



### Evaluation Of Factors Influencing The Adoption Of Business Intelligence Systems In Healthcare Sector: A Case Study Of Nigeria Gloria Chizoba Nwosu lechard2008@gmail.com

### Abstract

BIS adoption in the healthcare sector in particular is quite minimal. There are several reasons for this, which can be attributed to adoption determinants. Therefore, it is crucial to identify and examine the key factors influencing the adoption of BIS in the healthcare sector. A case study of Nigeria is utilised for this study. This research study aims to investigate the intentions to use BIS at individual level and actual firm adoption of business intelligence systems at organisational level. Hence, this current research study proposed an integrated model of the Technology-Organisation-Environment (TOE) and the Technology Acceptance Model (TAM), which incorporates stated critical adoption-related factors of BIS as well as unmet ones from review of previous literature. A questionnaire was used to collect data from 2 public hospitals in Nigeria, were a sample size of 200 respondents from the employees of the selected hospitals was used in the quantitative research approach. A total of 120 useful responses were analysed using the Statistical Package for the Social Sciences (SPSS). The findings of the study showed that there is significant positive relationship between compatibility, relative advantage, top management support, competitive pressure, and perceived usefulness with user intention to adopt BIS while complexity showed a negative relationship with user intention to adopt BIS.

Keywords: BIS, Adoption, Determinants, Nigeria, Technology-Organisation-Environment, compatibility

### INTRODUCTION

In the rapidly evolving healthcare industry of today, there are several challenges confronting the healthcare system due to developments in health technology amid, and post COVID-19 pandemic, demographic changes, and health funding limitations, which all require a deeper search for the effectiveness of the system, for the promotion of evidence-based activity as well as a raise in the standard of healthcare delivery (Glaser and Salzberg, 2021). This has necessitated the continuous use of several technological innovations and developments in the healthcare sector to improve healthcare activities and streamline the process of providing healthcare services for both health practitioners and consumers (Esposito et al., 2018; Alotaibi and Federico, 2017). According to experts from McKinsey, there is an increase in the adoption of digital technology from 81% to 95%, which is attributed to effect of Covid-19, a transformation that would have taken 2-3 years to make at the growth rates before the epidemic (Fernandez et al., 2020). Hasan, Islam & Siddique (2022) in their study, emphasised the need for Small and Medium Enterprises (SMEs) to embrace the integration of new information system (IS) for successful business operations and management



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which is continuously steered in the right strategic direction. BIS first appeared in the late 1990s as a result of improvements in organizational information systems and technology (Chen et al., 2012; Hedgebeth, 2007; Wixom & Watson, 2010).

Bates et al. (2014) and Kim et al. (2017) assert that the volume and complexity of data produced from a variety of sources, including medical devices, electronic health records, and administrative systems in the healthcare sector has increased at an unparalleled rate. They went on to say that this deluge of data offers immense potential for improving healthcare delivery, enhancing patient outcomes, and optimizing operational efficiency. To harness the power of this data, many healthcare organisations are turning to BI systems as a strategic tool in employed in the analysis of data and making decisions (Deldar et al., 2016; Jensen et al., 2016). BI systems provide healthcare professionals with valuable insights derived from large datasets, enabling them to make informed decisions and gain a competitive edge as an organisation (Chen et al., 2012; Işık et al., 2013).

The transmogrification of the healthcare sector has recently become a research subject in several fields, particularly psychology, medicine, and social policy. Healthcare has recently become a subject of concern and interest for Information technology specialists and economists (Olszack, 2022). Also, business intelligence, which is a process of acquiring and analysing data for use in decision-making processes, has received a lot of attention (El Bousty et al., 2018). According to Evelson (2011), Business Intelligence is presently a significant area of information technology, and managers give it great attention. BI is a system that is driven by technology and has the capacity to store different kinds of data, analyse it, and transform it into information that is of use and relevance to managers, employees, organisations, and executives in making decisions pertaining to data and improving their operational performance (Vidal-Garca et al., 2019). Nevertheless, making decisions in healthcare is quite challenging because of the variety of the stakeholders, different levels of interactions, high rate of uncertainty, and level of unpredictability (Massaro, 2021; Secundo, 2019). Incorporating Business Intelligence into an organisation's decision-making process will help save money and time while preventing wastage of resources (Wang & Hajli, 2017; Safwan et al., 2016b; Foshay & Kuziemsky, 2014).

Although recent research has looked at the critical success factors, the impact of specific organizational characteristics on BI adoption, use, and outcomes has gotten relatively little attention in the literature (Foshay et al., 2014). Salisu et al. (2021), in their review of literature, claim that adoption determinants are the reason why BIS implementation among SMEs and the healthcare sector is relatively low. These studies primarily focused on topics like banking, internet technology, and mobile commerce. As a result, there is limited research on the healthcare sector, particularly when it comes to rising nations. The exploration of the pertinent factors influencing the adoption of BIS is therefore clearly lacking (Salisu et al., 2021). This study seeks to close that gap.

### Research Aim

This study aims to identify and review the vital factors that impact behavioural intention to use BIS and actual decisions by organisation to adopt business intelligence systems in the healthcare

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sector of Nigeria. To identify the key factors and the level of influence that they posit towards the adoption of Business Intelligence Systems (BIS) in the Nigerian healthcare industry.

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### LITERATURE REVIEW

### Concept Of Business Intelligence

Tseng & Chou, (2006) opined that rapid technology advancement and internet usage have been the driving forces behind BI adoption. Although the BI concept is relatively familiar, it has been discussed differently in academia, leading to a variety of definitions in the literature (Olszak, 2016). Several journals related to this field of research has aided to gain insight into business intelligence, the solutions it presents, and its operational strategic impact, as well as provide a foundation for understanding the contributions, problems, and gaps in recent research studies relating to the adoption of BIS (Rouhani et al., 2016). In 1989, Howard Dresner of the Gartner Group coined the term "BI" to refer to the concepts and process to boost business strategy by emphasising fact-based information provided by BIS integration in decision making.

