

Is Cost of Equity Capital influenced by intellectual capital? An empirical analysis from the perspective of Indian companies

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Abstract

Purpose – This empirical study is developed with an aim of exploring how and to what extent the current year's as well as lagged years' disclosure level of intellectual capital (IC) influences the firm's value which is measured through the Cost of Equity Capital.

Design/methodology/approach – The content analysis technique is applied on the annual reports of 50 sample companies to construct an IC disclosure index for measuring the volume of IC disclosure and to collect other relevant information for the study periods from 2015–16 to 2019–20. However, due to unavailability of information for all the study periods, 7 companies were eliminated and finally 43 companies are used for analytical purpose. Keeping in mind about the aim of this research, regression equations are run to analyze the cause–effect relationship between the IC disclosure level and the Cost of Equity Capital after excluding the influence of other factors like firm size, unlevered beta and market-to-book ratio.

Findings – The present study finds that the amount of IC disclosure has an inverse association with the cost of equity capital. Our study also confirms that lagged years' IC disclosure has a greater inverse effect than the current year's IC disclosure on the Cost of Equity Capital.

Originality/value – For the first time in the literature of IC disclosure in the perspective of Indian context, this empirical study takes an initiative to investigate the impact of current year's as well as backlog years' IC disclosure level on the Cost of Equity Capital.

Keywords Disclosure, Intellectual capital disclosure, Cost of Equity Capital, Intellectual capital disclosure index, Capital asset pricing model

Paper type Research paper

1. Introduction

In this highly competitive economy of the 21st century, business firms show more interest to publish the integrated reports than the financial reports to indicate future value creation capabilities. Financial reports only capture the tangible or financial information and not the other portions, commonly termed as the nonfinancial part (IIRC, 2013). To remove this limitation of financial reporting, nowadays corporations have introduced another new concept of intangible or nonfinancial disclosure – termed as intellectual capital (hereafter it is termed as IC) disclosure (Rahman, Sobhan, & Islam, 2019). Concerning, firms have significantly disclosed their IC information more extensively and qualitatively to provide a signal towards their stakeholders regarding their future scope of growth (Ousama & Fatima, 2012).

However, Stewart (2000) described this IC or intangible asset as “intellectual material - knowledge, information, intellectual property, experience – that can be put to create wealth”.



Beside this, IC is defined as “a non-monetary asset without physical substance but (which) possess value or (which) can generate future benefits” by [Choong \(2008\)](#). Generally IC consists of human capital (HC), structural capital (SC) and relational capital (RC) ([Cronje & Moolman, 2013](#); [Sanchez, Salazar, & Basilio, 2013](#)). Human capital covers skills, knowledge, capabilities, creativity, personal attribute, technical competence at the personal level of employees and team work, healthy work environment, culture and gender equity at the organizational level ([Stropnik, Korošec, & Tominc, 2017](#)). Structural capital includes attributes such as knowledge that cannot be separated from the organization like organization structure, procedures, systems, management philosophy, etc. ([Martinez-Torres, 2006](#); [Stropnik et al., 2017](#)). Relational capital includes the relationship between the business organization and its related parties like customers, employees, investors, potential investors, resource providers, bankers, financiers, government, etc. ([Beattie & Thomson, 2007](#); [Joshi, Cahill, Sidhu, & Kansal, 2013](#)). [Drucker \(1993\)](#) argued that “knowledge has become the key economic resource and the dominant and perhaps even the only source of competitive advantage” ([Aregbesola, 2019](#)).

