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RESEARCH ARTICLE

THE EFFECT OF INTELLECTUAL CAPITAL ON OPERATIONAL PERFORMANCE AMONG DEPOSIT MONEY BANKS: MEDIATED BY INNOVATION

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ABSTRACT - The banking sector, like many other service industries, is frequently characterized by a high level of rivalry, driving enterprises to come up with innovative ideas and strategies to improve their chances for success. Over the years, Nigerian Deposit Money Banks' operational efficiency has been bad in terms of per customer service timing, time spent at the bank, and an unreliable network, among other things. This tendency might be linked to a lack of investment in the bank's intangible assets, often known as intellectual capital. This study examined the mediating effect of innovation in the relationship between intellectual capital (IC) and operational performance (OP) of deposit money banks (DMBs) in the Nigerian Banking sector. The study was built on the idea of Resource Base View Theory (RBV) and Human Capital Theory. Three dimensions of intellectual capital namely: Human Capital (HC), Structural Capital (SC) and Relational Capital (RC) were used. Cross-sectional survey design was adopted in this study and structured questionnaire was used to collect data from the operational employees of all the 13 DMBs operating in Jalingo, Taraba state, Nigeria. 399 questionnaires were distributed out of which 357 usable questionnaires were retrieved. The data was analyzed using PLS-SEM. Results of the analysis showed that all the components of IC (HC, SC and RC) have significant positive effect on operational performance of DMBs in Jalingo with human capital (HC) having the highest influence. In addition, results of the analysis also show that innovation mediates the relationship between intellectual capital and operational performance of DMBs. The study concludes that innovation (INV) plays a mediating role in the relationship between intellectual capital and operational performance of DMBs.

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1.0 INTRODUCTION

Intense global competition and the dynamic nature of innovation and creativity as an important phenomenon compel business organizations to come up with new ideas and processes in addition to current ones. This compulsion requires a complete transformation of the current structures, vision, and approaches adopted in the management and settings of the organizational atmosphere. Intellectual capital is one of the instruments required in achieving this transformation. Edvinsson and Malone (1997) see intellectual capital as a knowledge-based resource which obviously prevails over the tangible corporate value. Furthermore, in the present era, the ability of an organization to compete sustainably is derived from its ability to identify and utilize its knowledge-based assets otherwise known as intellectual capital (Dzenopoljac, Yaacoub, Elkanj, & Bontis, 2017; Inkinen, 2015; Obeidat et al., 2021). According to Lu, Kweh, and Huang (2014), this present era put more effort in understanding intellectual capital framework and the role it plays in value creation. The function of IC is becoming increasingly important as the globe gets more globalized and the business environment becomes more competitive in achieving the business goals of the organizations (Nawaz, 2019). In the 21st century, economic success of businesses mainly depends on their knowledge, innovation, and creativity in bringing up unique products and services. This shows how important and valuable the concept and idea of intellectual capital is to organizations and their success. Over the years, this concept has been getting more attention from scholars in the field of management along with other related disciplines.

Innovation, on the other hand, has a big impact on how successful a firm is. Additionally, it influences productivity which in turn affects economic success and growth (Abuhashesh, Al-Dmour, & Masa'deh, 2019). Therefore, huge investments on knowledge-based resources such as intellectual capital are needed in order to transform the structures, products, and processes of the organization for superior outcomes. Academic researchers in recent times identified the strategic role that innovation plays in leveraging competitiveness and intellectual capital driven performance (Gao, He, & Wang, 2009). Previous studies have found intellectual capital to be the basic inputs or raw material for the creation of

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value for the organization which is linked by innovation to leverage firm's superior performance (Chowdhury, Rana, & Azim, 2019; de Pablos, 2022; Li, Song, Wang, & Li, 2019; Obeidat et al., 2021; Wang, Cai, Liang, Wang, & Xiang, 2021; Xu, Shang, Yu, & Liu, 2019)

The success or failure of any business organization is linked to its performance. Organization performance refers to the ability of organizations to meet its stakeholder's needs and its own needs for survival (Obeidat, 2016). Organization performance is an important issue for both profit and non-profit organizations. It is an important criterion for the assessment of organizations, their actions, and environment. Organization performance could be financial or non-financial (operational). Financial performance is define as the extent to which the organization performs in relative to profitability, return on investment, and total sales growth (Ho, 2011). On the other hand, non-financial performance otherwise referred to as operational performance is defined as the performance related to organization's internal operations such as productivity, product quality, and customer satisfaction (Feng, Terziovski, & Samson, 2008).

The banking industry being a technology-driven and knowledge-intensive like other service industries is often characterized by high level of competition which requires them to come up with new ideas and methods of providing the best services to efficiently satisfy customers and secure competitive advantage (Ombongi & Long, 2018). Over the years, Nigerian DMBs have been performing below expectation in terms of operational efficiency considering the per customer services timing, time wastage in the bank, and network fluctuations among others. This led to poor performance of banks and consequently liquidation of some banks that cannot perform better. This problem may have resulted from giving too much attention to the physical assets of the banks with little focus on the intangible assets such as intellectual capital. Haris, Yao, Tariq, Malik, and Javaid (2019) posited that unlike the manufacturing and other nonfinancial sector, the success, profitability, and development of banks do not depend largely on tangible or physical assets because banks offer a variety of different financial services which made it rely more on intellectual capital components such as knowledge, expertise, skills, experience, information, advance systems, and processes for their success and profitability.

