) of sample companies.

The sources of data, for this study, are annual reports. According to Lang & Lundholm (2003) corporate annual report is important for two reasons; firstly, it is considered as an important source of company information by external users and secondly, the disclosure level in annual report is positively correlated with the amount of corporate information communicated to the market and to stakeholders using other media. Annual report also offers an opportunity for a comparative analysis of management attitudes and policies across reporting periods (Niemark 1995, Guthrie *et al*., 2004).

Measurement of Variables

Dependent variable

The main objective of this study is to determine the factors that influence the voluntary disclosure of IC information in sample companies' annual reports. Therefore, the dependent variable of this study is the extent of IC disclosure. In order to measure the extent of IC disclosure, we selected 45 IC disclosure items based on a comprehensive review of prior IC disclosure papers (Botosan, 1997; Bukh *et al.*, 2005; Guthrie *et al.*, 2004; Singh & van der Zahn, 2008). The disclosure list consists of three categories of intellectual capital: namely, human capital (24); internal capital (11); external capital (10) (see, Appendix-1). Since, IC disclosure list is prepared based on literatures from developed countries, a pre-test is conducted taking 10 annual reports for the year 2010 of randomly selected companies and no major discrepancies found in pre testing results. An unweighted dictomous procedure is followed in calculating the index. Under this procedure, the disclosure of a specific item in the annual report is given a score of 1. On the other hand, if the item is not disclosed, it is scored as 0. This scoring technique is selected to avoid any potential issues of subjectivity that may arise when a weighted scoring format is applied(Williams, 2001).The extent of IC disclosure is a ratio of the total number of items found in the annual report divided by the maximum number of items in the disclosure list. The extent of intellectual capital disclosure is calculated as follows:

$$ICD_i = \frac{TDSi}{MDIi}$$

Where ICDi is the extent of IC disclosure index of companiesi, TDSi is the total disclosure score for company i and MDIi is the maximum disclosure score (i.e., $n \leq 35$)

Independent Variable

The independent variables of this study are measured as follows:

(1) Efficiency of Intellectual Capital (VAIC™): The independent variable intellectual capital efficiency is measured by Pulic's (2000) VAIC^{TM} model (value creation efficiency of intellectual capital) in this study. It is very popular model among the researchers in measuring corporate intellectual capital efficiency. It is a measure for corporate intellectual ability (Pulic, 2000), providing aneasy-to-calculate, standardised, and consistent basis of measure, enabling effective comparative analyses across firms. Data used in the calculation of VAIC are based on financial statements. The procedures for calculating VAIC are as follows:

$VAIC^{TM}i = CEEi + ICEi$; $ICEi = HCEi + SCEi$,

where

$VAIC^{TM}$ = VA intellectual coefficient for firm i;

CEEi = VAi /CEi , indicator of VA efficiency of capital employed for firm i.

HCEi = VAi /HCi; refers to indicator of VA efficiency of

human capital for firm i;

SCEi = SCi /VAi; refers to indicator of VA efficiency of structural capital for firm i;

VAi = Output – Input (Total Income – Operating Expenses excluding Salaries and employee benefits)

CEi = book value of the net assets for firm i

HCi = Salaries and employee benefits for firm i;

SCi = VAi - HCi structural capital for firm i.

(2) Firm Size (SIZE): It is measured by the natural log of total assets of a company at the end of a reporting year (e.g. Bozzolan *et al.*, 2003).

(3) Profitability (PROFIT): It is measured by the return on assets (ROA), i.e., ratio of net profit –after tax to total assets.

(4) Leverage (DER): Leverage is measured by total debt to shareholders' equity, in line with the earlier studies (e.g. Zuliana, 2007; Omar, 2008).

(5) Audit Committee Size (ADSIZE): It is measured by counting the number of independent directors in the audit committee.

(6) Firm age (AGE): It is measured by subtracting the year 2011 from the year of inception.