In this connection, previous literature studies have explained how and to what extent this IC-related disclosure is advantageous for the firms. [Guthrie, Petty, Ferrier, and Wells \(1999\)](#) explain these advantages from the viewpoint of internal aspect as well as external aspect of the firm. By disclosing more information about the IC, firms are able to highlight their internal strength – operational efficiency, employees’ efficiency, morality, motivation and efficiency in resource allocation within the firm ([Flamholtz & Main, 1999](#); [Guthrie et al., 1999](#)), and from the perspective of external aspect, by providing IC-related information, firms are also able to enhance external reputation by establishing trustworthiness among the associated parties ([Toms, 2002](#); [Guthrie, Petty, & Ricceri, 2006](#)), creating transparency in terms of disclosure of intangible information rather than tangible information ([Aregbesola, 2019](#)), maintaining legality in the public eyes ([Beattie & Thomson, 2007](#)) and showing the long-term vision of the organization ([Taliyang, Harun, Mustafa, & Mansor, 2014](#); [Aregbesola, 2019](#)).

Besides, [Francis et al. \(2005\)](#) suggest that firms will also enjoy a competitive advantage in terms of lower equity cost (here after COE) by decreasing information asymmetry and associated estimation risk and eventually increasing the investor interest through expanding the volume of IC-related disclosure ([Schuster & O’Connell, 2006](#); [Lippoldt, 2008](#)). According to agency theory, information asymmetry is one of the crucial reasons for bearing the agency cost, leading to higher equity cost ([Kosi & Valentincic, 2013](#)). Furthermore, the stakeholder theory reveals that the entire stakeholders have the right to know about how they will be affected by the organizational activities, yet they cannot take any constructive role in operating the business. The basic purpose of any corporate organization is to create wealth not only for the owner but also for the stakeholders ([Donaldson & Preston, 1995](#)). Hence, an organization should disclose information about the IC for the benefit of all stakeholders as well as for itself for obtaining a lower equity cost.

Consequently, it can be said that the disclosure of information about the IC is too precious for both parties; investors can evaluate the firm, and managers can provide a favorable signal in a better way ([Bhasin, Shaikh, & Hanif, 2011](#)). However, there is a dearth of research ([Mondal & Ghosh, 2020](#); [Mehrotra, Malhotra, & Pant, 2017](#); [Kumar & Kavida, 2017](#); [Mondal & Ghosh, 2014](#)) pertaining to the impact of IC-related disclosure on the COE from the viewpoint of Indian companies. Hence, this empirical study aims to examine the effect of IC disclosure on the COE from the perspective of Indian companies. For this study, 43 companies were finally selected out of 50 companies, listed in National Stock Exchange (NSE), as the sample companies. Moreover, the amount of IC disclosure is measured through the self-generated IC disclosure index of 45 IC items based on the previous studies ([Guthrie, Petty, Yongvanich, & Ricceri, 2004](#); [Bukh, Nielsen, Gormsen, & Mouritsen, 2005](#); [Li, Pike, &](#)

Haniffa, 2008) for the study periods from 2015–16 to 2019–20 by a thorough study of annual reports of the sample companies using the content analysis technique. The findings of this research not only suggest the negative nexus between IC disclosure level and COE of the firm (Mangena, Pike, & Li, 2011; Boujelbene & Affes, 2013) but also support the logical and pragmatic concept that the lagged years' IC disclosure level has more effect than the current years' IC disclosure level on the COE of a firm (Rahman *et al.*, 2019).

The research study emphasizes the importance of improving disclosure policies for intangible resources at the managerial level. Managers should focus on disclosing the most relevant intellectual capital (IC) information that helps to predict future performance and future firm value while minimizing costs. Managers should also emphasize disclosing the relationship between tangible and intangible resources to better explain their role in driving firm performance and sustainability. This study also carries a strategic trick of managers to minimize information gap, to enhance investors' confidence, to enhance market liquidity, to enhance firm value and consequently to reduce finance cost. Contrariwise, disclosing IC provides transparency about the ethical business practices to investors and stakeholders, who can take an investment decision more accurately.

The rest of this research study is framed in the following way: the subsequent section deals with the existing literatures and development of research hypothesis. Thereafter, the third section states about the research design & methodology, while the fourth section explains the research model followed by the fifth section which discusses our findings, and the last section concludes our study by highlighting some limitations of this paper.