Most of the recent studies conducted on intellectual capital and firm performance in the banking sector focus on the financial performance of the banks (Ali, 2015; Chijioke, Chidubem, & Chigozie, 2017; Haris et al., 2019; Inyada, 2018; Okenwa, Amahalu, & Abiahu, 2017; Vo, 2018) with little or no attention given to the operational performance which is a prerequisite for attaining the financial performance (Obeidat, Abdallah, Aqqad, Akhoershiedah, & Maqableh, 2016; Ofurum & Aliyu, 2018). In addition, Obeidat et al. (2016) and Inkinen (2015) explain that the relationship between intellectual capital and firm performance is not direct, signifying that some variables that mediate or moderate the relationship exist. Hence, it is against this background that this study intends to fill the gap by testing the mediating effect of innovation in the relationship between intellectual capital and performance of deposit money banks in Nigeria, focusing on the operational aspect of performance.

2.0 LITERATURE REVIEW

2.1 Intellectual Capital

John Kenneth Galbraith was the first to use the notion of the term 'intellectual capital' in 1969 in a letter he send to Michael Kalecki. In 1991, Tom Stewart made the concept popular in an article he published in fortune magazine entitled 'Brain Power' where he explained the means through which intellectual capital is gaining acceptance as an interesting and valuable asset in America (Bontis, 1998). Numerous meanings of the term 'intellectual capital; were found in the extant literature. According to Stewart (1997), intellectual capital is the aggregate combination of knowledge, technology, information, intellectual property, experience, rights, organization learning and competence, and brands and customer relation that can create value for the organization. He sees intellectual capital as the brain power of the organization and currency of the future. According to Nahapiet and Ghoshal (1998), intellectual capital is a brand of knowledge and cognitive capacity to secure competitive advantage. Intellectual capital is the summation of all the knowledge an organization can leverage in an attempt to secure competitive advantage (Youndt, Subramaniam, & Snell, 2004). In general, intellectual capital is a knowledge related resource that includes knowledge, creativity, skills, structures, and customer relationship and interactions that organizations can exploit to create value and gain competitive advantage.

Intellectual capital consists of three major components as found in the extant literature namely: Human capital (HC), Structural Capital (SC) and Relational capital (RC) (Ali & Anwar, 2021; Alqershi et al., 2022; Khalique, Bontis, Shaari, Yaacob, & Ngah, 2018; Mubarik & Bontis, 2022; Obeidat et al., 2021; Obeidat, Tarhini, Masa'deh, & Aqqad, 2017; Vrontis, Christofi, Battisti, & Graziano, 2021; Wang et al., 2021)

2.2 Human Capital

Human capital is a component or dimension of intellectual capital that incorporate all characteristics related to human (personnel) of an organization. These include their knowledge, exposure, skills and experience as well as well as creative and innovative capabilities. Human capital is made up of all the knowledge accumulated in the human mind (Bontis, Crossan, & Hulland, 2002; Stewart, 1997). It is critical to the innovation and strategic sustainability of the organization (Bontis et al., 2002). Human capital is considered as the key determinant of competitive advantage of companies (Pasban & Nojedeh, 2016). It represents a set of knowledge, skills and capabilities, own by individuals in the organization (Pasban & Nojedeh, 2016; Savvides & Stengos, 2020). It is an important resource of the firm because of the role it plays in developing the available resources of a firm (Dias, Zarelli, & Selig, 2014).

2.3 Structural Capital

Structural capital refers to knowledge that stays within the boundaries of the firm. It includes systems and data bases, procedures, culture, and organizational routine. Ali (2015) outlined firm flexibility, service documentation, knowledge center, broad utilization of information technology, and organization learning as examples of structural capital. According to Amiri, Majid, and Omrani (2010), structural capital has to do with the systems and structures in an organization. Structural capital is recognized as an instrument and structure of an organization that facilitates and support employees in attaining optimal intellectual performance (Bollen, Vergauwen, & Schnieders, 2005). The major drivers of structural capital within an organization as identified by Edvinsson (2000) include: organizational culture, database, software, hardware, trademark, and patent. According to Bontis et al. (2002), individuals in an organization will find it impossible to reach their full potentials if the organization's systems and procedures are found to be poor. Chen, Lai, and Wen (2006) argued structural capital as being a supportive mechanism for human capital.