Multiple Regression Models

In our study, we have adopted a multiple ordinary least square (OLS) regression model which is very common in IC disclosure studies (see, for example, Bozzolan *et al*., 2003, Mohammad *et al*., 2011, Whiting & Woodcock, 2011,Cordazzo *et al*., 2012). The equation of the OLS regression is as follows:

$ICDit = \alpha + \beta_1 (VAIC™)it + \beta_2 (PROFIT)it + \beta_3 (SIZE)it + \beta_4 (LEVERAGE)it + \beta_5 (AGE)it + \beta_6 (ADSIZE)it + \varepsilon$

where

ICDit= extent of intellectual capital disclosure of company i in year t,

VAIC™it = intellectual capital efficiency of company i in year t,

PROFITit = profitability of company i in year t,

SIZEit = size of company i in year t,

DERit = leverage of company i in year t,

AGEit = age of company i in year t,

ADSIZEit = audit committee size of company i in year t,

α = regression intercept,

βi = parameters to be estimated, i = 1,2,…….6,

ε = error term of the regression.

REGRESSION RESULTS AND DISCUSSION

As mentioned earlier, the research objective of this study is to investigate the effects of IC efficiency and some firm specific factors on the voluntary disclosure of IC items on the annual reports of 30 leading Indian knowledge intensive companies. In this section we will present and analyze the descriptive results, correlation analysis and multiple regression results of the study.

Descriptive results

Table 1 presents the descriptive statistics of all variables (i.e., ICD index, VAIC, ADSIZE, SIZE, DER, AGE, and PROFIT) based on raw data (four years average) for the year 2009-2012. The results show that ICD varies between 2.96% to 16.3% and the average level of disclosure is 11%. Therefore, sample Indian knowledge companies' IC disclosure is low.

Table 1: Descriptive Statistics of All Variables

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
ICD	30	2.96	16.3	11.00931	3.526969
ADSIZE	30	3	7	4.068966	1.162849
DER	30	0	15.155	2.857922	4.600282
VAIC	30	2.478	10.77249	4.668757	2.090458
SIZE	30	5.604	13.402	9.065088	1.738097
AGE	30	1.791759	4.60517	3.080756	0.855709
PROFIT	30	0.0072	0.497337	0.147335	0.125371
Valid N (listwise)	30				

Intellectual capital efficiency varies between 2.49 to 10.77 with an average of 4.67. So selected sample companies are intellectually efficient. The average profitability of sample companies is 15%.

Multicollinearity Test

In this study we use the multiple regression analysis to examine the individual effect of independent variables on the extent of IC disclosure. The independent variables namely, firm size, ROA (measure of profitability), and debt-equity ratio (measure of leverage) all being accounting figure and may have the problem of multicollinearity. Hence, a test is conducted to examine the interrelationships among them. We have used simple correlation and the value of VIF (Variance Inflation Factor) to examine the presence of multicollinearity. According to Gujrati (2004), correlation not exceeding 90% between two variables may be considered as free from the problem of multicollinearity. Weisberg (1985) suggests that multicollinearity in explanatory variables can also be diagnosed through analysis of VIF values. The VIF values higher than 10 indicates the existence of multicollinearity (Mayers, 1990; Gaur & Gour, 2009). In our study the correlation results, presented in Table 2, show that the highest correlation among two variables is 66.3%. The VIF values lie between 1.645 and 2.191. These findings suggest that multicollinearity among variables is unlikely to create a serious problem in the interpretation of the multiple regression results.

Multiple Regression Analysis

The multiple relationships between firm specific factors and extent of IC disclosure are shown in the Table 3. The value of adjusted R^2 is 0.360, i.e. the explanatory power of the model is 36%. The empirical results also show that independent variables collectively explain the 46% variance (since, R^2 value is 0.460) in dependent variable (i.e. extent of IC disclosure) which is statistically significant at 5% level. Therefore, R^2, adjusted R^2, and F-statistic

Here, * denotes significance level at 5% level

The multiple regression results in Table 3 show that intellectual capital performance and the extent of IC disclosure have negative relationship and such relationship is statistically significant. Therefore, empirical results do not support our first hypothesis (H_1). However, the result

Table 2: Simple Correlation among Variables

	ICD	VAIC	ADSIZE	DER	SIZE	AGE	ROA
ICD	1	-0.355*	-0.282**	-0.346*	-0.231	0.418*	0.297**
VAIC		1	-0.238	-0.196	-0.145	-0.424*	0.048
ADSIZE			1	0.602*	0.457*	0.221	-0.349*
DER				1	0.663*	0.253**	-0.437*
SIZE					1	-0.029	-0.591*
AGE						1	0.321*
ROA							1

Here, * and ** denote significance level at 1% and 5% level.