2. Literature review and hypothesis development

According to signaling theory, by publishing information, the business organizations want to give a signal about the firm's condition and capabilities towards the concerned parties (Murni, 2004). Khan, Muttakin, and Siddiqui (2013) argued that firms having higher profitability will publish higher disclosure level in their annual reports to create a good reputation and to make a separate identity in terms of better performance among the investors and stakeholders than the other competitors. The study of Hamrouni, Miloudi, and Benkraiem (2015) also reveals that the permission of voluntary disclosure of information relating to IC extremely depends on the firm's performance. Contradictory firms having bad performance will always want to publish less information voluntarily to hide their bad performance and vice versa (Frias Aceituno, Rodriguez-Ariza, & Garcia-Sanchez, 2013).

A group of previous researchers (Mangena *et al.*, 2011; Lippoldt, 2008; Leuz & Verrecchia, 2000; IASB, 2005) argued that the COE is negatively correlated with the information asymmetry (about the IC). The business organization will be able to cut down their equity cost by enhancing liquidity in the stock market via minimizing the information asymmetry. Information asymmetry may be defined as inequality in getting information among the insider and outsider stakeholders, where insiders have more internal information and future prospect of the corporation than outsiders (Prabowo, 2017). In this context, investors will face a high estimation risk which will arise from the uncertainty generating from this information gap. Therefore, organizations have to provide a high return to tempt investors (high risk, high return) (Barus & Siregar, 2014). With a high disclosure level, business firms will be able to reduce the uncertainty of investment as well as estimation risk among investors; as a result, investors will also demand a lower rate of return, meaning firms' COE will also minimize (Schuster & O'Connell, 2006). Researchers such as Botosan (2006), Boujelbene and Affes (2013) and Mangena *et al.* (2011) also suggested the same statement that low level of information gap between the insiders and outsiders will help corporation to pay a lower amount for their self-capital, i.e. equity cost.

Moreover, in such an open-access era, qualitative information is given more emphasis than quantitative information (Beretta & Bozzolan, 2008; Zhang & Li, 2005). In this regards, at present, firms extensively disclose IC-related information to fulfill the demand of investors towards qualitative information (Barile, Saviano, Polese, & Caputo, 2015). Anam, Fatima, and Majdi (2011) suggested that firms having favorable operating profitability and better growth opportunity disclose more information pertaining to IC-related information. A sizeable body of researchers (Abdolmohammadi, 2005; Orens, Aerts, & Lybaert, 2009; An, Davey, & Eggleton, 2011) reveal that market capitalization and firm value are significantly and positively correlated with the volume of IC disclosure. While Boujelbene and Affes (2013) argued that the cost of equity capital is negatively correlated with the human capital as well as structural capital, no such relation exists with the relational capital.

Over and above, IC is considered as a crucial factor for the value creation process. IC is taken as the sum of all attributes, residing in a firm, that enhance the competitive advantages of the firm in the market place (Stewart, 1997). By disclosing more information about IC, the organizations represent their future wealth creation capabilities to investors (Botosan, 1997; Edvinsson & Malone, 1997). Beattie and Thomson (2007) argued that intangible attributes such as employees' efficiency, skill, knowledge, competencies, customer's relationship and management systems are not adequately reflected in the traditional financial statement, but these intangible attributes are very essential for the growth of the organization and sustainability in the long run. Additionally, by disclosing information about IC, business organizations will be benefited in establishing stakeholders' faith, mobilizing market fluidity, enhancing nobility, increasing proficiency in operating business operations, efficiently distributing resources and ensuring ultimate utilization of resources (Barth, Kasznik, & McNichols, 2001; Holland, 2003) which will also assist the business firm to minimize its cost of capital (Aboody & Lev, 2000; Lev, 2001). In conclusion of the aforementioned discussion, it can be said that the amount of voluntary disclosure relating to IC information and the equity cost are inversely correlated with each other.