2.4 Relational Capital

Relational capital, sometimes referred to as customer capital or sometimes called external capital was defined by Bontis (1998) as the knowledge embedded in the marketing channels and customer relationships of an organization. It is primarily centered on relationship with clients and customer fulfilment (Amiri et al., 2010). It can also be described as the talent of a business to interrelate in a progressive way with outside stakeholders, thus actualizing the potentials of human and structural capital in creating value (Kianto, Andreeva, & Pavlov, 2013). Customer capital was adjusted to relational capital based on the argument by Bontis (2000). He explained that intellectual capital is not only affected by the customers' contribution but a whole bunch of dealings with dealers, shareholders, strategic partners and others. Relational capital include all those resources associated with a firm's relationship and links with suppliers, customers, business associates and local community with all the information gained in this affiliations (Bontis, 1998; Edvinsson & Malone, 1997; Sveiby, 1997).

2.5 Innovation

Innovation has long been identified as the engine of growth for business organizations (Nasir, Mansor, & Abu, 2015). The fierceness of rivalry in the market place, outburst of technology, and globalization in recent years made every company struggle towards achieving innovation and differentiation in order to survive. All at once, businesses need to exploit new market opportunities, develop new products/services and market for the attainment of market success and competitive advantage. Innovation has been defined as the employment and execution of novel ideas for value creation. This explanation take inclusion of the various innovation types for example, product development, coming up with new process technology and management practice. This means embracing new products and/or processes in line with customers' specifications to strengthen competition and overall prosperity of the firm (Leskovar-Spacapan & Bastic, 2007). Innovation, according to Gupta, Tesluk, and Taylor (2007), is the generation of fresh ideas in the production and provision of goods and services. Müller, Rammer, and Trüby (2009) stated that innovation is said to occur when people add value to improve products, services, processes, delivery systems, and policies not just for organizational benefits but for the benefits of the stakeholders as well.

2.6 Operational Performance

Organizations must make every effort to function in a more efficient and effective way possible in today's business environment (Brown, Bessant, & Jia, 2018). This is due to the fact that organizations need to rise up and face the dynamic transformation occurring in these environments which are enormously unsteady (Santa, Ferrer, Bretherton, & Hyland, 2010). Richard, Devinney, and Yip (2008) described operational performance as that performance that is non-financial which include: customer satisfaction, product quality, efficiency, productivity, on time delivery, employee satisfaction, work force development, and strategic goal attainment. Operational performance refers to the performance related to organization's internal operations such as productivity, product quality and customer satisfactions (Feng et al., 2008). Furthermore, Manikas and Terry (2010) defined operation performance as the organization's capacity toward evaluating its processes and outcomes. According to Luo, Huang, and Wang (2012), operational performance refers to non-economic factors and societal relations that influence the efficiency of a firm's operations. Operational performance measurements have the advantage of having a progressive impact on the organization's forthcoming financial performance (Hernaus, Bach, & Vukšić, 2012).

3.0 THEORETICAL BACKGROUND AND HYPOTHESES

3.1 Theoretical Background

This research is anchored on the concept of Resource Base View Theory (Barney, 1991) and Human Capital theory (Schultz, 1961). The study is anchored on these theories because they are directly explaining how investment in the intangible assets (Intellectual Capital) by organizations can help improve the innovativeness, competitiveness, and overall performance of an organization.

Over the years, resource base view theory has been identified and recognized as one of the leading theoretical frameworks for intellectual capital studies (Eisenhardt & Martin, 2000; Kraaijenbrink, Spender, & Groen, HAIR). The

theory stated that organizations that own and control distinctive valuable resources can enjoy sustainable competitive advantage and improved performance. However, according to Barney (1991), for organizations to gain competitive advantage, these resources must be unique and unmatched. The theory explains that an organization's internal environment is considered as the major driver for achieving competitive advantage (Wang, 2014). The theory laid emphasis on organization's unique resources as being the core foundation for achieving sustainable competitive and improved performance.

On the other hand, human capital theory was first proposed by Schultz (1961). The theory was later developed broadly by Becker (2009). In the article titled "Human capital: a theoretical and empirical analysis, with special reference to education", Schultz (1961) argued that skills and knowledge form part of organization's capital and are crucial for enterprise growth. The core concept of human capital entails spending money to develop people in terms of education, skills, and experience. According to Schultz (1961), investing in people in terms of education, skills, and experience will lead to an increase in employee productivity and eventually bring about an increase in returns and performance of business. Skills, experience, and creativity of staff help improve the innovative capabilities of firm to do things differently (Subramaniam & Youndt, 2005). High human capital efficiency in terms of education, experience, training, and advance knowledge and abilities improve cognitive capabilities of individuals to have a better job performance through efficient activities (Hsu & Wang, 2012).