Table: 3: Multiple Regression Results

$ICDit = \alpha + \beta_1 (VAIC™)it + \beta_2 (PROFIT)it + \beta_3 (SIZE)it + \beta_4 (LEVERAGE)it + \beta_5 (AGE)it + \beta_6 (ADSIZE)it + \varepsilon$

Variables	Beta Values	t - value	Significance	VIF
Constant	-0.134	-0.237	0.815	-
$VAIC^{TM}$	-0.600	-2.885	0.009	1.680
ADSIZE	0.355	1.783	**0.089**	**1.543**
DER	-0.456	-1.621	0.120	2.080
SIZE	0.180	0.689	0.498	1.645
ROA	-0.040	-0.169	0.868	2.191
AGE	0.098	0.458	0.652	1.797
MODEL SUMMERY				
F-VALUE	**2.983***			
R^2	0.460			
ADJ. R^2	0.360			

is consistent with the other prior IC disclosure studies (e.g. van der MEER-Kooistra & Zijlstra, 2001; Williams, 2001; Lim & Dallimore, 2002). The negative association between IC efficiency and IC disclosure suggests that those firms with high IC performance would be reluctant to disclose IC related information because of a possible threat to a firm's competitive advantage (Whiting & Miller, 2008).

The relationship between audit committee size and extent of IC disclosure is statistically significant. Therefore, our second hypothesis is accepted and the results indicate that IC disclosure in annual reports of Indian listed knowledge companies depends upon the number of independent directors in the audit committee. On the other hand, we hypothesize that leverage positively influence the extent of IC disclosure but the empirical result of leverage is found not to be significant, which is consistent with the study results of Ousama *et al.* (2012). But the finding is inconsistent with some prior studies (e.g. Williams, 2001; White *et al.,* 2007; Zuliana, 2007; Omar 2008). Therefore, the results of this study reject our fourth hypothesis (H_4) and indicate that leverage is not a determinant of the extent of IC disclosure in the annual reports of sample companies. A possible explanation of this result is that in addition to the disclosure in the annual reports, companies may rely on other channels of communication to mitigate the conflicts between capital providers and managers to reduce the agency costs (Ousama *et al*., 2012; Chow & Wong-Boren, 1987).

In our study we hypothesized that there is a positive association between 'Farm Size' and extent of IC disclosure and empirical result supports our prediction since there is positive association between firm size and dependent variable. But the relationship is not statistically significant. Therefore, study results reject our third hypothesis (H_3). The findings contradict with the findings of previous IC studies (e.g. Bozzolan *et al*., 2003; Guthrie *et al*., 2006; Oliverira *et al*. 2006, White *et al*. 2007; Omar, 2008). The results of those studies have been found that firm size is significantly and positively associated with the extent of IC disclosure. However, this study result supports the findings of Bukh *et al*. (2005) and Williams (2001) where firm size do not affect the level of IC disclosure in annual reports.

The results of this study do not support our fourth hypothesis and reveal that profitability is not an explanatory variable of the extent of IC disclosure given by the index. However, the results of profitability is consistent with some previous IC disclosure studies those report same results (Williams, 2001; Beaulieu *et al*., 2009; Oliveria *et al*., 2006; Zuliana, 2007; Yau *et al*., 2009). Nevertheless, the negative result indicates that the more profitable firm will disclose lesser amount of IC information. The probable reason for this could be that the profitable companies do not disclose their intellectual assets to the market because those assets may be one of the strategic factors that contributed to their achievements.

Age is included in this study for a measure of risk and hypnotized a negative relationship with the IC disclosure index. But the empirical results show that age and dependent variable has no significant relationship and the hypothesis is rejected (H_6). However, the result is consistent with the previous IC disclosure studies (e.g. Bukh *et al*., 2005; White *et al.*, 2007). Therefore, firm age is not a determinant for IC disclosure of Indian knowledge companies.

