



# What Drives Voluntary Intellectual Capital Information Disclosure? Evidence from Deposit Money Banks in Nigeria

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## Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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## ABSTRACT

The aim of this study is to explore the determinants of intellectual capital(IC) information disclosure from the perspective of signaling and proprietary cost theories. This study adopted *ex-post facto* research design. In particular, a data set was drawn from the five-year (from 2012 to 2016) annual reports of 12 Deposit Money Banks (DMBs) operating in Nigeria. The data set collected was analysed by means of panel corrected standard error (PCSE). The study results indicate that whereas corporate age and size have significant positive relationship with IC information disclosure, intellectual capital performance has significant negative association with IC information disclosure. Additionally, corporate profitability is found to have insignificant negative relationship with IC information disclosure. The study results offer useful insights that would assist policymakers and regulators in formulating policies and developing reporting guidelines that, at the moment, are not

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included in the existing accounting reporting guidelines. Moreover, the paper confirms prior study results in this area and includes such unusually explored IC disclosure driver as IC performance and, thus, extends and deepens existing literature on the determinants of IC information disclosure.

**Keywords:** *Intellectual capital; disclosure; drivers of intellectual capital disclosure; deposit money banks.*

**JEL CODE:** O34, O15, M41, M49, D83

## 1. INTRODUCTION

The shift of attention from industry-based economy to knowledge-based economy has been witnessed in the last few decades. This has undoubtedly created a need for more emphasis on IC [1]. Representing the gap between book value and market value of firms [2] and the unseen value in the business of nowadays [3] IC has been noted to play a very significant role in corporate value creation and strategy determination [4]. Although argument has been advanced by some authors that IC represents only a part of this gap [1,5] difficulty associated with its measurement and, thus, underreporting has continued to create information asymmetry situation. In addition, "in current practice, IAS No.38 covers the treatment of intangibles and does not allow capitalization of intangibles that are not identifiable or reliably measurable" [6]. This situation has prompted managers of corporates to consciously engage in discretionary IC information disclosure with the overriding intent to not only narrow this information lopsidedness, but to signal their excellence or superior quality to the capital markets. This is notwithstanding the potentially damaging effect of such disclosure on the competitive advantage of these companies.

Extant literature indicates rising empirical studies on IC information disclosure [7,8,[9,10,11,12] Orens, *et al.*, 2009; [13] [14] Cordazzo, *et al.*,2012; [15,16,17,18, 3] Joshi, *et al.*,2016; [19] Wang *et al.*, 2016;[20],21] Mehrotra, *et al.*, 2017; [22] Mulya & Faeni, 2019; Rep, *et al.*, 2019; Dey & Faruq, 2019; Rahman, *et al.*, 2019; [23] Alrawashedh, *et al.*, 2021). However, most of these studies focused on the determinants of IC (Petty & Cuganesan, 2005; Cordazzo, 2007; [9,11,13] Cordazzo, *et al.*, 2012; Ousama, *et al.*, 2012; [17] Joshi, *et al.*,2016; Mehrotra, *et al.*, 2017; [21] Mulya & Faeni, 2019; Rep, *et al.*, 2019; Dey & Faruq, 2019; Rahman, *et al.*, 2019; Gobel, *et al.*, 2020; [23] Alrawashedh, *et al.*, 2021). Whereas some of the studies indicate

that corporate age is insignificantly related to IC information disclosure (Cordazzo, 2007; Cordazzo, *et al.*, 2012; Joshi, *et al.*,2016), others reported significant relationship among these variables. (See, for example, [23] This indicates a mixed and, thus, unclear research finding regarding the relationship between corporate age and IC information disclosure.