3.2 Intellectual Capital and Firm Performance

Influences of intellectual capital on organization performance have been explained in the literature. For example, a study conducted by Hashim, Osman, and Alhabshi (2015) on the Malaysian organizations found the existence of a significant influence of intellectual capital components on the performance and success of the organizations studied. It was also confirmed by Zangoueinezhad and Moshabaki (2009) that structural capital is capable of improving organization's operations with little cost which will consequently lead to business success. According to the report of Waseem, Loo-See, Adeel, and Riaz (2018), all the components of intellectual capital (human capital, structural capital, and relational capital) have a direct and positive effect on the Pakistani textile companies except for structural capital. Scarce intangible assets of a firm could bring about competitive advantage if properly utilized (Kamukama, Ahiauzu, & Ntayi, 2011). Furthermore, intellectual capital determines the present and future competitiveness and value growth of a firm. Tovstiga and Tulugurova (2009) observed that those organizations that effectively mobilize their intellectual capital in the form of knowledge, experience, and skills strategic capabilities are the ones that most often achieve competitive advantage and gain superior performance. Hence, intellectual capital is the knowledge resources and competences that are most often precious and rare and can provide a sustainable competitive advantage and greater organization performance (Kamukama et al., 2011). Therefore, the following hypotheses were proposed for this study:

H_1: Human capital has a positive and significant effect on the operational performance of deposit money banks

H_2: Structural capital has a positive and significant effect on the operational performance of deposit money banks

H_3: Relational capital has a positive and significant effect on the operational performance of deposit money banks

3.3 Mediating Effect of Innovation

Intellectual capital serves as the driver for firm performance as it constitutes the basis for technological innovation (Xu et al., 2019). High-tech firms that have low technological innovation capability will have their product and/or services becoming obsolete and eventually eliminated by the market (Xu et al., 2019). Wang et al. (2021) argued that innovation plays a mediating role in the relationship between intellectual capital components and firm performance arguing that innovation depends heavily on the existence of knowledge, experience, and skills of employees coupled with organizational systems, network, and work procedures which are all embedded in the firm's intellectual capital. Given that innovation leads to firm performance, Lee, Lee, & Garrett (2019) suggested that a path may exist from intellectual capital to innovation and consequently firm performance.

Furthermore, Waseem et al. (2018) found the mediating effect of innovation in the relationship between human capital and firm performance and also between relational capital and firm performance in Pakistan. Innovation also mediates the link between human capital and firm performance for SMEs (McDowell, Peake, Coder, & Harris, 2018). Hence, the study proposed the following hypothesis:

H_4: Innovation mediates the relationship between intellectual capital and operational performance of deposit money banks

3.4 Conceptual Framework

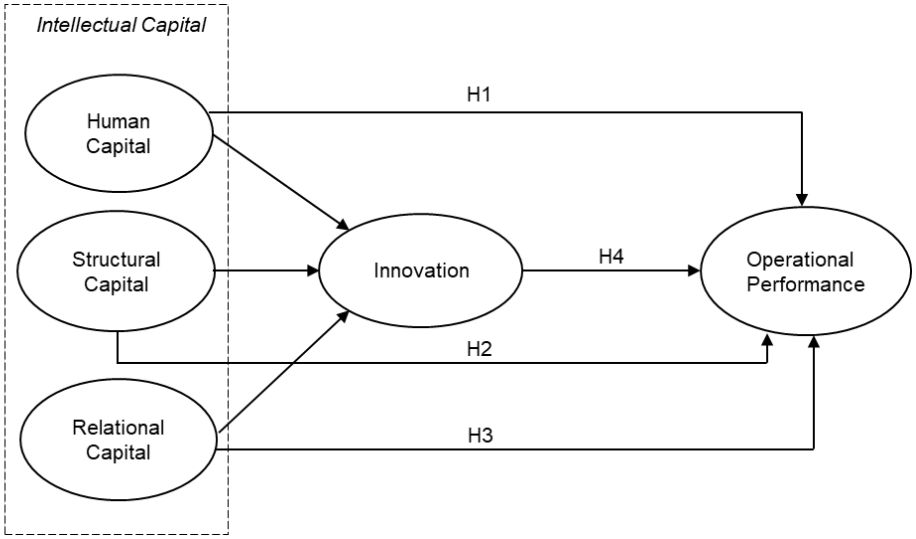

Figure 1. Conceptual framework

5.0 METHODOLOGY

5.1 Respondents

The respondents for this study consist of all operating staff that are directly involved in the business operation of the 13 DMBs in Jalingo, Taraba state. This will not include securities, cleaners, drivers, and other staff that may not be directly involved in the banks' business operations. There are 13 deposit money banks operating in Jalingo, Taraba state with a total number of 399 employees that are directly involved in the bank's business operation. Hence, the study examined the entire population of 399 because PLS-SEM works better with larger sample size (Jannoo, Yap, Auchoybur, & Lazim, 2014). In addition, studying the entire population makes the findings in this study more accurate and reliable. A total of 399 questionnaires were administered to the respondents. However, the researcher was able to retrieve 357 usable questionnaires representing 89.5% which were used for the analysis.

5.2 Measurement

A five-point Likert scale was used in the questionnaire to measure the extent to which the prospective respondent agrees or disagree with the statements in the questionnaire. The instrument consists of four sections A to D. Section A consist of 4 items related to the respondent's demography, Section B consist of 15 statements on intellectual capital, which were divided into subsections B1, B2 and B3 for human capital, structural capital, and relational capital respectively. Section C consists of 5 items which covers statements relating to innovation performance and finally, Section D consists of 5 items with statements relating to the operational performance of the organization. Measures of human capital, structural capital, and relational capital were adapted from the work of Wang et al. (2021) and Hsu and Sabherwal (2011). Measures of innovation were adapted from Hsu and Sabherwal (2011) and measures of operational performance were adapted from Wang et al. (2021).