CONCLUSIONS

In the knowledge economy, the value relevance of accounting numbers has been limited due to the inadequacy of financial statements' ability to reflect a company's intellectual capital resources and capabilities (Vafaei *et al.*, 2011). This off-balance sheet information (i.e. the value generating capabilities of the company's intellectual capital) is highly important to investors to assess the incremental value creation ability of the company. However, it is found that companies are reluctant to disclose the information about their intellectual resources. The present study is conducted to examine what factors determine the disclosure of IC information. In other words, we try to find the determinant of voluntary disclosure of IC information in the annual reports of 30 Indian knowledge intensive companies.

Empirical study, based on four years data (2009, 2010, 2011, and 2012), reveals that sample companies disclose low amount IC information in their annual reports and firm specific factors like intellectual capital efficiency, audit committee size have influence on the amount of IC related information disclosure. The negative association between firm specific factor like intellectual capital efficiency and the extent of IC disclosure suggests that companies do not disclose their strategic assets (intellectual assets). Therefore, companies do not report/disclose their important intangible assets that contribute to their success to the marketfor the fear of imitable and/or losing their competitive strength. Williams (2001) explains this negative association as 'management may perceive that "high" intellectual capital performance levels could provide a signal to competitors and those wishing to enter the market of possible value creating opportunities'. However, the study finds positive association between audit committee size and extent of IC disclosure. Finally, present study extends the current intellectual capital literature by undertaking this study in the Indian context.

REFERENCES

Arvidsson, S. (2003).The extent of disclosure on intangibles in annual reports, paper presented at 4th Annual SNEE Congress, Mo¨lle, 20-23 May.

April, K. A., Bosma, P., & Deglon, D. A. (2003). IC mea-

surement and reporting: establishing a practice in SA mining. *Journal of Intellectual Capital,* 4(2), 165-180.

Al-Ali, N. (2003). *Comprehensive intellectual capital management: Step-by-step*. John Wiley & Sons, USA.

Alam, I., & Deb, S. K. (2010). Human resource accounting disclosure (HRAD) in Bangladesh: multifactor regression analysis – a decisive tool of quality assessment. *The Cost and Management*, 9-13.

Beaulieu, P. R., Williams, S. M., & Wright, M. E. (2002). Intellectual capital disclosures in Swedish annual reports, in Bontis, N. (Ed.), *World Congress on Intellectual Capital Reading*, Butterworth-Heinemann, Boston, MA, pp. 135-56.

Brammer, S. J., & Pavelin, S. (2006). Voluntary environmental disclosures by large UK companies. *Journal of Business Finance & Accounting,* 33 (7-8), 1168-88.

Brennan, N. (2001). Reporting intellectual capital in annual reports: evidence from Ireland.*Accounting, Auditing & Accountability Journal,* 14(4), 423-436.

Bukh, P. N., Nielsen, C., Gormsen, P., & Mouritsen, J. (2005). Disclosure of information on intellectual capital in Danish IPO prospectuses. *Accounting, Auditing & Accountability Journal,* 18(6), 713-32.

Bhasin, M. L. **(n.d.)** Intellectual Capital Reporting Study of IT-Sector Corporations in India**.** *Australian Journal of Business and Management Research,* 1(1).16-28.

Brennan, N. (2001). Reporting intellectual capital in annual reports: evidence from Ireland. *Accounting, Auditing & Accountability Journal,* 14(4), 423-36.

Bontis, N. (2003). Intellectual capital disclosures in Canadian corporations. *Journal of Human Resource Costing and Accounting,* 7(1/2), 9-20.

Botosan, C. A. (1997). Disclosure level and the cost of equity capital. *The Accounting Review,* 72(3), 323-49.

Bozzolan, S., Favotto, F., & Ricceri, F. (2003). Italian annual intellectual capital disclosure: An empirical analysis. *Journal of Intellectual Capital,* 4(4), 543-558.

Clarkson, M. B. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *The Academy of Management Review,* 20(1), 92-117.

Chander, S., & Mehra, V. (2011). A study on intangible assets disclosure: An evidence from Indian companies. *Intangible Capital,* 7(1), 1-30.

Chan, K. H. (2009). Impact of intellectual capital on organizational performance.An empirical study of companies in the Hang Seng Index (Part 2), *The Learning Organization,*16(1), 22-39.