BI, an automation driven procedure for creating models and insights from unstructured data that has been acquired from a variety of sources and is arranged in a methodical fashion to enhance corporate operations and procedures. (Neil & Craig, 2019). It is a driven data decision support system (DSS) that provides primary support history, business intelligence system, summary-based report, executive information system, and online analytical processing system (Hedgebeth, 2017). The volume of data has increased opportunities within the realm of business intelligence, which can combine data from sensors and other real-time personal information with historical data trends to derive situational insights that are not typically available (Ahmed, 2021).

### Business Intelligence Systems application and relevance A. Business Intelligence Systems as the main driver of organisational productivity:

Business Intelligence Systems, a technology innovation is the widely acknowledged main driver of organisational productivity, significantly contributing to the goals of organisations, when broadly adopted (Zhu et al., 2006; Puklavec et al., 2018). Therefore, it is vital for businesses to comprehend the factors that influence newly discovered technology adoption (Karahanna et al., 1999). According to research, organisations benefit from the adoption and implementation of BIS by performing better overall (Olszak, 2016).

### B. Business Intelligence Systems as a technological innovation that improves firms' decisionmaking processes.

Popovi et al. (2012) suggested that BISs integration in organisational processes is crucial for its goal achievement as well are enhancement of its decision-making capacity. BISs were developed as an innovation in IS to offer capabilities in both data integration and analysis, providing relevant information for stakeholders across diverse organisation in making informed decisions (Puklavec et al., 2018; Turban et al., 2010).





To be more specific, research has demonstrated that decision-making based on data yields higher choice quality than intuition-based decision-making (Kowalczyk & Buxmann, 2015). As a primary decision support system, BI will help businesses process data in order to extract information and make better business decisions. BISs are one innovation that can considerably assist organisations in meeting their objectives through improving decision-making (Popovi et al., 2012).

### C. Business Intelligence Systems as quality information system

BIS is defined by Popovi et al. (2012) as "quality information in well-designed data stores, coupled with software tools that provide users with timely access, effective analysis, and intuitive presentation of the right information, enabling them to take the right actions or make the right decision."

Impact of Business Intelligence in decision making in the Healthcare Sector

There have been advancements in technology in the healthcare industry to haste the process of service delivery for both the consumer and the staff, different researchers have argued the relevance of BI tools in different sectors, this include the provision of real-time information to the end user, it enhances decision making, and facilitate easy flow of information when tracking the organization activities (Olszak & Ziemba, 2003; Masa'Deh et al., 2021). O'Raina & Helfert (2015), suggested that BIS adoption in healthcare sector is a game changer to boost the productivity of each department.

To address the evolving needs, a project was initiated to define diagnosis-treatment combinations (DTCs), which enable easy identification of patient groups based on their diagnoses and treatments (de Vries et al., 2021). This highlights the need for an intelligent combination of data from various sources to provide a different view of healthcare processes, gathering comprehensive information for effective management decision-making, which requires integrating data from multiple sources. The integration of this intelligent process allows the harmonization and analysis of diverse data. Adopting these advanced management information systems and techniques, aided healthcare institutions in developing countries to gain valuable insights into patient groups, resource utilization, quality outcomes, and process efficiency (Vermeulen & van der, 2020).

Business intelligence system adoption in the healthcare sector

According to a recent literature review on BI systems adoption by Salisu et al. (2021), BI applications development has received a lot of attention, but adoption of BI systems has received less attention. There is evidence in literature which suggests that adoption is low particularly in healthcare sectors and in developing countries. DeLone and McLean in their IS success model, demonstrated that the adoption of BI systems is affected by behavioural intention (Chau & Xu, 2012). Therefore, it is necessary to identify the elements influencing BI adoption. In addition, considering that the field of BI is still developing, some studies have employed qualitative studies that are case study-based and involve a small number of organisations, to investigate in-depth in order to explore the specific elements to focus on. The results of these studies cannot be generalised. Some of the examples are identification of determinants BIS adoption at the organisational level of SME (Puklavec et al., 2014), case study analysis of BI adoption in a





Slovakian retail chain (Olexová, 2014), and (Bijker & Hart, 2013) research of the factors that can help businesses utilize BI more widely with more success.

In addition, Acheampong & Moyaid (2016) found that few research have particularly examined what makes BIS effective in organisations operating in poor countries, despite the fact that using BI in decision-making is crucial. Wieder and Ossimitz (2015) also pointed out that factors impacting the adoption of BI in decision-making have not been thoroughly studied and that academic interest in BI is currently very low.Malladi (2013) used the Technology-Organization-Environment model in his study to analyze the variables related to the degree of organizational adoption of Business Intelligence & Analytics (BIA). His findings show that the level of BIA adoption is strongly correlated with a business's perceived benefits, technological complexity in terms of data infrastructure, and organization size.

#### Technology adoption models

Several Theories, models and framework has been produced due to the investigation of the key factors influencing technology adoption. As a result, it is shown that nine frameworks and models in all were frequently utilised in study of technology adoption. These frameworks or models help in the comprehension of the adoption strategies and intention to use BIS in healthcare sectors.

#### Technology Acceptance Model (TAM)

A popular theoretical paradigm for understanding the adoption and usage of IT is the TAM model. It explains a significant amount of the heterogeneity in users' behavioural intentions to adopt and use in a variety of scenarios, claim Hong et al. (2006). According to Au and Zafar (2008), a user's adoption of IT and how they would utilise it at work is predicted by TAM.