6.0 DATA ANALYSIS AND RESULTS

This study employed SPSS version 23.0 to carry out all descriptive analysis and PLS-SEM path modeling using Smart PLS 3.3.3 to perform data analysis and testing of hypotheses. PLS model is usually analyzed and interpreted in two phases namely, measurement model and structural model (Fernandes, 2012; Hair, Ringle, & Sarstedt, 2011).

6.1 Respondents' Demography

According to Table 1, demographically, majority of the respondents are males constituting 70.3% with females having 29.7%. Also, majority of the respondents' ages fall between the ranges of 30-39 years constituting 78.2%. In terms of educational qualification, NCE/Diploma holders carried the majority with about 50% and finally, most of the participants fall in the category of Junior staff representing over 60%.

Table 1. Respondents' demography

Demographics	Features	Frequency	Percentage (%)
Gender	Male	251	70.3
	Female	106	29.7
	Total	357	100

Table 1. (cont.)

Demographics	Features	Frequency	Percentage (%)
Age	Less than 30	126	35.3
	30-39	153	42.9
	40-49	60	16.8
	50-59	18	5.0
	Total	357	100
Education	Secondary	37	10.4
	Diploma/NCE	178	49.9
	B.Sc./HND	82	23.0
	M.Sc./MBA	60	16.8
	Total	357	100
Staff Category	Senior	142	39.8
	Junior	215	60.2
	Total	357	100.0

6.2 Measurement Model

In measurement model, three step processes have been recognized for assessment (Götz, Liehr-Gobbers, & Krafft, 2010; Hair et al., 2011) which include individual item reliabilities, convergent validity and discriminant validity. In order to ascertain the individual item reliability, factor loadings, Cronbach's alpha, and composite reliability were thoroughly assessed. Based on experts' recommendations, factor loadings, Cronbach's alpha, and composite reliability should be ≥0.7 (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). Hence, this study set a threshold of ≥0.7 for factor loadings, composite reliability, and Cronbach's alpha. The result of the reliability assessment in Table 2 below shows that all loadings scaled through the reliability criterion. In order to determine convergent validity, the average variance extracted (AVE) of each of the constructs in the study was analyzed. Convergent validity can be assessed by calculating the average variance extracted (AVE) across all indicators associated with a particular construct. The acceptable threshold for AVE is ≥0.5 (Sarstedt, Ringle, & Hair, 2017). Hence, this study set a threshold of ≥0.5 as acceptable for AVE. Table 2 below shows that there is no issue of convergent validity in this study as the AVE of all constructs appeared above the threshold of 0.5. Finally, discriminant validity was assessed based on Fornel-Larcker and HTMT criterion (Sarstedt et al., 2017). As for HTMT, Henseler, Ringle, and Sarstedt (2015) recommended a threshold value of 0.85 as being acceptable for constructs that are conceptually distinct and 0.90 for constructs that are conceptually similar. The Fornel-Larcker criterion postulates that a latent variable shares more variance with its given indicators compare to any other construct in the structural model (Fornell & Larcker, 1981). Hence, the average variance extracted (AVE) of each construct should be higher than the construct's squared correlation with any other construct. Hence, this study adopt a threshold of ≤0.85 for HTMT as being acceptable and the guidelines for Fornell-Larcker's criterion as explained by Ab Hamid, Sami, and Sidek (2017) was used in establishing validity of constructs in this study. Based on this recommendation, results in Table 3 and Table 4 for Fornel-Larcker criterion and HTMT respectively, shows that there is no issue of discriminant validity in this study.

Table 2. Measurement model results

Constructs	Items	Loadings	AVE	CR	Cronbach β
Human Capital	HC1	0.834	0.764	0.942	0.922
	HC2	0.837			
	HC3	0.889			
	HC4	0.923			
	HC5	0.884			
Structural Capital	SC1	0.848	0.736	0.933	0.910
	SC2	0.855			
	SC3	0.866			
	SC4	0.842			
	SC5	0.878			
Relational Capital	RC1	0.780	0.677	0.880	0.913
	RC2	0.834			
	RC3	0.837			
	RC4	0.815			
	RC5	0.846			

Table 2. (cont.)