Cheng, M., Lin, J., Hsiao, T., & Thomas W. L, (2010). Invested resource, competitive intellectual capital, and corporate performance. *Journal of Intellectual Capital,* 11(4),433 – 450.

Chen, M.C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual Capital,* 6(2), 159-176.

Chow, C. W., & Wong-Boren, A. (1987). Voluntary financial disclosure by Mexican corporations. *Accounting Review,* 62(3), 533-541.

Cormier, D., Magnan, M., & Van Velthoven, B. (2005). Environmental disclosure quality in large German companies: economic incentives, public pressures, or institutional conditions? *European Accounting Review,* 14 (1), 3-39.

Deegan, C. (2000). *Financial accounting theory*, McGraw-Hill, Sydney.

Edvinsson, L., & Malone, M. S. (1997). *Intellectual capital: The proven way to establish your company's real value by measuring its hidden brainpower*. London: Judy Piatkus.

Goh, P. C., & Lim, K. P. (2004).Disclosing intellectual capital in company annual reports: evidence from Malaysia. *Journal of Intellectual Capital,* 5(3), 500-10.

Ghosh, S. K., & Nandi, S. (2012). Corporate Disclosure and Audit Committee Characteristics in India, 4th Conference on Excellence in Research and Education, IIM Idore, Indore.

Ghosh, S. K., & Mondal, A. (2009). Indian software and pharmaceutical sector IC and financial performance. *Journal of Intellectual Capital,* 10(3), 369-388

Gour, A. S., & Gour, S. S. (2009). *Statistical Methods for Practice and Research,* (2nd Ed.) Response Books.

Gujarati, D. N. (2004). *Basic Econometrics,* (4th Ed.). New Delhi, Tata McGraw-Hill Publishing Company Limited.

Guthrie, J., Petty, R., Ferrier, F., & Wells, R. (1999).There is no accounting for intellectual capital in Australia: a review of annual reporting practices and internal measurement of intangibles, paper presented at the OECD Symposium on Measuring and Reporting of Intellectual Capital, Amsterdam.

Guthrie, J., & Petty, R. (2000). Intellectual capital: Australian annual reporting practices. *Journal of Intellectual Capital,* 1(3), 241-51.

Guthrie, J., Petty, R., Yongvanich, K., & Ricceri, F. (2004). Using content analysis as a research method to inquire into intellectual capital reporting. *Journal of Intellectual Capital,* 5(2), 282-93.

Guthrie, J., Petty, R., & Ricceri, F. (2006). The voluntary reporting of intellectual capital: comparing evidence from Hong Kong and Australia. *Journal of Intellectual Capital*, 7(2), 254-272.

Garcia-Meca, E., & Martinez, I. (2005). Assessing the quality of disclosure on intangibles in the Spanish capital market. *European Business Review*, 17(4), 305-313.

Hossain, M., & Hammami, H. (2009). Voluntary disclosures in the annual reports of an emerging country: the case of Qatar. *Advances in Accounting, Incorporating Advances in International Accounting,* 25(2), 255-65.

Hitt, M. A., Bierman, L., Shimizu, K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource based perspective. *Academy of Management Journal*, 44(1), 13-28.

Hong P. T., David P., & Phil, H., (2008).The evolving research on intellectual capital. *Journal of Intellectual Capital,* 9(4), 585 – 608.

Jensen, M.C.,&Meckling, W.H. (1976).Theory of the firm: managerial behavior, agency costs and ownership structure.*Journal of Financial Economics,*3(4), 305-60.

Mavridis, D. (2004). The intellectual capital performance of the Japanese banking sector.*Journal of intellectual Capital,* 5(1), 92-115.

Paula, K., & Antti, L. (2007). Investigating the value and efficiency of intellectual capital. *Journal of Intellectual Capital,* 8 (2), 272 – 287

Ismail, T. H. (2008). Intellectual Capital Reporting in Knowledge Economy: Evidence from Egypt paper presented at the International Conference on "Economic Direction III: Economic Policy in a Rapidly Changing World", at Kuwait University.