Hence, there is no doubt on the importance of IC disclosure in representing the firm value, which has been analyzed from different viewpoints by several researchers. However, most of these empirical research studies are conducted abroad. Moreover, most of them are carried out on the basis of current year's IC disclosure level, but it is more logical and pragmatic that the effect of IC disclosure of the preceding year or years has more effect than the current year's IC disclosure on the firm's future value creation process because the current year's IC disclosure is published through the annual report in the middle of the current year; that is why in this empirical study, the effect of IC disclosure is analyzed from the perspective of current year as well as lagged years.

Therefore, the following hypothesis is developed:

H1. IC disclosure level has a negative effect on the Cost of Equity Capital.

3. Research methodology

3.1 Sample selection and data sources

Initially top 50 listed companies are selected based on their market capitalization as on 31st March, 2020, from India's one of the leading stock exchanges – NSE. Thereafter, 7 companies were eliminated due to unavailability of data, and the remaining 43 companies were analyzed. Using the content analysis technique, all the relevant data were collected from the annual reports of the sample companies by agreeing the arguments of previous academicians (Lang & Lundholm, 1993; Niemark, 1995; Guthrie *et al.*, 2004) for the study periods 2015–16 to 2019–20. This research study attempts to investigate the influence of IC disclosure level from the current year's as well as preceding years' aspect on the current year's COE.

Therefore, the year 2019–20 is considered as the current year and years from 2018–19 to 2015–16 are taken as preceding years.

3.2 *Dependent variable*

In this study, COE is considered as the dependent variable, and it may be defined as the required rate of return that money providers or investors forecast to earn from their provided money or investment (Botosan, 2006). In addition, it can also be explained as “the discount rate the market applies to a firm’s expected future cash flows to arrive at current stock price” (Reverte, 2012, p. 258). Hence, COE is crucial to investors to measure the return rate that influences them to bear the risk regarding to the companies’ ability of generating cash flow in future as compared to different investment opportunities with a similar risk profile obtainable in the market (Berk & DeMarzo, 2007). Although very important, there is no fixed method for determining COE.

Several researchers suggest alternatives methods of determining COE. These alternative methods can be explained from the view point of two approaches. The first approach is the capital asset pricing model (CAPM), based on average return. In this approach, investors are compensated for bearing additional risks in the name of risk premium in addition of risk-free rate (Easton, 2004; Botosan & Plumlee, 2005; Reverte, 2012). In this model, the COE is determined by adding the risk-free rate (R_f) and expected market risk premium ($R_m - R_f$) after multiplied by market beta (β) which is considered as the degree of risk [i.e. $K_e = R_f + \beta (R_m - R_f)$] (Botosan, 2006).

The second approach includes the methods, namely the residual income model (Gebhardt, Lee, & Swaminathan, 2001), the abnormal earning growth model (Gode & Mohanram, 2003) and the price earnings growth model (Easton, 2004), based on the internal rate of return that should equalize the prospective cash flows with the present stock price. On the other hand, Lee, Walker, and Christensen (2006) argue that all these methods, which fall under the second approach, require a comprehensive amount of accounting forecast which is not only very difficult to collect but also very risky because future is always uncertain. Moreover, these methods are also based on unrealistic assumptions that firms will always earn at a fixed rate of return and the growth rate will be always fixed (Gietzmann & Ireland, 2005).

After considering the aforementioned discussion in this research study, I go with the CAPM to measure the equity cost. As Cooper (2006) suggests that results should not significantly dominate with the use of the method and depend on the applicability, and it is the relative differences in estimating the equity cost among firms, rather than the accuracy of the absolute measures of COE, that matters in respect of effect of IC disclosure on the COE (Boujelbene & Affes, 2013). Here the rate of government bond, having 10 years’ maturity, is considered as the risk-free rate (i.e. R_f), and the average market return of NIFTY 50 is considered as the market return (i.e. R_m).