### The Technology, Organisation, and Environment (TOE) framework

The Technology, Organisation, and Environment (TOE) framework (Tornatzky & Fleischer, 1990) was used in this study because it focuses on the pertinent determinants of technology adoption at the organisational level of the healthcare industry. TOE, a well-known theoretical framework that is used at the firm level will be one of the concepts adopted for this research. The TOE framework addresses factors that affect the adoption of technological innovations in organisational, technological, and environmental contexts. Previous research investigated the adoption of various technologies using viewpoints pertinent to the TOE framework.

#### Hypotheses development

Technology, Organisation, and Environment, in addition to perceived usefulness of TAM model are the four dimensions identified in the chosen theoretical frameworks on which the research framework will be emphasized. The framework's evaluation of the factors influencing the intention to adopt business intelligence systems will assist health organisations in the processes of making decisions regarding technology adoption in general and BIS specifically.

### **Technology context**

A critical analysis of the literature on the subject of technology adoption reveals that many studies on IT adoption place a major emphasis on the technological context of innovation (Oliveira & Martins, 2011). Previous studies on technology adoption assert that the technological aspect of





adoption describes the traits of internal and external technologies that could have an impact on organisations or people, which are relevant to the organisation (Tornatzky and Fleischer, 1990; Talukder et al., 2020). The equipment and procedures currently used by the organisation are included in the internal technologies of the organisation. Since they specify a firm's broad tolerance for the breadth and pace of technological change, these technologies are crucial in the decision to adopt innovation (Baker, 2012).

Complexity, compatibility, relative advantage, and IT assets are the main and most frequently studied aspects used to analyse the impact of technological factors on the adoption of technology by SMEs (Karunagaran et al., 2019; Verma and Bhattacharyya, 2017; Puklavec et al., 2018). The determination of the level of firm IT adoption has also been examined by numerous studies using technological characteristics (Talukder et al., 2020; Chen et al., 2015; Gangwar 2018; Ma & Lee, 2019; Lai et al., 2018; Ahmad et al., 2019).

### Compatibility and intention to adopt BIS

According to Rogers et al. (2014) and Oliveira et al. (2014), compatibility is the extent to which a technological innovation is seen as being in line with values, present views, practises, and desires of potential users. As a result, it refers to how well an IT system is in conformity with the organization's current beliefs, experiences, and needs. Macredie and Mijinyawa (2011) noted that compatibility is a key factor in determining how quickly innovations are adopted.

Kaur Kapoor et al. (2014) holds the view that Compatibility is a crucial antecedent of consumers' acceptance of technology. Therefore, compatibility can accurately forecast whether an IS innovation will be adopted. (Lai et al., 2014; Ifinedo, 2011). It has been discovered that technological innovations spread more quickly when they are compatible with adopters' procedures and technology (Ifinedo, 2011; Olexová, 2014).

### Hypothesis 1

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(H01): There is no significant relationship between compatibility and intention to adopt BIS.

#### **Complexity and intention to adopt BIS**

The degree of difficulty involved in comprehending and learning to use an innovation is known as its complexity (DeLone & McLean, 2003). Technology's complexity results in increased uncertainty for effective implementation, which raises the adoption decision's risk. Ifinedo asserts that new ideas that are straightforward are embraced more quickly than those that need consumers to first acquire new knowledge and understanding of them (Ifinedo, 2011). Therefore, if organisations find it difficult to comprehend and integrate technology with their organisational procedures, they are less inclined to employ it (Verma and Bhattacharyya, 2017). Consequently, complexity has a negative relationship with technology adoption (Lian, 2014; Gangwar and Date 2016; Narwane et al., 2019a, b). Implementing business intelligence systems is a very complex process due to the ubiquity of standards and protocols as well as the diversity of hardware and software (Ifinedo, 2011). The evidence from these studies suggests that the adoption of numerous technologies has in fact been hampered by complexity (Côrte-Real et al., 2014; Gu et al., 2012).





Olexová, affirms that complexity has a significant impact on how technological innovations are adopted (Olexová, 2014). This also coincides with findings from Ramamurthy, Sen, and Sinha (2008) study on data warehouse, which established that complexity is a negative major barrier of IS application.

However, BIS are viewed as a technology which is complicated (Olexová, 2014), which probably have a detrimental effect on users' perceptions of the systems' usability, particularly among those who develops high levels of technical proficiency anxiety (Yoon et al., 2017). Therefore, Yoon et al. (2017) noted that even though the user interface of BI systems has improved in recent time, however, the systems remain complex and challenging to use because users must first go through a brief training period before using the system (Yoon et al., 2017). Accordingly, Yoon et al. 2017 reported that ease of use was the main driver behind the purchase of BI tools.

### Hypothesis 2

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(HO2): There is no significant relationship between complexity and intention to adopt BIS.

### **Relative advantage and intention to adopt BIS**

According to Roger (2014) and Oliveria et al. (2014) the extent to which an innovation is viewed as superior to the idea it replaces is termed relative advantage. Therefore, there is more likelihood for an organisation to adopt new technology if it perceives larger benefits from it than from its current technologies (Alshamaila et al., 2013; Chang et al., 2017; Ramanathan et al., 2012; Wang et al., 2010). Numerous studies have established that relative advantage is a significant factor that is positively correlated with the adoption of a variety of innovations across different sectors (Darko et al., 2017; Chang et al., 2006; Olexová, 2014; Hsiao et al., 2009; Oliveira et al., 2014; Owusu et al., 2017).