Further, whereas some of the studies indicated that corporate size is positively related to IC disclosure [9,13,17] Eddine, *et al.*, 2015;[3] Mehrotra, *et al.*, 2017; Rahman, *et al.*, 2019; Alrawashedh, *et al.*, 2021), others reported insignificant impact of corporate size on IC disclosure (Dey & Faruq, 2019). This is yet another inconclusive study results. In addition, while some of the studies on the determinants of IC information disclosure indicated that corporate profitability is positively related to IC disclosure [3] Susanto, *et al.*, 2019; Rahman, *et al.*, 2019; Astuti, *et al.*, 2020), others reported negative relationship among these variables. (Mondal & Ghosh, 2014;[24] Alrawashedh, *et al.*, 2021). Also, whereas some of the studies indicated that corporate profitability has no relationship with IC disclosure (Mehrotra, *et al.*, 2017; [22] others showed insignificant relationship (Dey & Faruq, 2019; Mulya & Faeni, 2019). Yet, some indicate significant positive relationship among these variables [11]. Thus, the study results are inconclusive or unclear.

Furthermore, prior research have investigated company size, corporate age, the frequency of meetings of Commissioners, Commissioners' influence, type of auditor, industry average, profitability, corporate governance, listing age, globally affiliated auditors, board independence, board gender, board diversity, accreditation Status and audit committee [24,3,22] Dey & Faruq, 2019; Mulya & Faeni, 2019; Gobel, *et al.*, 2020; [23] Alrawashedh, *et al.*, 2021) as drivers of IC information disclosure. However, to the author's best knowledge, no study has deployed intellectual capital performance as an

independent variable in a study of this nature using evidence from Nigeria banking context. Building on the foregoing, this paper aims to further investigate the effects of such corporate characteristics as age, size and profitability on IC information disclosure. In addition, the study explores the effect of intellectual capital performance on IC information disclosure.

This paper makes empirical and theoretical contributions. First, by exploring the firm age, size, and profitability and IC performance as drivers of IC information disclosure, empirical literature on IC disclosure is extended and deepened. Second, empirical literature on drivers of IC information is deepened by the introduction of the extended value added intellectual coefficient as indicator of IC performance. Third, the study further expands empirical literature by confirming prior study finding by [24] that IC performance is negatively related to IC information disclosure. Fourth, by deploying proprietary cost theory to explain the motivation for IC information disclosure by DMBs in Nigeria, this study further validates this theory as a robust framework for explaining disclosure behaviors of corporate management.

The remainder of this paper is organized as follows: whereas section two presents a review of related literature and hypotheses development, section three delineates the study methodology. Thereafter, section four details both the results of the descriptive and inferential analyses conducted and its discussion. This is followed by section five, which presents the concluding remarks.

## **2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT**

### **2.1 Intellectual Capital and Intellectual Capital Disclosure**

In a knowledge-based economy, where core competencies are identified by firms as hidden instead of observable assets (Alrawashedh, *et al.*, 2021), IC resource is often marked as critical asset that does not only account for organizational value creation, but represents the organization's most important resources from where its competitive advantage originates. Nevertheless, its eclectic nature has engendered its varying conceptualization. In addition, the interchangeable use of such terms as knowledge asset, intangible asset, intellectual capital and intellectual asset has offered wide-ranging definitions [25] Consequently, consensus

regarding the meaning of IC is yet to be reached [5,24,19]. As those intangible assets that create value for a company which are not reported in their statement of financial position [26] IC is viewed as not only the intangible value of a firm [25 ] but a resultant insight as regards head value, the capacities to earn in the future, based on human capital, relational capital and structural capital [27]. Moreover, the sub-domains of IC have generally been identified as human capital, structural capital and relational capital [26, 25]

Human capital comprises the individual knowledge which is composed of both knowledge accumulations, tacit and explicit objective knowledge acquired through experience [28] Structural capital is often conceptualized to include such variables as processes, the non-physical infrastructure and databases of the organization that make it possible for human capital to function, while relational capital sub-concept consists of supplier relationships, customer relationships, trade names and trademarks [25]. So, the sub-concepts of IC very clearly suggest that it is made up of the value of the knowledge of such organizational assets as employee, structure, and its inter and intra relationships. However, the difficulty associated with IC measurement has resulted to its underreporting. In addition, "the current financial reporting model only includes information on some IC components, such as goodwill, R&D, copyrights, patents and trademarks and continues to ignore the other major IC components" [2] Accordingly, organizational management have resorted to voluntary IC information disclosure practices to address this problem of underreporting. Thus, voluntary IC disclosure is now being practiced by firms in very many countries [2] Moreover, IC information disclosure remains a component of discretionary information disclosure in corporate annual report that has formed information source for investment decision making [22].