Jindal, S., & Kumar, M. (2012).The determinants of HC disclosures of Indian firms.*Journal of Intellectual Capital,* 13(2), 221 – 247

Komnenic, B., & Pokrajcic, D. (2012). Intellectual Capital and Corporate Performance of MNCs in Serbia. *Journal of Intellectual Capital,* 13(1), 106-119.

Kim, M., & Ritter, J. R. (1999). Valuing IPOs. *Journal of Financial Economics,* 53(3),409-37.

Lim, L., & Dallimore, P. (2002).To the public listed companies, from the investment community. *Journal of Intellectual Capital,*3(3), 262-76.

Lang, M., & Lundholm, L. (1993). Cross-sectional determinants of analysts' ratings of corporate disclosures.*Journal of Accounting Research,* 37 (2), 353-83.

Cordazzo, M., & Vergauwen, P. G. M. C. (2012). Intellectual capital disclosure in the UK biotechnology IPO prospectuses. *Journal of Human Resource Costing & Accounting*, 16 (1), 4 – 19

Nurunnabi, M., Hossain, M., & Hossain, M. (2011). Intellectual capital reporting in a South Asian country: evidence from Bangladesh. *Journal of Human Resource Costing & Accounting,* 15(3), 196 – 233

Mondal, A., & Ghosh, S. K. (2012). Intellectual capital and financial performance of Indian Banks. *Journal of Intellectual Capital,* 13(4).

Mondal, A., & Ghosh, S. K. (Forthcoming). Intellectual capital reporting trends in India: An Empirical study on selected companies. *International Journal of Financial Management.*

Myers, R. (1990). *Classical and modern regression with applications*, (2nd ed.). Duxbury, Boston, MA.

Niemark, M. (1995). *The hidden dimensions of annual reports: Sixty years of social conflict at general motors,* Markus Wiener, Princeton, NJ.

Oliveras, E., Gowthorpe, C., Kasperskaya, Y., & Perramon, J. (2008). Reporting intellectual capital in Spain.*Corporate Communications,* 13(2), 168-181.

Oliveira, L., Rodrigues, L. L., & Craig, R. (2006). Firm-specific determinants of intangibles reporting: evidence from the Portuguese stock market. *Journal of Human Resource Costing & Accounting,* 10 (1), 11-33.

Omar, I. H. J. (2008).Voluntary intellectual capital disclosure: evidence from Bahrain, working paper, University of Bahrain, Bahrain.

Ousama, A. A., Fatima, A. H., & Majdi, A. R. H. (2012). Determinants of intellectual capital reporting: Evidence from annual reports of Malaysian listed companies. *Journal of Accounting in Emerging Economies,* 2 (2), 119 – 139

Pulic, A. (2000).VAIC™- An accounting tool for IC management. *International Journal of Technology Management*, 20(5, 6, 7, 8),702-714

Pablos, P. (2003). Intellectual capital reporting in Spain: a comparative view. *Journal of Intellectual Capital,* 4(1), 61-81

Riahi-Belkaoui, A. (2003). Intellectual capital and firm performance of US multinational firms: a study of the resource-based and stakeholder view. *Journal of Intellectual Capital,* 4(2), 215-226.

Roberts, C., Weetman, P., & Gordon, P. (2005). *International financial reporting: A comparative approach*. Essex: Pearson Education

Singh, I., & Van Der Zahn, J. L. W. (2008). Determinants of intellectual capital disclosure in prospectuses of initial public offerings. *Accounting & Business Research*, 38 (5), 409-31.

Stewart. T. A. (1997). *Intellectual capital□The new wealth of organizations.*New York, Doubleday Dell Publishing Group.

Scott, W. R. (2000). *Financial Accounting Theory,* 2nd edition, Prentice Hall.

Sujan, A., & Abeysekera, I. (2007). Intellectual capital reporting practices of the top Australian firms. *Australian Accounting Review,* 17(2), 62-74.

Singh, S., & Kansal, M. (2011). Voluntary disclosures of intellectual capital: An empirical analysis. *Journal of Intellectual Capital,* 12(2), 301 - 318

Sveiby, K. E. (1997). *The new organizational wealth: managing and measuring knowledge based assets.* Berrett Koehler Publisher, San Francisco, CA.