Furthermore, relative advantage relates to determining if the implementation of a business intelligence system would result in lower operating expenses and increase in relative operational benefits for a particular hospital. Accordingly, the likelihood of adopting a technology is dependent on the degree to which it offers advantages over the accepted practises and procedures (Maresova et al., 2017). These benefits generate strong incentives for adopting these technologies in a competitive market. When implemented properly, BIS enables the company to make wise decisions, which offers it a competitive edge in the market (Rouhani et al., 2016; Tseng & Chou, 2006). While Acheampong et al. (2016), postulates that relative advantage has a significant and positive relationship with BI Systems adoption in organizations, some studies (Yoon, 2014; Rogers, 2003) failed to find any evidence to substantiate the claim that relative advantages have a significant impact on the adoption of innovations. Jaradat et al. (2022) in their study, demonstrated that perceived relative advantage of IT innovation is a key factor influencing the adoption of different IS. Therefore, the present study proposed the hypothesis below:

### Hypothesis 3

(HO3): There is no significant relationship between relative advantage and intention to adopt BIS.





#### **Organisation Context/dimension**

The adoption of innovations can be facilitated or hindered by organisational processes and structure (Tornatzky and Fleischer, 1990). With consideration to technology adoption context, the organisational adoption decision is heavily influenced by an organization's characteristics which includes the internal factors and characteristics of the organisation (Clohessy et al., 2019; Ahmad et al., 2019). Evidence from studies suggests that adoption of technological innovations may be impacted by several organisational characteristics. Top management support, perceived adoption costs, the number of employees, revenue, the extent of centralization and formalization, and its resources base, including staff and their ties and networks, and organisational data environment are the key organisational context dimensions for technology adoption (Kuan and Chau 2001; Tornatzky & Fleischer, 1990; Ramamurthy et al., 2008; Verma and Bhattacharyya, 2017). Based on the characteristics and sensitivity of the healthcare sector, the organisational aspects that this study will concentrate on are top management support and size of organization.

#### Top management support and intention to adopt BIS

In IS, top management support is defined as the extent to which top managers understand the importance of the IS position and how much of their involvement in IS activities (Ragu-Nathan et al., 2004). Therefore, top management support in BIS adoption, describes to the ability of top managers to comprehend the nature, functionality and capabilities of business intelligence systems which will affect their decision to or not completely support its adoption and implementation. Previous research (Gangwar, 2018; Lai et al., 2018; Puklavec et al., 2017; Verma and Bhattacharyya, 2018; Ramanathan et al., 2017) has found that top management support is a significant predictor of continuous technology adoption. Moreso, Chang et al. (2006) in their research findings, noted that support from top management will have an impact on how quickly new IS are adopted in hospitals. Ragu-Nathan et al. (2014) affirmed that top management support is a critical success factor for organisational activities such as IS functions. By creating the strategy and vision for BIS application, financing the BIS projects, and taking on the risks associated with BIS, the top management support enables the successful adoption and implementation of BIS project (Puklavec et al., 2018). According to Lin (2014), the likelihood that companies will use electronic supply chain management systems is favourably correlated with top management support. Also, Teo et al. (2009), in their wide-ranging study, discovered that organisations' use of e-procurement technologies is positively associated with top management support.

#### Hypothesis 4

**(HO4):** There is no significant relationship between top management support and intention to adopt BIS.

#### **Environment context/dimension**





Due to the constantly shifting business climate and competition from different market actors, Organisations in the business sector are more inclined and motivated to look for ways to use innovative technologies to achieve sustainable competitive advantage during upswings. Every organisation closely examines other actors' behaviour to get a competitive advantage. It is widely acknowledged as a strategic imperative for organisational survival to adopt modern IT in the fiercely competitive and continuously altering business environment of today.

### Competitive pressure and intention to adopt BIS

Competitive pressure, as defined in the context of technological innovation, refers to the level of pressure that a company experiences from its competitors. It is considered a key factor in the adoption of innovation (Zhu et al., 2003; Zhu et al., 2006, Lin, 2014). Previous research has found that the adoption of technology is positively correlated with competitive pressure. Some of these studies are Lin and Lin's (2008) e-business diffusion determinants, Chiu et al. (2007) on firm adoption of broadband mobile application, and Lin (2014) on the electronic supply chain management systems adoption. However, Acheampong et al. (2016), argued that competitive pressure did not significantly influence the adoption of BIS. The businesses that adopt technology quickly and fully tend to have a competitive advantage over their rivals. If SMEs feel pressure from their competition and are aware that their competitors are also implementing BIS, they will do so in order to retain their customers and prevent loss to their competitors. Therefore, the present study proposed the hypothesis below:

### Hypothesis 5

(HO5): There is no significant relationship between competitive pressure and intention to adopt BIS.

### Perceived usefulness of BIS and intention to adopt BIS:

Perceived usefulness is one of the categories of the TAM model variables which describes the degree to which users of a particular innovation considers that the application of the system will improve their job performance (Brock et al., 2017; Davis, 1989). Lopez-Nicolas et al. (2008), are of the opinion that new innovation should be able to help the user complete a task more quickly, efficiently, and with higher quality and less time. PU is the most popular variable and the main factor influencing the uptake of new technology (Venkatesh & Davis, 2000). Therefore, it is expected that PU will be one of the primary drivers of intention to use BIS and BIS adoption in the healthcare sector. PU is a crucial factor in studies of the user's perspective on the intentions to use and adopt new technology (Soon, 2017). Prior literature has frequently demonstrated and established a positive association between intention to use and has successfully measured this relationship in a variety of fields (Wu &Chen, 2017; Archenaa & Anita, 2015), including the field of big data (Weerakkody et al., 2017, Esteves & Curto, 2013). However, BIS adoption in general has not been a priority in the healthcare industry. The user cannot create a positive perception of usefulness until they perceive the value of BIS in real-world healthcare settings. The study proposed that PU had a positive relationship with BIS adoption in accordance with the theoretical tenets of the TAM model.