Literature indicates the deployment of many theories to explain the motivation for discretionary IC information disclosure by prior studies. Specifically, whereas agency theory, stakeholders' theory, signaling theory and legitimacy theory have been deployed by [5,29] to explain the disclosure behaviours of firms, proprietary cost theory has been employed to explain disclosure behaviours of companies by investigating its impacts on disclosure (see, for example, [30,31,32] Consistent with these studies, this paper employs Signaling and

Proprietary Cost Theories to investigate the drivers of voluntary IC information disclosure, drawing evidence from DMBs operating in Nigerian context.

## 2.2 Hypotheses Development

### 2.2.1 Corporate age and intellectual capital disclosure

Empirical literature indicates that prior studies have explored corporate age as a determinant of IC information disclosure [9] Cordazzo, *et al.*, 2012; [3] Joshi, *et al.*, 2016; Mulya & Faeni, 2019; [23] Whereas some of the studies found insignificant relationship among these variables (Cordazzo, 2007; Cordazzo, *et al.*, 2012; Joshi, *et al.*, 2016), others indicated that both variables are significantly related (Gobel, *et al.*, 2020). [23] In addition, some of these studies reported a positive relationship of corporate age with IC information disclosure. (Mondal & Ghosh [24,23]. Specifically Joshi, *et al.* investigated the level and determinants of IC information disclosure using evidence from listed top firms in Malaysia and indicated that company size, industry type and leverage are significantly related to the level of IC disclosure, while return on total assets, committee independence, board independence, audit committee, company age, foreign shareholding, complexity, auditor size and institutional shareholding are not significantly related to the level of IC disclosure. Cordazzo (2007) analyzed the disclosure of Intangibles in Italian IPO prospectuses using evidence from firms operating in Italy and showed that corporate size and pre-IPO management ownership are related to the level of intangible information disclosure, whereas the level of technology and firm age are not related to it.

Drawing evidence from a Non-Vocational Higher Education operating in Indonesia, [23] explored the drivers of IC information disclosure and indicated that corporate age, accreditation status and corporate size have significant effects on IC information disclosure. Drawing evidence from India, [24] investigated the determinants of IC information disclosure practices and showed that whereas corporate age and size, and the size of audit committee are positively related to IC information disclosure, leverage, profitability and IC efficiency have negative relationship with IC information disclosure. Thus, empirical results on this relationship are inconclusive and unclear. Building on these prior studies, the following hypothesis is proposed.

**H<sub>1</sub>1:** Corporate age is positively related to IC information disclosure.

### 2.2.2 Size and intellectual capital disclosure

Some stakeholders often scrutinize big companies and, so, it can be predicted that companies that attempt to reduce political costs might engage in such positive disclosure practice as IC information disclosure [9] Also, there is a general acknowledgement that big companies engage in a comprehensive reporting [33] Moreover, existing empirical literature indicates rising studies on corporate size as a driver of IC information disclosure (Petty & Cuganesan, 2005; Cordazzo, 2007; [9] Bru"ggen, *et al.*, 2009; Ousama, *et al.*, 2012; Scaltrito, 2014; [17] Eddine, *et al.*, 2015; [3] Joshi, *et al.*, 2016; Mehrotra, *et al.*, 2017; Kamath, 2017; [21] Rep, *et al.*, 2019; Dey & Faruq, 2019; Rahman, *et al.*, 2019; Alrawashedh, *et al.*, 2021). Whereas some of these studies indicated that corporate size is positively related to IC disclosure (White, *et al.*, 2007; [13,17, [3] Mehrotra, *et al.*, 2017; Rahman, *et al.*, 2019; Alrawashedh, *et al.*, 2021), others reported an insignificant effect of corporate size on IC disclosure (Dey & Faruq, 2019).