3.3 *Independent variable*

To fulfill the research objectives, the volume of voluntary disclosure of IC-related information is considered as the independent variable. The volume of IC-related information is measured by preparing an IC disclosure checklist based on the previous literature (Guthrie *et al.*, 2004; Bukh *et al.*, 2005; Li *et al.*, 2008; Setia, Abhayawansa, Joshi, & Huynh, 2015; Melloni, 2015) consisting 45 IC items from the three components (human capital, relational capital and structural capital). Thereafter, a value range of 0–3 is used to score the IC items to convert qualitative data into quantitative data. Though previous researchers like Guthrie *et al.* (2006) and Abeysekera (2008) use “0” and “1” to score the IC items, here I use a value range 0–3 for the same purpose based on the disclosing pattern within the annual reports of the sample companies using the content analysis technique

which is very effective for rigorous, formative and accurate analysis of textual context (Guthrie *et al.*, 2004; Vitolla, Raimo, Rubino, & Garzoni, 2019). A value of 0 is given if the item is not disclosed; a value of 1 is given if the item is presented in a descriptive form. If the item is disclosed numerically, a value of 2 is assigned, and alternatively a value of 3 is also assigned if the item is presented descriptively and numerically. For computing the disclosure index, firstly all the assigned values are summed up to calculate the actual score, and secondly total numbers of IC items in the checklist are multiplied with the maximum score value for calculating the maximum score. Finally, the disclosure index is obtained by dividing the actual score by the maximum score.

3.4 Control variable

Similar to previous researchers such as Botosan and Plumlee (2002, 2005), Revert (2012), Botosan, Plumlee, and Wen (2011), Mazzotta and Veltri (2014), Salvi, Petruzzella, and Giakoumelou (2018), firm size, market-to-book ratio and beta (unlevered) are considered as control variables.

Firm Size (SIZE), taken as a proxy measure of the availability of IC-related information (Mangena, Pike, & Li, 2010), is calculated on the basis of natural logarithm of market capitalization (Botosan & Plumlee, 2005). There exists a negative correlation between firm size and the equity cost through either eliminating information asymmetry or removing transaction cost (Chen & Jian, 2007; Mangena *et al.*, 2010). Generally larger firms have more financial strength than smaller firms, and this strength allows the large firm to bear extra cost of publishing more information (El-Bannany, 2013).

Market-to-Book Ratio (*MBR*) is computed as the ratio between market capitalization to the book value of equity capital. Similar to previous researchers such as Cheng, Collins, and Huang (2006), Khurana and Raman (2004) and Orens *et al.* (2009), I also expect that the MBR and the COE are adversely interrelated with each other. A lower MBR indicates a higher level of uncertainty about the growth opportunities of the firm, thus reducing the confidence of investors, and they claim a higher return for their investment which leads to a higher equity cost (Chen & Jian, 2007).

Beta (BETA_U): Sharpe (1964), in his study, argued that cost relating to the equity capital is directly and positively correlated with the beta. Beta is used to measure a security's systematic risk. Hence, a security having higher beta bearing a high degree of risk and investors also demand more return to compensate this additional risk, resulting in higher COE. Beta is computed by adopting the slope of securities return with the market return, but in this study, I used unlevered beta instead of beta, also known as levered beta, to bifurcate the joint influence of market risk and leverage risk at the same time (Botosan *et al.*, 2011; Salvi, Vitolla, Raimo, Rubino, & Petruzzella, 2020) as only COE was considered in this study. Unlevered beta is computed as follows:

$$\text{normal beta} / \left(1 + \frac{\text{Debt}}{\text{equity}} \right)$$

4. Research models

In order to explore our hypotheses, we ran two regression equations (Botosan & Plumlee, 2005; Espinosa & Trombetta, 2007; Mangena *et al.*, 2010; Orens *et al.*, 2009). The two regression equations are as follows:

$$COE_{it} = \beta + \beta_1 ICD_{it} + \beta_2 SIZE_{it} + \beta_3 MBR_{it} + \beta_4 BETA_{u_{it}} + \varepsilon_{it} \tag{1}$$

$$COE_{it} = \beta + \beta_1 ICD_{it-1} + \beta_2 ICD_{it-2} + \beta_3 ICD_{it-3} + \beta_4 ICD_{it-4} + \beta_5 SIZE_{it} + \beta_6 MBR_{it} + \beta_7 BETA_{u_{it}} + \varepsilon_{it} \tag{2}$$

where COE = Cost of Equity Capital, ICD = Intellectual Capital Disclosure Level, SIZE = Firm Size, MTB = Market-to-Book Ratio and BETA_u = Unlevered Beta.