### Hypothesis 6

(HO6): There is no significant relationship between perceived usefulness and intention to adopt BIS.

### Intention to use BIS and BIS Adoption

Intention to use BIS is a behavioral intention to engage in a particular future behaviour (Esteves & Curto, 2013) and is a crucial indicator of how someone will actually utilise technology (Castañeda et al., 2007). To actually adopt any system, intention to use is a necessary first step (Brock, 2017). Intention to use was a significant mediator in the link between predictors and the adoption of a particular system, according to Venkatesh and Davis, (2000). Previous research asserts that someone is more likely to adopt a technology if they intend to use it (Venkatesh et al, 2003). Research in the social sciences has shown that intention to use has a direct impact on actual use (Khan et al., 2018), and other research has found that intention to use have a considerable impact on BIS adoption (Shin, 2016). According to this study, people who have the intention of using BIS will actually use it.

### **Hypothesis 7**

(HO7): There is no significant relationship between intention to use BIS and BIS adoption.

### **Research Model Development**

Based on the review of past related studies, it was discovered that the healthcare sector in the context of developing country has not been thoroughly explored regarding the factors affecting BIS adoption. Therefore, a gap has been identified in the literature.

The identification and definition of related concepts and the relationships that exist between them is the goal of a research model (Aziz et al., 2018). This study suggests an integrated methodological framework that can be utilized to facilitate and improve the intention to adopt and use BIS. It is pertinent to the theoretical framework, empirical investigation, and strong hypotheses that were employed in this study to find and organize the information given (Morioka & Carvalho, 2016; Ngulube, 2018). Accordingly, from the findings of review of literature, the theoretical background, underpinning integrated theories of "technology– organisation—environment (TOE) theory" (Tornatzky & Fleischer, 1990), and the "technology acceptance model" (Davis et al., 1989), and associated hypotheses concerning factors influencing the intention to use and adopt BIS in healthcare sector of Nigeria, relative advantage, complexity, top management support, compatibility, perceived usefulness and competitive pressure were the constructs noted to have influence on intention to use and adopt BIS. T

### ndependent Variables (IVs)

The independent variables are compatibility, complexity, relative advantage, top management support, competitive pressure, and perceived usefulness (Fig. 4).

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### **Dependent Variables (DV)**

In our conceptual model (Fig.4), we regard intention to use BIS which affects organisational adoption of BIS in the healthcare sector as a dependent variable.



FIGURE 1: RESEARCH MODEL.

### **RESEARCH METHODOLOGY**

The study's main goal is to identify the crucial factors affecting the adoption of BIS in Nigerian Healthcare Sector. The research objectives are to examine the elements influencing intention to use BIS and the actual BIS adoption in healthcare delivery for decision making, identify gaps in the related studies, and offer recommendations aimed at promoting the adoption and employee intention to use BIS in healthcare sector. The basic aim of this study is to ascertain the functional correlation between explanatory and causal factors which are the elements that influence use intention of BIS and the actual firm adoption of BIS, the positivist research paradigm was employed for this study.





A deductive approach was employed by the following similar studies, Jaradat et al. (2022); business intelligence system adoption from Jordan perspective, Puklavec et al. (2018); BIS adoption stages, understanding the key determinants.

This study employed a single method for gathering the study data. Hence, the study adopts the mono-quantitative research choice where quantitative data were collected using a survey

Over the course of two weeks, 2 public health institutions in Nigeria received a total of 200 questionnaires, 142 filled questionnaires were filled out and returned. Nevertheless, on multiple dataset examinations, such as the detection of incomplete information, comparing early and late responses, and missing data, 4 invalid data have been deleted. With 138 valid responses in the final dataset, a 69% response rate. This proportion of sampled and returned survey responses is regarded as satisfactory (Wu et al., 2022; Mellahi & Harris, 2016).

This study's data were gathered using a quantitative research method. This was done by using a questionnaire as the instrument of collecting data. A questionnaire is a form that asks subjects to provide information in the form of self-reports. The information obtained by a questionnaire is comparable to that obtained through an interview, however, the questions are often less in-depth, and the information is of a quantitative nature (Burns and Grove, 1993).

### DATA ANALYSIS AND RESULTS

Demographic characteristics of the study sample

The current study employed the use of 200 questionnaires which were sent to employees of the 2 chosen public hospitals in Nigeria. A total of 142 questionnaires were returned. Nevertheless, there were 138 usable questionnaires due to four incomplete questionnaires, which were discarded. A usable response rate of 69% was recorded as opined by Wu et al. 2022 and Mellahi & Harris (2016 to be acceptable. However, the calculated sample size with the inclusion of the 10% attrition is 120, this value is still within the acceptable percentage response rate. See Table 4 for the summary of the sample characteristics of the type of respondent.

#### Table1

Demographic characteristics of the study sample

### Socio demographic

Frequency n=120

Percentage

Age Category



18-24 20.8	25
25-34 37.5	45
35-44 30.8	37
45-54 9.2	11
55 and above 1.7	2
Gender	
Female 43.3	52
Male 56.7	68
Education level	
Diploma/certificate 15.0	18
BSC/HND 50.8	61
MSc 26.7	32
PhD 7.5	9
Current job title	
Doctor 10	12
Administrative staff 8.3	10
Nurse 5.0	6

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Allied health professional 6.7	80	
IT/technology specialist	12	10.0

 TABLE: DEMOGRAPHIC CHARACTERISTICS OF THE STUDY SAMPLE

How familiar the respondents are with Business Intelligence System

The result in figure 4 shows that only 10% of the respondents were very familiar with BIS as at the period of the data collection.