In detail, Alrawashedh, *et al.* (2021) explored the drivers of IC, drawing evidence from Amman Stock Exchange in Jordan. The authors indicated that whereas firm size and the industry type have significant and positive effect on IC disclosure, leverage and profitability have significant and negative effect on it. Deploying evidence from DS30 Firms operating in Bangladesh, Dey and Faruq (2019) examined the drivers of IC disclosure. The authors showed that while globally affiliated auditors and board independence are positively related to IC information disclosure, board gender diversity is negatively related to IC information disclosure. Additionally, the authors showed that corporate size, board size, profitability and leverage, have no significant effects on IC information disclosure. These mixed findings indicate inconclusive results. Further, Sugandi and Handojo [22] argue that corporate size implicitly indicates the quantity of their resources and, so, bigger companies tend to have more resources. Moreover, the size of a company has direct relationship with its responsibility with the community, which is the responsibility for IC disclosure [23] Drawing on the foregoing, hypothesis two is proposed as follows:

**H<sub>1</sub>2:** Corporate size is positively related to IC information disclosure.

### 2.2.3 Profitability and intellectual capital disclosure

Empirical literature further indicates growing studies on corporate profitability and IC disclosure relationship [11] Ousama, *et al.*, 2012; Mondal & Ghosh, 2014; Eddine, *et al.*, 2015; [3] Mehrotra, *et al.*, 2017 [22] Mulya & Faeni, 2019; Rahman, *et al.*, 2019; Astuti, *et al.*, 2020; Dey & Faruq, 2019; Alrawashedh, *et al.*, 2021). Whereas some of the studies indicated that corporate profitability is positively related to IC disclosure [3] Rahman, *et al.*, 2019; Astuti, *et al.*, 2020), others reported a negative relationship among the variables. (Mondal & Ghosh, 2014; [24] Alrawashedh, *et al.*, 2021). Additionally, whereas some of the studies indicated that corporate profitability has no relationship with IC disclosure (Mehrotra, *et al.*, 2017; [22] others show insignificant relationship (Dey & Faruq, 2019; Mulya & Faeni, 2019). As example, [22] investigated the determinants of IC information disclosure using evidence from Indonesia and showed that while the type of auditor, company size and industry type affect IC information disclosure, leverage, profitability, corporate governance, and listing age do not affect IC information disclosure.

In a similar study, Mulya and Faeni, (2019) investigated the factors that affect the level of IC information disclosure using evidence from companies listed in Indonesian stock exchange, the authors found that company size, its age, return on equity, the frequency of meetings of Commissioners and Commissioners' influence significantly affect the level of IC information disclosure. Moreover, according to Oliveira *et al.* (2006, as cited in [21] signaling theory holds that firms that are profitable tend to disclose additional information to circumvent devaluation of their shares. So, building on the inconclusive study results and the theoretical postulation, hypothesis three is proposed as follows:

**H<sub>13</sub>:** Corporate profitability is positively associated with IC information disclosure.

### 2.2.4 Intellectual capital performance and intellectual capital disclosure

Very often the knowledge of vital information regarding a corporate skews significantly in favour of the corporate managers. This usually engenders information lopsidedness situation and, thus, underreporting. Consequently, the gap between the book value and the market value of the related company continues to widen. In such

situation, signaling theory, according to An [5] suggests information asymmetry reduction by signaling to interest-related groups by party with additional information. But, proprietary cost theory "states that the incentive to disclose information is a decreasing function of the potential proprietary costs attached to disclosure and an increasing function of the favorableness of the news in a disclosure" [34]. Thus, corporate management discloses information considered potentially not damaging to their firms.

Moreover, past studies have investigated company size, corporate age, the frequency of meetings of Commissioners, Commissioners' influence, type of auditor, industry average, profitability, corporate governance, listing age, globally affiliated auditors, board independence, board gender, board diversity, accreditation Status and audit committee [22] Dey & Faruq, 2019; [23] Alrawashedh, *et al.*, 2021) as drivers of IC information disclosure. However, none of these studies explored IC performance as a determinant of IC disclosure. Drawing evidence from India, [24] showed that IC efficiency, an indicator of IC performance, is negatively related to IC information disclosure. But, Signaling theory submits that firms with superior quality should signal their advantages or excellence to the capital market [21] Thus, it is predicted that enhanced IC efficiency would engender increased level of IC information disclosure. Accordingly, the following hypothesis is proposed:

**H<sub>14</sub>:** Intellectual capital performance is positively related to IC information disclosure.

## 3. METHODOLOGY

### 3.1 Sample and Data Collection

We adopt *ex-post facto* research design in this study. The rationale for adoption of this design is because, according to Onwumere (2009), it is deployed in studying an event that had already taken place and, consequently, data exist already. To test the study hypotheses, 12 DMBs operating in Nigeria were selected on the basis of availability of their annual reports in their official websites for a five-year period which is from 2012 to 2016, and are international financial reporting (IFRS) compliant, since Nigerian firms adopted IFRS in 2012. DMBs were selected as a result of their knowledge intensive nature. Consistent with Möller, *et al.* (2011), Abdul hay, *et al.* (2018), Ali and Ahmed (2019), Aggarwal

and Verma (2020) and Sürdü, *et al.* (2020), data collection was done by means of content analysis. Following Onuoha, *et al* [35] a 52 items IC information disclosure index (see Appendix) was employed for the content analysis procedure. The data collected were assembled into dependent variable (IC information disclosure) and independent variables (corporate age, corporate Size, profitability and IC performance indicators).

### 3.2 Measurement Instruments

The measurement of dependent and independent variables are as follows:

- Return on equity (ROE) was deployed to measure corporate profitability, and it was computed by dividing operating profit before tax by total equity following Shukla [36,37].
- Both VAIC developed by Pulic [38] and its extended variant (EVAIC), extended to include relational capital efficiency (RCE), since it was not included by VAIC, were deployed to measure IC performance. Accordingly, RCE was computed by dividing value added by relational capital, while relational capital was proxied by marketing costs following Jafaridehkordi and Abdul Rahim [39,40]
- Firm size was measured as the natural logarithm of total assets (see, for example, [13] Bolgorian & Mayeli, 2019; [41,42]
- Following Widiatmoko, *et al.* (2020), corporate age was measured by the difference between the year this research was carried out and the year of incorporation of the banks.

Consistent with White, *et al* [9,33,35] ICD disclosure scores were computed as follows:

$$\text{ICD Scores} = \frac{\sum d}{M} \times 100\%$$

Where:

ICD Scores = Extent of IC disclosure score  
 d = Number of IC items disclosed  
 M = Total number of IC items that are expected to be disclosed

### 3.3 Model specification

The model of this study is specified as follows:

$$\text{ICD} = a_1 + a_2\text{CA} + a_3\text{CS} + a_4\text{P} + \text{ICPa}_5 + \text{U}$$

Where:

EICD = Extent of IC disclosure scores  
 CA = Corporate age  
 CS = Corporate Size  
 CP = Corporate Profitability  
 ICP = IC performance (proxied with VAIC and EVAIC)  
 U = the Error term  
 $a_1$  = Intercept  
 $a_2, a_3, a_4$  and  $a_5$  = coefficients of the independent variables.

Using STATA version 13.0, the above model was estimated by means of the panel corrected standard error (PCSE) following prior studies (see, example, Hossain, 2016; Mohammed, 2018). PCSE model is selected because, according to Hossain (2016), it has been known to allow contemporaneous correlation of observations amongst the panels and panel-level heteroskedasticity.

## 4. RESULTS AND DISCUSSION

### 4.1 Descriptive Analysis

Table1 presents the results of the descriptive analysis conducted. From this table, it would be seen that the mean of the extent of IC indicators disclosed is about 34. This indicates that of all the 52 IC indicators employed to perform the content analysis procedure on the annual reports of the 12 DMBs studied, which were anticipated to be disclosed, 34 were disclosed. This number is above 60 %, a clear indication that the level of IC information disclosure by the DMBs in Nigeria is above average. Table 1 also shows that whereas the average age of these banks is about 43 years, the mean of their total asset is about ₦1.9 trillion. It also indicates that the average of the ROE is about 16.2%, indicating that every ₦1 of total equity capital invested, about 6k of operating profit before tax is returned. In addition, the mean of both measures of IC performance, VAIC and EVAIC, are 3.32 and 35.4 respectively. This indicates that inclusion of relational capital component of IC in the Pulic's model increased the coefficient by 32.08, suggesting that measuring IC with VAIC, which excludes relational capital, would be inadequate.