Through Equation (1), I want to examine what is the nexus of current year’s IC disclosure (ICD_{it}) with the current year’ COE (COE_{it}), but Equation (2) is little bit different from Equation (1). In the sense, by Equation (2), I want to demonstrate whether there is any effect of previous year’s or years’ IC disclosure level (ICD_{it-1}, ICD_{it-2}, ICD_{it-3} & ICD_{it-4}) on current year’s COE (COE_{it}).

5. Research findings

5.1 Descriptive statistics and correlation analysis

Table 1 provides the information about the descriptive statistics for all the related variables. Table 1 shows the mean values of IC disclosure – 0.3714, 0.3507, 0.3510, 0.3469 and 0.3336 for the year 2019–20, 2018–19, 2017–18, 2016–17 and 2015–16, respectively. Hence, it can be interpreted that the level of disclosing IC-related information gradually increases in the Indian companies but still is not up to the mark or satisfactory limit (Reverte, 2012; Easton, 2004).

In order to observe the direction of association among the ICD, COE and other variables of this research study, the Pearson’s correlation coefficients are used, presented in Table 2. From this table, it can be seen that the COE for the year 2019–20 is negatively associated not only with the IC disclosure level of the same year but also with the previous year’s or years’ IC disclosure level. Moreover, this negative correlation between the COE and ICD is statistically significant at 5% level, except ICD for the year 2016–17. It means that a higher level of IC disclosure lowers its COE, resulting in improved firm value. Note that this disclosure is not bounded or based on only current year as it is more logical and pragmatic that the level of IC disclosure of the preceding year or years has more effect than the current year’s IC disclosure on the firm’s COE because the current year’s IC disclosure is published through the annual report in the middle of the current year.

	Mean	Std. deviation	N
COE _{it}	11.8101	2.66469	43
ICD _{it}	0.3714	0.0624	43
ICD _{it-1}	0.3507	0.06205	43
ICD _{it-2}	0.351	0.05006	43
ICD _{it-3}	0.3469	0.06486	43
ICD _{it-4}	0.3336	0.06495	43
SIZE _{it}	11.5666	0.77659	43
MBR _{it}	6.6693	10.37668	43
BETA _{u_{it}}	0.6848	0.39222	43

Table 1.
Descriptive statistics

Source(s): Own compilation

	COE _{it}	ICD _{it}	ICD _{it-1}	ICD _{it-2}	ICD _{it-3}	ICD _{it-4}	SIZE _{it}	MBR _{it}	BETA _{Au, it}
COE _{it}	1								
ICD _{it}	-0.346**	1							
ICD _{it-1}	-0.255**	0.055	1						
ICD _{it-2}	-0.280**	0.676	0.331	1					
ICD _{it-3}	-0.144	0.426	0.451	0.503	1				
ICD _{it-4}	-0.315**	0.478	0.323	0.725	0.582	1			
SIZE _{it}	-0.086	-0.600	-0.051	0.033	-0.173	0.020	1		
MBR _{it}	-0.256**	-0.277	0.118	-0.098	-0.094	0.107	0.208	1	
BETA _{Au, it}	0.767*	0.758	-0.061	-0.073	0.040	-0.134	-0.224	-0.226	1

Note(s): Here, “*” represents 1% significance level and “**” represents 5% significance level