Figure 1: Familiarity with BIS (n=120)

Business Intelligence System utilisation by the Healthcare Organisation Result in figure 2 shows that 57.2% of the respondents' organizations were using BIS as at the period of the data collection.





FIGURE 2: ORGANISATIONAL BIS UTILISATION (N=120)

Length of organizational use of Business Intelligence System

Result in figure 3 demonstrates that more than half (52.2%) of the respondents were in organisations that had used BIS between 1-5 years and only 2.9% of the organizations had used BIS for more than 10 years.



FIGURE 3: LENGTH OF BIS USE. (N=69)





### Analysis of Results of Research Objectives/Measurement Items

Objective one: To identify the key factors and the level of influence that they posit towards the adoption of Business Intelligence Systems (BIS) in the Nigerian healthcare industry.

### **Construct 1: Compatibility**

The overall result for the construct showed that there was high acceptability that BIS is compatible with the work of the respondents. This percentage representation showed that 68.4% i.e (*Agree and Strongly Agree*) indicated that compatibility of BIS to work process is key factor to their intention towards adoption of BI.

Compatibility	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (SD)
I think that using BI systems fits well the way I like to gather information at work	17(14.2)	3(2.5)	21(17.5)	41(34.2)	38(31.7)	3.7(1.3)
Using BI is compatible with every aspect of my work	7(5.8)	8(6.7)	31(25.8)	54(45.0)	20(16.7)	3.6(1.0)
The Changes introduced by BI are consistent with my existing work practice	7(5.8)	7(5.8)	30(25.0)	25(20.8)	51(42.5)	3.7(1.1)
Using BI fits with my work style	7(5.8)	5(4.2)	22(18.3)	50(41.7)	36(30.0)	3.9(1.1)
<b>Construct overall</b>	5(4.2)	5(4.2)	28(23.3)	53(44.2)	29(24.2)	3.8(1.0)

**TABLE 2: COMPATIBILITY ANALYSIS** 

### **Construct 2: Complexity**

Result in the table below shows that respondents did not perceive integrating BIS with their work as a complex process. The mean (SD) of 2.7(1.0) shows that the majority of the respondents were Neutral on the complexities associated with the BIS. This is also reflected as the percentage indicates that 45% of respondents were negatively *(Strongly Disagree and Disagree)* disposed to the content of the complexity construct. It can also be inferred from here that the complexities of BIS can influence intentions to adopt. See Table 6 for the result.

Complexity	Strongly	Disagree	Neutral	Agree	Strongly	Mean
	disagree				agree	(SD)





I believe that	35(29.2)	33(27.5)	27(22.5)	23(19.2)	2(1.7)	2.4(1.1)
learning to use	, , , , , , , , , , , , , , , , , , ,					
Business						
Intelligence system						
is difficult						
Integrating BIS into	14(11.7)	52(43.3)	24(20.0)	25(20.8)	5(4.2)	2.6(1.1)
my work practice is						
very difficult						
I believe that	23(19.2)	33(27.5)	25(20.8)	32(26.7)	7(5.8)	2.7(1.2)
developing BIS is a						
complex process						
I believe it is	21(17.5)	30(25.0)	24(20.0)	36(30.0)	9(7.5)	2.9(1.2)
complicated to						
transfer the current						
system in use to BIS						
platform						
Construct overall	12(10.0)	42(35.0)	34(28.3)	30(25.0)	2(1.7)	2.7(1.0)

### TABLE 3: COMPLEXITY ANALYSIS

### **Construct 3: Relative advantage.**

The result in the Relative advantage construct shows that the majority (72.5%) of the respondents perceived that BIS have the relative advantage that would improve their work and as such would influence their intention to adopt. This intention to adopt is also inferred from the mean value which is  $3.9\pm1.0$  indicating that majority of the respondents agree to the content of the relative advantage construct.

Relative advantage	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (SD)
Business intelligence systems can provide real time information to users	13(10.8)	1(0.8)	18(15.0)	46(38.3)	42(35.0)	3.9(1.2)
Business intelligence systems allows me to make right decision and take right actions	9(7.5)	4(3.3)	16(13.3)	57(47.5)	34(28.3)	3.9(1.1)
Business intelligence system improves the	5(4.2)	4(3.3)	20(16.7)	45(37.5)	46(38.3)	4.0(1.0)





quality if decision						
and actions on						
patient care						
Construct overall	4(3.3)	7(5.8)	22(18.3)	50(41.7)	37(30.8)	3.9(1.0)

#### TABLE 4: RELATIVE ADVANTAGE ANALYSIS

#### **Construct 4: Top management support.**

The overall mean for the construct for Top management support showed that top management may affect intention to adopt BIS. It however, showed that the respondents were somewhat Neutral and were not sure about the willingness of the Top management to support the adoption of BIS. This result is inferred from the average which  $3.4\pm1.0$ .