### 4.2 Inferential Analysis

The result of the correlation analysis conducted is reported in Table 2. The results indicate that at 5% level of significance, EICD is positively and

significantly correlated with CS ( $r = 0.4304^*$ ,  $p < 0.05$ ) and ICP (indicated by VAIC) ( $r = 0.3216^*$ ,  $p < 0.05$ ), but has insignificant positive association with CA ( $r = 0.0714$ ,  $p > 0.05$ ), and CP( $r = 0.2227$ ,  $p > 0.05$ ). In addition, the result shows that EICD has insignificant negative association with ICP( $r = -0.2054$ ,  $p > 0.05$ ), using EVAIC as its alternative proxy. The table further shows that while CA has significant negative and positive correlation with CP( $r = -0.2587^*$ ,  $p < 0.05$ ) and ICP ( $r = 0.3479^*$ ,  $p < 0.05$ ), respectively, CS also has significant positive association with ICP ( $r = 0.4478^*$ ,  $p < 0.05$ ). It would also be observed that ICP has significant positive association with CP( $r = 0.6959^*$ ,  $p < 0.05$ ).

Moreover, the correlation analysis conducted was also deployed to test the presence of multicollinearity amongst the independent variables. From this table, it would be seen that the correlation coefficients are below 0.8 threshold, indicating absence of multicollinearity problem. This is because, according to Ousama, *et al* [2]. correlation coefficients less than 0.80 indicates that there is no problem of multicollinearity.

Table 3 reports the results of the inferential analysis conducted. The table draws attention to the parameter coefficients ( $\beta$ ), z-values (Z), and the p-values. These results show that corporate

age has significant positive effect on the extent of IC information disclosure ( $\beta = 0.0448$ ,  $Z = 2.05$ ,  $p < 0.05$ ). Thus, *H1*, which states that corporate age is positively related to IC information disclosure, is supported. In addition, the results indicate that the corporate size is also significantly positively related to the extent of IC information disclosure ( $\beta = 9.85$ ,  $Z = 14.45$ ,  $p < 0.05$ ). This finding provides support to *H2*, which states that corporate size is positively related to IC information disclosure

Further, Table 3 indicates that corporate profitability has insignificant negative relationship with the extent of IC information disclosure ( $\beta = -0.043$ ,  $Z = -0.45$ ,  $p > 0.05$ ). So, *H3*, which states that corporate profitability is positively associated with IC information disclosure, is not supported. Furthermore, from table 3, it can be observed that whereas VAIC, an indicator of ICP, has insignificant positive relationship with the extent of IC information disclosure ( $\beta = 1.37$ ,  $Z = 1.62$ ,  $p > 0.05$ ), its alternative measure, EVAIC, is significantly negatively related to the extent of IC information disclosure ( $\beta = -0.0767$ ,  $Z = -4.60$ ,  $p < 0.05$ ). Using VAIC, this result supports *H4*, which states that IC performance is positively related to IC information disclosure. However, based on the result that the EVAIC is significantly negatively related to the extent of IC information disclosure, *H4* is not supported [43-48].

**Table1. Descriptive statistics**

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
CA	60	43.25	31.69539	3	122
CS(₦million)	60	1916183.1	1064095.7	580226	4514788
CP( ROE)	60	16.1852	9.70801	0.64	39.96
ICP(VAIC)	60	3.318667	1.692281	1.4	10.01
ICP(EVAIC)	60	35.35	25.44	7.39	159.26
EICD	60	34.0667	4.47542	22	42