Source(s): Own compilation

Table 2. Pearson’s correlation coefficients

5.2 Collinearity analysis

On the other hand, from [Table 2](#), it can also predict the collinearity status of the considered variables. Here the highest coefficient value is 0.767 between the COE and BETA_{Au}. Thus, roughly it can be said that there is no multicollinearity among the variables as the highest coefficient value (0.767) is below the threshold limit (i.e. 0.80) ([Farrar & Glauber, 1967](#); [Salvi et al., 2020](#)). Moreover, variance inflation factor (VIF) test is also used to examine the multicollinearity issues among the variables, relating to the regression models. The results of the VIF test are presented in [Table 3](#) and in [Table 4](#) for [Equation \(1\)](#) and [Equation \(2\)](#), respectively. The highest and lowest VIF values are 1.114 and 1.018, respectively, in [Table 3](#) for the 1st equation and 2.528 and 1.037, respectively, in [Table 4](#) for the 2nd equation. Hence, the VIF values confirm the prediction of correlation coefficient about the freeness of multicollinearity among the variables as all the VIF values are below 10. According to previous researchers such as [Myers \(1990\)](#) and [Greene \(2008\)](#), if the VIF values are less than 10, the influence of multicollinearity is insignificant for a regression and its interpretation of results as well.

5.3 Regression results

The results of two regression equations are presented in [Table 3](#) and [Table 4](#), respectively. [Tables 3 and 4](#) show a value of Adj. R^2 of 0.677 and 0.681, respectively, which suggests that the dependent variable, i.e. COE, can be explained by the two regression models up to 67% & 68% levels. Hence, we can say that these two models are well-fitted models. Moreover, highly statistically significant (at 1%) F -stat values from the two tables also confirm about the

	Beta	t -statistics	VIFs
Intercept		3.039	
ICD _{it}	-0.195	-2.144**	1.09
SIZE _{it}	-0.095	-1.028***	1.12
MBR _{it}	-0.214	-2.432**	1.018
BETA _{Au, it}	0.751	8.163*	1.114
Adj. R^2		0.677	
F -stat.		23.379*	
Durbin-Watson		1.955	

Note(s): Here, “*” represents 1% significance level; “**” represents 5% significance level and “***” represents 10% significance level

Source(s): Own compilation

Table 3. Regression coefficients of Equation 1

	Beta	t-statistics	VIFs
Intercept		1.726	
ICD _{it-1}	-0.107	-0.985**	1.35
ICD _{it-2}	-0.112	-0.845***	2.022
ICD _{it-3}	-0.015	-0.103	2.528
ICD _{it-4}	-0.01	-0.082**	1.745
SIZE _{it}	-0.044	-0.457	1.07
MBR _{it}	-0.250	-2.504**	1.139
BETA _{it}	0.796	8.371*	1.037
Adj. R ²		0.681	
F-stat.		12.083*	
Durbin-Watson		1.914	

Table 4.
Regression coefficients
for Equation 2

Note(s): Here, “*” represents 1% significance level; “**” represents 5% significance level and “***” represents 10% significance level
Source(s): Own compilation

fitness of these two regression models. It can also be said that these two regression equations have a better ability in predicting the outcome variable. Here the Durbin–Watson statistic values are 1.955 and 1.914 which are closer to 2; hence, we can say that the assumption of independent errors is tenable and much lower than 5, indicating there is no auto-correlation issues among variables.

Table 3 represents the regression results for the nexus between current year’s IC disclosure level (ICD_{it}) and current year’s COE (COE_{it}) and reveals that ICD_{it} has statistical significance at 5% level and a negative influence (−0.195) on COE_{it}. On the other hand, Table 4 shows the regression results of the relationship between the current year’s COE and 4 years’ lagged IC disclosure levels, presented as ICD_{it-1}, ICD_{it-2}, ICD_{it-3} & ICD_{it-4} for the lagged year 2018–19, 2017–18, 2016–17 and 2015–16, respectively. The results inform us that current year’s COE (COE_{it}) is negatively associated with every lagged year (−0.107, −0.112, −0.015 and −0.010). This negative association is also statistically proved. Hence, these findings confirm our hypothesis that current year’s as well as previous years’ IC disclosure level have a negative impact on the current year’s COE.