Top management	Strongly	Disagree	Neutral	Agree	Strongly	Mean
support and	disagree				agree	(SD)
intentions to adopt						
My top	12(10.0)	12(10.0)	41(34.2)	38(31.7)	17(14.2)	3.3(1.1)
management is						
likely to invest						
funds in BIS						
My top	11(9.2)	12(10.0)	37(30.8)	44(36.7)	16(13.3)	3.4(1.1)
management is						
ready to take the						
risk involved in						
adoption of BIS						
My top	7(5.8)	10(8.3)	35(29.2)	44(36.7)	24(20.0)	3.6(1.1)
management is						
likely to be						
interested in						
continuing						
adoption of BIS to						
improve patient						
care and gain a						
competitive						
advantage						
<b>Construct overall</b>	4(3.3)	15(12.5)	43(35.8)	45(37.5)	13(10.8)	3.4(1.0)

 TABLE 5: TOP MANAGEMENT SUPPORT ANALYSIS





### **Construct 5: Competitive Pressure**

The result of the competitive pressure shows that the respondents did not quite agree that the absence of BIS would place their organization under bad competitive pressure. This is inferred from the (SD) mean of 3.3(1.0). The individual Likert item also showed neutral responses as a good proportion of the respondents responded to the negative. This may also imply that the intention to adopt BIS may not depend on the competitive advantage that BIS can offer the organization.

Competitive pressure of BIS	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (SD)
and intention to	_				_	
adopt						
My hospital	13(10.8)	14(11.7)	37(30.8)	36(30.0)	20(16.7)	3.3(1.2)
experienced						
competitive						
pressure to						
introduce a BIS						
I believe that my	9(7.5)	24(22.5)	40(33.3)	27(22.5)	20(16.7)	3.2(1.2)
organization will						
lose clients to our						
competitors if we						
do not adopt BIS						
My hospital would	8(6.7)	17(14.2)	36(30.0)	36(30.0)	23(19.2)	3.4(1.1)
have experienced a						
competitive						
disadvantage if BIS						
had not been						
adopted						
<b>Construct overall</b>	5(4.2)	18(15.0)	45(37.5)	37(30.8)	15(12.5)	3.3(1.0)

 TABLE 6: COMPETITIVE PRESSURE ANALYSIS

Objectives two: To assess the key factors and the extent they affect employee's intention to use BIS in healthcare delivery in Nigeria.

### **Construct 6: Perceived usefulness.**

The overall mean for "Perceived usefulness  $(4.0 \pm 1.0)$  of BIS and intention to adopt" indicates that perception and understanding of the usefulness of BIS influence employees' intention to adopt BIS. This is also seen as the proportion was highest (73.3%) with the positive responses (Agree and Strongly).

Perceived	Strongly	Disagree	Neutral	Agree	Strongly	Mean
usefulness of BIS	disagree				agree	(SD)





and intention to						
adopt						
Using BIS would	13(10.8)	2(1.7)	21(17.5)	44(36.7)	40(33.3)	3.8(1.2)
improve my job						
performance						
Using BIS would	6(5.0)	2(1.7)	25(20.8)	49(40.8)	38(31.7)	3.9(1.0)
make it easier to do						
my job						
If I use BIS, I	5(4.2)	5(4.2)	21(17.5)	51(42.5)	38(31.7)	3.9(1.0)
spend less time on						
routine job/task						
Overall, I would	6(5.0)	2(1.7)	20(16.7)	52(43.3)	40(33.3)	4.0(1.0)
find BI useful in						
the job						
Construct overall	4(3.3)	1(0.8)	27(22.5)	49(40.8)	39(32.5)	4.0(0.9)

 TABLE 7: PERCEIVED USEFULNESS ANALYSIS

#### **Construct 7: Intention to use BIS.**

The overall mean  $(4.0\pm1.0)$  for this construct demonstrates practically that the employees were favorable disposed to using BIS. Here also the percentage was highest (73.3%) on the positive response indicating that at least 73% of the employees would use BIS if it was their decision to take.

Employees intention to adopt BIS	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (SD)
If it is my decision, I intend to use BIS at every opportunity	13(10.8)	3(2.5)	23(19.2)	45(37.5)	36(30.0)	3.7(1.2)
If it is in my decision, I plan to increase my use of BIS	6(5.0)	1(0.8)	21(17.5)	52(43.3)	40(33.3)	4.0(1.0)
Construct overall	5(4.2)	2(1.7)	25(20.8)	49(40.8)	39(32.5)	4.0(1.0)

#### TABLE 8: INTENTION TO USE ANALYSIS.

Results of the Correlation Coefficient Analysis

#### Hypothesis 1

(H01): There is no significant relationship between compatibility and intention to adopt BIS.



0.692

0.000

120

0.000

120

120

1

### (H1): Compatibility positively affects intention to adopt BIS.

**P-value** 

Ν

#### Compatibility Intention to use Pearson Correlation 1 **P-value** Compatibility Ν 120 Pearson Correlation $0.692^{*}$

### Correlation between compatibility and intention to adopt BIS

Table 9. Results of hypotheses testing \*\*. Correlation is significant at the 0.01 level (2-tailed).

### **Hypothesis I Testing**

Intention to adopt

Result from the correlation table indicate a statistically significant positive correlation between compatibility of BIS and intention to adopt, p-value is less 0.001. It reflects that greater perception of Compatibility if BIS and work process will lead to higher intention to adopt BIS. Because of this the null hypothesis which states that there is no significant relationship between compatibility and intension to adopt BIS is rejected and the alternate hypothesis is accepted.

Hypothesis 2

(HO2): There is no significant relationship between complexity and intention to adopt BIS.

(H2): Complexity negatively affects intention to adopt BIS.

### Correlations between complexity and intention to adopt BIS

		Complexity	Intention to use
	Pearson Correlation	1	0.014
Complexity	P-value		0.878
	Ν	120	120
	Pearson Correlation	0.014	1
Intention to adopt	P-value	0.878	
	Ν	120	120

TABLE 10: RESULTS OF HYPOTHESES TESTING. \*\* CORRELATION IS SIGNIFICANT AT THE 0.01 LEVEL (2-TAILED)

### **Hypothesis 2 Testing**

Result from the correlation shows that there is no statistically significant relationship between complexity and intention to adopt BIS. This assertion is made because the test statics (P-value is 0.878); implying that the complexity of BIS may not influence intention adopt BIS and because



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of this, the null hypothesis which states there is no statistically significant relationship between complexity and intention to adopt BIS is accepted and the alternate hypothesis is rejected.