Constructs	Items	Loadings	AVE	CR	Cronbach β
Innovation	INV1	0.859	0.748	0.937	0.916
	IVN2	0.872			
	IVN3	0.860			
	IVN4	0.857			
	IVN5	0.875			
Operational Performance	OP1	0.764	0.667	0.909	0.875
	OP2	0.839			
	OP3	0.826			
	OP4	0.791			
	OP5	0.859			

Table 3. Fornel-Larcker Criterion

	HC	INV	OP	RC	SC
HC	0.874				
INV	0.742	0.865			
OP	0.689	0.710	0.816		
RC	0.519	0.656	0.557	0.823	
SC	0.658	0.774	0.641	0.589	0.858

Table 4. Heterotrait-Monotrait Ratio (HTMT)

HC				
INV	0.807			
OP	0.760	0.784		
RC	0.573	0.729	0.625	
SC	0.718	0.846	0.707	0.656

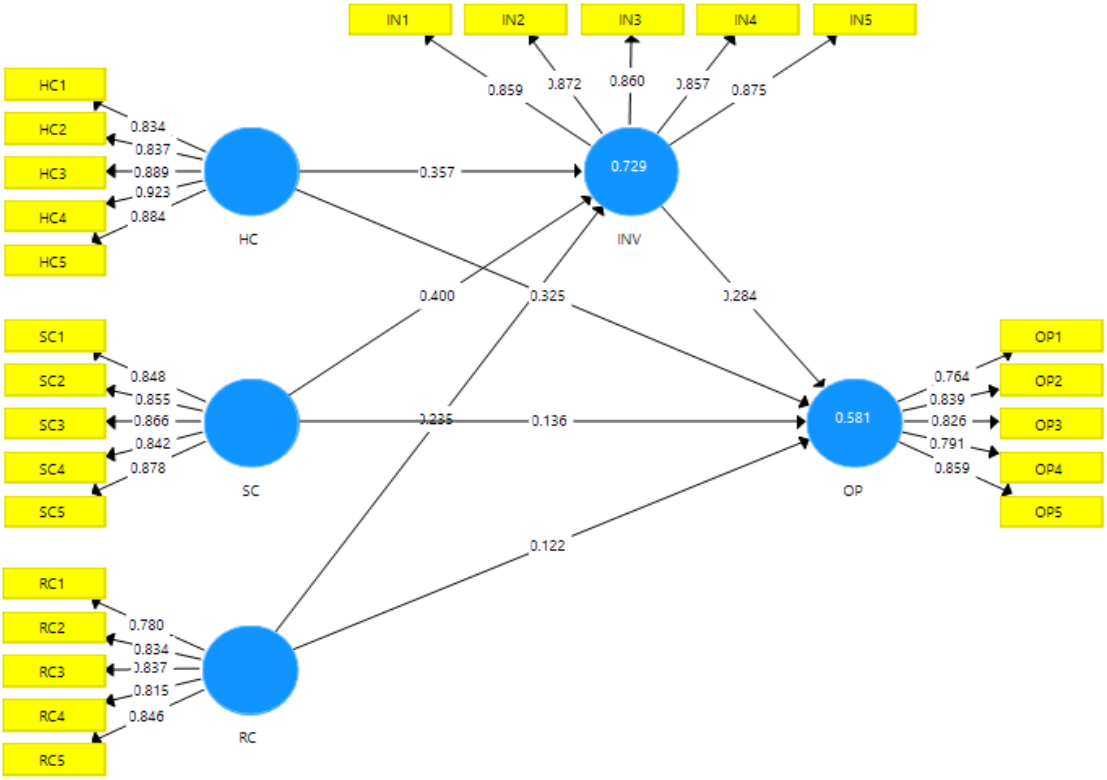

Figure 2. Measurement model

6.3 Structural Model

Structural model illustrates relationship existing among latent variables or constructs that were proposed in this research model. R^2, Q^2 and significance of paths are the basis for which structural model is assessed. The study starts the structural model analysis with determination of the goodness of the model by assessing the inner VIF (Variance Inflation Factor) for all latent variables to check for collinearity issues (see Table 5), then the strength of each structural path which is determined by the values of R^2 for the endogenous constructs was assessed to establish the predictive power of the structural model. The values of Q^2 were also assessed to establish the predictive relevance of the endogenous latent variables (see Table 6). Finally, Partial least square-structural equation modeling (PLS-SEM) was run to get path coefficients (structural model relationships) that the study hypothesized among latent variables (see Figure 3). The standardized values of path coefficient fall between -1 and +1. Coefficients closer to +1 represent strong positive relationship and those closer to -1 represent a strong negative relationship (Hair, Matthews, Matthews, & Sarstedt, 2017).

Table 5. Inner VIF values

	OP	INV
OP		
INV	3.689	
HC	2.319	1.850
SC	2.660	2.069
RC	1.809	1.605

Results in Table 5 indicate that there is no collinearity issue in this study as all inner VIF values for all latent variables fall below 5 as recommended by Hair et al. (2011). Table 6 also indicates that the study model has both predictive power and predictive relevance because the values of both R^2 and Q^2 for all endogenous construct meet experts' requirement. R^2 value of 0.75 is considered substantial, whereas 0.5 is considered moderate and 0.25 is considered weak (Sarstedt et al., 2017). Meanwhile, Q^2 values above 0 and 0.25 and 0.50 are considered to have small, medium, and substantial predictive importance in the PLS path model (Hair, Risher, Sarstedt, & Ringle, 2019).