Source: Author's compilation from STATA output

**Table 2. Results of correlation analysis**

	EICD	CA	CS	CP( ROE)	ICP(VAIC)	ICP(EVAIC)
EICD	1.0000					
CA	0.0714	1.0000				
CS	0.4304*	0.2297	1.0000			
CP( ROE)	0.2227	-0.2587*	0.2255	1.0000		
ICP(VAIC)	0.3216*	-0.1043	0.4478*	0.6959*	1.0000	
ICP(EVAIC)	-0.2054	0.3479*	0.0653	-0.186	-0.0574	1.0000

Source: Author's compilation from STATA output

Note: \*Denote correlation is significant at the level 5%

**Table 3. Multiple regression result**

Dependent variable		ICD		
Independent variables		Coefficients	Z-Values	P-Values
CP		-0.0428	-0.45	0.657
CA		0.0448	2.05	0.040
ICP(VAIC)		1.3703	1.62	0.106
ICP(EVAIC)		-0.0767	-4.60	0.000
CS		9.8470	14.45	0.000
R-Squared	0.9893			
Z-value	193274.23			
P-value	0.000			

Source: Author's compilation from STATA output

### 4.3 Discussion

This paper explored the determinants of the extent of IC information disclosure from the perspective of signaling and proprietary cost theories. The current study results show that corporate age has significant positive effect on the extent of IC information disclosure. This finding suggests that the older a company is the more it discloses IC information in its annual report. The finding supports prior study findings (Gobel, *et al.*, 2020 [23] that corporate age is significantly related to the extent of IC information disclosure. The results also indicate that corporate size has significant positive relationship with the extent of IC information disclosure. This result suggests that big corporates disclose more of IC information. This finding supports earlier study findings (see, for example, White, *et al.*, 2007; [9] Scaltrito [17] Mehrotra, *et al.*, 2017; Rahman, *et al.*, 2019; Alrawashedh, *et al.*, 2021) that corporate size is significantly positively related to the extent of IC information disclosure. This result further supports the argument by White, *et al.* [9] that some group of stakeholders often scrutinize big companies and, so, it can be predicted that companies that attempt to reduce political costs might engage in such positive disclosure practice as IC information disclosure. The results also support the assertion by Morariu [33] that there is a general acknowledgement that big companies that fit in to a given industry are wont to engage in a comprehensive reporting.

Further, the present study result indicates that corporate profitability is insignificantly negatively related to the extent of IC information disclose. This result suggests that the motivation by corporate management to disclose IC information in their corporate annual reports is not driven by the company's level of profitability. Thus, corporate profitability is not an important variable

to consider in management decision to disclose IC information. This finding is consistent with prior study result (Dey & Faruq, 2019; Mulya & Faeni, 2019) that corporate profitability has insignificant relationship with the extent of IC information disclose. Additionally, the result is inconsistent with signaling theory which, according to Oliveira *et al*, as cited in Kamath, [21] holds that firms that are profitable tend to disclose additional information to circumvent devaluation of their shares. This implies that signaling theory is not a robust framework to explain corporate profitability-IC information disclosure link.

Furthermore, the study results also show that IC performance is significantly negatively related to IC information disclosure. This finding suggests that efficient firms are not always favorably disposed to report this advantage in their annual report. This finding is consistent with prior study finding (Mondal & Ghosh [24] that IC performance is negatively related to IC information disclosure. The result supports proprietary cost theory which, according to Scott [34] "states that the incentive to disclose information is a decreasing function of the potential proprietary costs attached to disclosure and an increasing function of the favorableness of the news in a disclosure"(p.26). Thus, corporate management discloses IC information considered potentially not damaging to their firm. This further suggests that companies that possess efficient employees, advantageous innovations as a result of their research and development activities, valuable relationship with their customers and suppliers, would not be inclined to report this advantage in their corporate annual reports for fear of the potential damage to their companies' competitive advantage. Conversely, this result is inconsistent with signaling theory, which suggests that firms with superior quality should signal their



advantages or excellence to the capital market [21].

In addition, the differences in the present study results regarding the deployment of VAIC and EVAIC, indicators of IC performance, very patently suggest that the influence of IC performance on IC information disclosure can only be significant when all the sub-domains of IC are put into consideration. This further suggests that management of corporates tend to reduce the level of IC disclosure when the efficiency of all the components of IC is improving. This may be to prevent the potentially damaging effect of the release of such information regarding their firms' efficient employees (human capital), innovative abilities, management processes (structural capital), and the nature of their relationships with customers and suppliers which yield networks and connections for them (relational capital).