Singhvi, S. S., & Desai, H. B. (1971). An empirical analysis of quality of corporate financial disclosure. *The Accounting Review,*129-38.

Najibullah, S. (2005). *An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance in context of commercial banks of Bangladesh*. Retrieved from http://sb.iub.edu.bd/internship/autumn2005/0220175.pdf

Teece, D. J. (2000). *Managing intellectual capital: Organizational, Strategic, and Policy Dimensions.* Oxford University Press, Oxford.

Thompson, P., & Randall, B. (2000). Accounting for intellectual capital: shaping the future through the knowledge economy. *Singapore Accountant,* 32-39.

Vafaei, A., Taylor, D., & Ahmed, K. (2011). The value relevance of intellectual capital disclosures. *Journal of Intellectual Capital*, 12(3), 407 - 429

Weisberg, S. (1985). *Applied Linear Regression*, 2nd ed., Wiley, New York, NY.

Watts, R.,& Zimmerman, J. (1986). *Positive Accounting Theory,* Prentice Hall, Englewood Cliffs, NJ.

Wallace, R. S. O., & Naser, K. (1995). Firm specific determinants of the comprehensiveness of mandatory disclosure in the corporate annual reports of firms listed on the stock exchange of Hong Kong. *Journal of Accounting and Public Policy,* 14, 311-68.

Wong, M., & Gardner, C. T. (2005). Intellectual capital disclosure: New Zealand evidence, paper presented at 2005 AFAANZ Conference, Melbourne. Retrieved from www.afaanz.org/ web2005.pdf

Williams, S. (2001). Is intellectual capital performance and disclosure practices related?. *Journal of Intellectual Capital,* 2(3), 192-203.

White, G., Lee, A., & Tower, G. (2007). Drivers of voluntary intellectual capital disclosure in listed biotechnology companies. *Journal of Intellectual Capital,* 8(3), 517-37.

Whiting, R. H., & Miller, J. C. (2008). Voluntary disclosure of intellectual capital in New Zealand annual reports and the hidden value. *Journal of Human Resource Costing & Accounting,*12(1), 26 – 50

Whiting, R. H., & Woodcock, J. (2011). Firm characteristics and intellectual capital disclosure by Australian companies. *Journal of Human Resource Costing & Accounting,* 15 (2) 102 – 126

van der Meer-Kooistra, J., & Zijlstra, S.M. (2001). Reporting on intellectual capital. *Accounting, Auditing & Accountability Journal,* 14 (4), 456-76.

Vergauwen, P.G.M.C.,& van Alem, F.J.C. (2005).Annual report IC disclosures in The Netherlands, France and Germany.*Journal of Intellectual Capital,* 6(1), 89-104.

Yau, F.S., Chun, L.S.,&Balaraman, R. (2009).Intellectual capital reporting and corporate characteristics of public-listed companies in Malaysia.*Journal of Financial Reporting & Accounting,* 7 (1), 17-35

Yi, A.,& Davey, H. (2010).Intellectual capital disclosure in Chinese (mainland) companies.*Journal of Intellectual Capital,* 11(3), 326-47.

Zuliana, Z. (2007). *Factors influencing intellectual capital disclosure: a Malaysian evidence,* Master thesis, International Islamic University Malaysia, Kuala Lumpur.

Appendix1: List of Intellectual Capital Items

Human Capital	External Capital	Internal Capital
Know-how	Brand	Management Process
Vocational Qualifications	Customer Satisfaction	Technological Process
Career Development	Quality Standard	Information Systems
Training Programme	Company Name	Networking Systems
Gender	Favourable Contracts	Management Philosophy
Religion	Business Collaboration	Intellectual Property
Disability	Licensing Agreements	Financial Relations
Employee Safety	Franchising Agreements	Culture
Employee Relationship	Distribution Channel	Research and Development
Employee Motivation	Market Share	Patents
Employee Teamwork		Trade Marks
Employee Capabilities		
Employee Productivity		
Compensation Plan		
Employee Benefits		
Employee Share		
Option Ownership Plans		
Employee Numbers		
Professional Experience		
Education Levels		
Seniority		
Age of Employees		
Entrepreneurial Skills		
Employee Behaviour		