Table 6. Predictive Power (R^2) and Predictive Relevance (Q^2)

	R^2	Q^2	t-values	P Values
INV	0.729	0.537	26.838	0.000
OP	0.581	0.375	15.164	0.000

6.4 Direct Relationship

A basic bootstrapping with 5000 sub samples was run to establish the relevance of the direct path as recommended by Chin (2010) in a two tailed test at a 0.05 level of significance. Results of the structural model are displayed in Table 7 below.

Table 7. Structural model results (direct effects)

Hypotheses	β	STDEV	t Values	p Values	2.5%	97.5%	Sig. level	Decision
HC -> OP	0.325	0.059	5.534	0.000	0.277	0.436	***	Supported
SC -> OP	0.136	0.056	2.444	0.015	0.208	0.437	*	Supported
RC -> OP	0.122	0.046	2.626	0.009	0.146	0.438	**	Supported

Notes: *** <0.001, ** <0.01, and * <0.05

Results of the structural analysis of direct effect as presented in Table 7 above indicate that all the components of intellectual capital (HC, SC and RC) have significant positive effect on the operational performance of Deposit Money Banks. Human capital appeared to have the strongest effect.

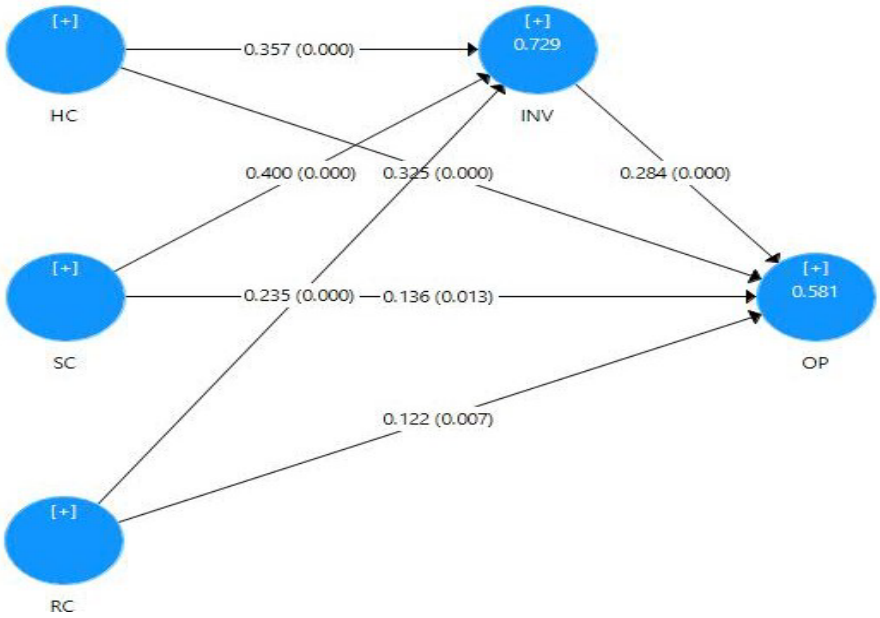

Figure 3. Structural Model

6.5 Mediation Analysis

To ascertain the mediating effect of innovation in the relationship between intellectual capital and operational performance of DMBs in Jalingo, the Preacher and Hayes (2004) method of assessing mediation effects was followed. According to Preacher and Hayes (2004), mediation is said to occur when the results of the indirect effects from the confidence interval bias corrected are all on the same direction. This means that the lower and the upper boundary of the confidence interval bias corrected must all be positive or negative for mediation to be established. If the result shows that there is no 0 between the lower and upper boundaries of the confidence interval, it shows that the indirect effect is not zero (Hayes, 2009), hence mediation has taken place. The results of the indirect effects and the confidence intervals bias corrected figures are presented in Table 8 below. The results of the indirect hypothesis reveal that innovation mediates the relationship between all the components of intellectual capital and operational performance of DMBs (all p values < 0.001), hence the hypothesis that innovation mediates the effects of intellectual capital on operational performance of DMBs is supported

Table 8. Mediation results

Hypotheses	β	S.E	*t* Values	*p* Values	2.5%	97.5%	Sig. level	Decision
HC -> INV -> OP	0.101	0.029	3.550	0.000	0.050	0.165	***	Supported
SC -> INV -> OP	0.114	0.033	3.432	0.001	0.033	0.115	***	Supported
RC -> INV -> OP	0.067	0.020	3.288	0.001	0.058	0.192	***	Supported