6. Discussion

From the aforementioned findings, it can be said that firms may use this IC disclosure as a technique of fostering towards minimization of the COE (Salvi *et al.*, 2020). These findings also support the argument of Kim and Taylor (2014), explaining the importance of discreet voluntary disclosure, particularly for those companies that have enriched intellectual capital, to build a bridge between the provider of information and user of information in order to mitigate information asymmetry, arising from the inadequacy of financial reports in depicting the nonfinancial items like intellectual capital, social responsibility, quality of corporate governance which are not measurable in monetary terms but immensely contribute towards the value creation process. Alternatively, firms that disclose more information regarding their intellectual capital enjoy a competitive advantage than others. In this connection, information asymmetry creates moral hazard and adverse investing decision that lead to higher associated risks. In contrary, greater transparency in disclosing intellectual capital enhances the confidence of investors towards a firm’s achievement and success, which in turn towards the minimization of business risk associated with the investment and maximization of market liquidity that leads to lower equity cost. Rahman *et al.*, 2019 reveal that voluntary intellectual capital disclosures help to build a favorable

attitude among different stakeholders, leading to positive influence towards the firm value. Besides, forward-looking information pertaining to the IC helps to eliminate information asymmetry that can positively dominate the firm value by reducing the firm's COE (Vitolla *et al.*, 2019; Kim & Taylor, 2014).

7. Conclusion

The primary aim of this research work is to examine the nexus between IC disclosure level and COE in the perspective of Indian scenario based on NSE 50 companies for the period of 5 years starting from 2015–2016. To measure the IC disclosure level, I prepared a checklist of IC disclosure of 45 items based on the previous research works (Guthrie *et al.*, 2004; Bukh *et al.*, 2005; Li *et al.*, 2008) and assigned values, ranging from 0 to 3. A value of 0 is given if the item is not disclosed in the annual report; a value of 1 is given if the item is presented in a descriptive form. If the item is disclosed numerically, a value of 2 is assigned, and lastly a value of 3 is assigned if the item is presented in both ways – descriptively and numerically by adopting the content analysis of the annual reports of the sample companies (Guthrie *et al.*, 2006; Abeysekera, 2008). The results show that only on an average 35% disclose information regarding IC in the annual report in India due to the absence of any mandatory guideline concerning IC disclosure.

This empirical research work reveals that IC disclosure has a negative influence on a firm's COE. Higher level of IC disclosure can minimize information gap, and this minimum information gap represents better performance or better future prosperity, all of which lead to higher firm value and lower finance cost and thus lower cost of equity capital (Orens *et al.*, 2009; Boujelbene & Affes, 2013).

Furthermore, the findings of this empirical study support the logical and pragmatic concept that the IC disclosure level of preceding year or years has more effect than the current years' IC disclosure level on the COE of a firm because the current year's IC disclosure is published through the annual report in the middle of the current year and it is a rare chance to effect the COE instantly that differentiates this research work from the previous studies such as those by Vitolla *et al.* (2019), and Salvi *et al.* (2020). This study also indicates a less amount of disclosures regarding IC information which is a matter of concern. Respective authorities and policymakers should keep this in mind while developing a framework regarding IC disclosure. It will be very fruitful not only for the users of annual reports but also for the firms if a separate section is kept for the disclosure of information about the IC in the annual reports. Consequently, investors, stakeholders or other related parties easily can collect relevant information regarding their investment. On the other side, firms can also provide a signal to its related parties. Retrospectively firms can improve its value by gaining confidence of investors, by increasing stock market liquidity and by minimizing its finance cost.

This research work can be conducted by bifurcating industry wise: knowledge-based industries and non-knowledge-based industries. It can also be carried out by expanding the study periods and/or incorporating more companies in the sample. Besides, a more advanced disclosure index can be developed by adding more IC representative items in the IC disclosure checklist for measuring IC disclosure level more accurately.

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