## **5. CONCLUSION AND IMPLICATION**

The aim of this study was to explore the determinants of IC information disclosure in Nigeria from the perspective of signaling and proprietary cost theories. Drawing on evidence from 12 DMBs operating in Nigeria, results show that corporate age has significant positive effect on the extent of IC information disclosure. Also, the results indicate that whereas corporate size has significant positive relationship with the extent of IC information disclosure, corporate profitability is insignificantly negatively related to the extent of IC information disclosure. Additionally, it was found that IC performance has significant negative relationship with IC information disclosure. Overall, the study results show that whereas corporate age, corporate size and IC performance play important role in the management decision to disclose IC information in their corporate annual report, corporate profitability is not important in this decision.

The implication of these study results are in two ways. First, the finding that IC information disclosure is driven by the age and size of a bank provides robust empirical basis and insights that would guide regulators and policy makers. Specifically, whereas this awareness offers objective basis for regulators to develop future IC information reporting guidelines for corporates, policy makers are now better informed to make policy decisions regarding IC information reporting. Second, the finding that IC information disclosure is negatively related to IC

performance would provide important insight for policy makers, regulators and capital market participants regarding IC information reporting behaviors of banks. Thus, the now heightened understanding would help the policy makers and regulators to craft policies and reporting guidelines which, at the moment, are not covered by extant accounting reporting standards, and insist on the need for improved IC information disclosure in the corporate annual reports. The better understanding of capital market participants would also assist them in assessing the values of the firms.

The study contributes to literature in four ways. First, by exploring the age, size, and profitability and IC performance as drivers of IC information disclosure, empirical literature on IC disclosure is extended and deepened. Second, literature on drivers of IC information is also deepened by the introduction of EVAIC, an uncommonly deployed alternative measure of IC performance, as one of the independent variables in the model of the drivers of IC disclosure. Third, this study further deepens empirical literature by confirming prior study finding by Mondal and Ghosh [24] that IC performance is negatively related to IC information disclosure. Fourth, by deploying proprietary cost theory to explain the motivation for IC information disclosure by DMBs in Nigeria, this study further validates this theory as robust framework for explaining disclosure behaviors of corporate management.

This study has two limitations which would make generalization of the study results difficult and, thus, requires caution in the application of the insights drawn from the study results. First, the study focused on five year study period which is from 2012 to 2016. Second, the study concentrated on 12 DMBs operating in Nigeria. Accordingly, future studies in this area should consider extending the study period, increasing the number of banks and including firms from such other industries as information and communication technology and insurance. This would provide broader basis for generalization of results. Nonetheless, this study results offer useful insights regarding motivation for IC information disclosure from Nigerian banking context.

## **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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## APPENDIX

**Chart 1. Intellectual capital disclosure index**

S/N	Human capital	Structural capital	Relational capital
1	Employee training	Intellectual property	Brands
2	Employee education	Management philosophy	Customers
3	Employee age	Management processes	Customer loyalty
4	Average training hours	Information systems	Bank names
5	Management training	Corporate culture	Distribution channels
6	Employee Training hours total	Networking systems	Business collaborations
7	Employee productivity	Organization learning	Licensing agreements
8	Employee work-related competences	Research & development	Favourable contracts
9	Entrepreneurial spirit	Innovation	Franchising agreements
10	Employee Work-related knowledge	Technology	Bank image/reputation
11	Employee relationship	Knowledge-based infrastructure	Relationship with suppliers
12	Employee motivation	Distribution network	Consumer complaints
13	Employee commitments	Management quality	Customer satisfaction
14	Employee teamwork	Quality management and improvement	Shareholder loyalty
15	Proactive and reactive ability	Cost of innovations	Customer knowledge
16	Employee health/mental state	Knowledge sharing	Customer training & education
17			Marketing
18			Company awards
19			Customer acquisition
20			Customer relationship

Source: Onuoha, et al. [35]

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