Notes: *** <0.001, ** <0.01, and * <0.05

7.0 DISCUSSION

The purpose of this study was to evaluate the mediating impacts of innovation on the link between intellectual capital and operational performance of deposit money banks. Direct and indirect links were established. The study was built on the concept Resource Base View theory (Barney, 2001) and Human Capital theory (Schultz, 1961). According to the study's findings, all three components of intellectual capital; human capital, structural capital, and relational capital, have a direct link with deposit money banks' operational performance. This is in line with the findings of Khalique, Nassir Shaari, Isa, & Ageel (2011) who discovered a positive influence of all intellectual capital components on the success of pharmaceutical enterprises in Pakistan. Smriti and Das (2018) also observed that intellectual capital components had a beneficial influence on company performance in India. Likewise, Obeidat et al. (2016) also revealed a positive influence of intellectual capital on the performance of Jordanian manufacturing firms. However, this study discovered that human capital has the greatest impact on the operational performance of deposit money institutions. This finding is also in line with the findings of Smriti and Das (2018) who also reported that human capital has the largest impact on firm productivity. Mohammad, Ansari, Ologbo, and Rezaei (2013) also found that out of all intellectual capital components, human capital contributes the most to organizational success. Human capital may have the greatest influence on performance since it is the workers' knowledge, ideas, skills, and experience that utilize structural capital and maintain excellent relationships with all organizational stakeholders in order to achieve the corporate goals and objectives.

The study also discovered that innovation has a positive mediating role in the link between deposit money banks' operational performance and their intellectual capital. This suggests that deposit money institutions need to innovate more

if they want to increase productivity and operational effectiveness. This finding confirms the assertion by Hsu and Wang, (2012), Inkinen (2015), and Obeidat et al. (2016) that some variables intervene in the relationship between intellectual capital and firm performance. In addition, Wang et al. (2021) also explained that innovation mediates the relationship between intellectual capital and performance of high-tech firms in China. This study offers an alternative explanation on the relationship between intellectual capital and operational performance in the Nigerian banking sector. Specifically, innovation mediates the effects of intellectual capital and operational performance of firms in the banking sector.

8.0 CONCLUSION

Intellectual capital has been identified as a knowledge-based assets that contribute immensely in the growth and development of business organizations. Knowledge, skills, experience, organizational culture, systems, and good customer relationship play a vital role in improving the innovative performance and ensuring the success of firms in the service industry.

Over the years, Nigerian DMBs have been performing below expectation in terms of operational efficiency considering the per customer services timing, time wastage in the bank, network fluctuations, and lack of innovation among others. This led to poor performance of banks and consequently liquidation of some banks that cannot perform better. This resulted from giving too much attention to the physical assets of the banks with little focus on the intangible assets such as intellectual capital.

This study aimed to address this problem by investigating the mediating effect of innovation in the relationship between intellectual capital and operational performance of deposit money banks in the Nigerian banking sector. A theoretical model was proposed and empirical testing was conducted by analyzing the data obtained from deposit money banks using PLS-SEM structural equation modeling. The results revealed that the three components of intellectual capital namely; human capital, structural capital, and relational capital have direct positive effect on operational performance of DMBs. Therefore, based on the results of the hypotheses testing, the study concludes that intellectual capital has a positive role to play in enhancing the operational performance of deposit money banks. Innovation, on the other hand also plays a vital role in mediating the relationship between intellectual capital and operational performance of deposit money banks. Furthermore, this study aligns with the resource base view theory and human capital theory base on the fact that intangible assets owned by deposit money banks contribute in enhancing its innovative and operational performance. The findings stressed on the value of all the three components of intellectual capital comprising of human capital, structural capital, and relational capital in shaping the performance of business organization. However, human capital is the most crucial. This explains the human capital theory on the need to invest on the knowledge, skills, and experience of employees in order to achieve a better and improved performance.

Based on the findings of this study, management of firms in the banking industry need to sustain in the their intellectual capital management through hiring qualified and experienced workers, ensuring effective training of staff as at when due, improving provision of enhanced networks, systems and structures, and creating and maintaining quality relationships with business stakeholders especially customers and strategic partners. This will help greatly in creating and maintaining a workforce that is up-to-date with the required knowledge and skills to compete in the ever changing business environment.

9.0 LIMITATIONS

Cross-sectional survey design was applied to investigate the underlying mechanism of the influence of intellectual capital on firm performance. Hence, the study cannot uncover causality among constructs because cross-sectional survey approach investigates the relationships between exposures and outcomes in a single snapshot of time.

Conceptually, only the three broad components of intellectual capital as identified in the extant literature were considered in this study, other components that are less relevant or part of the broader components were left out. Likewise, outcome from this study is associated only to the operational performance of deposit money banks.

Lastly, this study was conducted within the context of the Nigerian banking sector which is recognized as knowledge and technological intensive, therefore, findings from this study cannot be generalized to other low-tech sectors. Due to time and financial constraints, data for this study was only collected from Deposit Money Banks operating in Taraba state, Nigeria.

10.0 FUTURE RECOMMENDATIONS

This study has certain drawbacks that necessitate more research. Future research should look at the link between intellectual capital, innovation, and operational success in companies from different industries or countries. The underlying mechanism of intellectual capital's impact on firm performance is investigated in this study using a cross-sectional survey design, consequently, future research should take a longitudinal approach to clarify causal relationships and look into any time lag effects of intellectual capital accumulation. Furthermore, future studies should consider employing other mediators that may play a role in the relationship between intellectual and firm performance to deepen the understanding of the mechanism through which intellectual capital affects firm performance.

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