### Hypothesis 3

(HO3): There is no significant relationship between relative advantage and intention to adopt BIS.

(H3): Relative advantage positively affects BIS adoption.

	8	Relative advantage	Intention to adopt
	Pearson Correlation	1	0.834**
Relative advantage	P-value		0.000
	Ν	120	120
Intention to adopt	Pearson Correlation	0.834**	1
	P-value	0.000	
	Ν	120	120

### Correlation between relative advantage and intention to adopt BIS

Table 11. Results of hypotheses testing **\*\***. Correlation is significant at the 0.01 level (2-tailed).

### Hypothesis 3 testing

Result from the correlation shows there is a positive statistically significant correlation between relative advantage and intention to adopt BIS, p<0.001. this means that perception of more relative of advantage of BIS will increase to intention to adopt. As a result, the null hypothesis is rejected and the alternate hypothesis which states that Relative advantage of BIS affects adoption is accepted.

Hypothesis 4

(HO4): There is no significant relationship between top management support and intention to adopt BIS.

(H4): Top management support positively affects intention to adopt BIS.

Correlation between 1 op management support and intention to adopt BIS							
		Top management	Intention to adopt				
		support					
Top management	Pearson Correlation	1	0.559**				
support	P-value		0.000				

### Ton management group out and intention to adout DIS

	N	120	120
	Pearson Correlation	0.559**	1
Intention to adopt	P-value	0.000	
	Ν	120	120
T 11 10 D 1		• • • • • • • • • • • • • • • • • • • •	(11) $(2)$ $(1)$

Table12 . Results of hypotheses testing \*\*. Correlation is significant at the 0.01 level (2-tailed).

### Hypothesis 4 testing

The result on hypothesis 4 also shows there is a positive statistically significant correlation between top management support and intention to adopt BIS, the test statistics showed less than 0.001 as the P-value and it indicates a very high correlation between top management support and intention adopt BIS. This means that the top management decision is a very high factor that influences the intention to adopt BIS. From the foregoing, the null hypothesis is rejected, and the alternate hypothesis is accepted.

Hypothesis 5

(HO5): There is no significant relationship between competitive pressure and intention to adopt BIS.

(H5): Competitive pressure positively affects BIS adoption.

		Competitive pressure	Intention to adopt
Competitive pressure	Pearson Correlation	1	0.449**
	P-value		0.000
	Ν	120	120
Intention to adopt	Pearson Correlation	.0449**	1
	P-value	0.000	
	Ν	120	120

### Correlation between competitive pressure and intention to adopt BIS

Table. 13 Results of hypotheses testing \*\*. Correlation is significant at the 0.01 level (2-tailed).

### Hypothesis 5 testing

Similar to the others, result showed there is an infinite statistically significant correlation between competitive pressure and intention to adopt BIS and intention to adopt BIS and it reflects a positive correlation; indicating that an increase in one will lead t increase in the other, p<0.001. Following from the result, the null hypothesis which states there is no significant association between competitive pressure and intention to adopt BIS is rejected and the alternate hypothesis which states that competitive pressure positively affects BIS adoption is accepted.



### Hypothesis 6

(HO6): There is no significant relationship between perceived usefulness and intention to adopt BIS.

(H6): There is a significant relationship between perceived usefulness and intention to adopt BIS.

	Correlations		
		Perceived usefulness of BIS	Intention to adopt
Demonitred	Pearson Correlation	1	0.736**
vsefulness of BIS	Sig. (2-tailed)		0.000
userumess of DIS	Ν	120	120
	Pearson Correlation	0.736**	1
Intention to adopt	Sig. (2-tailed)	0.000	
	Ν	120	120

Table . 14 Results of hypotheses testing \*\*. Correlation is significant at the 0.01 level (2-tailed).

### Hypothesis 6 testing

The result of the correlation shows a positive statistically significant correlation between perceived usefulness of BIS and user's intention to adopt BIS. Here the calculated test statistics (p<0.001) is lower than the value of alpha (0.05). Because of this, there is rejection of the null hypothesis while the alternative hypothesis which states there is a significant relationship between perceived usefulness and intention to adopt BIS is accepted. This also suggests that perceived usefulness of BIS is a determinant of intention to adopt BIS.

Results of the Regression Coefficient Analysis

Result in the regression table shows that at 95% CI (2.418-27.774) p=0.001, *relative advantage* would 2.103 times more likely to predict intention to adopt BIS. At this point, even though some of the factors were statistically significant at the correlation statistics, the strength may not be so much as to determine or predict intention to adopt BIS.

Binomial regression to determine predictors to intention to adopt BIS.

	Odd ratio	S.E.	Wald	Degree of	P-value	Adjusted odds	95% EXP(B)	C.I. for
				freedom		ratio	Lower	Upper
Compatibility	0.054	0.511	0.011	1	0.916	1.055	0.387	2.874
Complexity	0.386	0.438	0.778	1	0.378	1.471	0.624	3.471
Relative advantage	2.103	0.623	11.407	1	0.001	8.194	2.418	27.774





Top management	0.270	0.557	0.251	1	0.617	1 3 2 1	0.444	3 03/
support	0.279	0.557	0.231	1	0.017	1.321	0.444	5.954
Competitive	0.640	0.525	1 5 2 9	1	0.216	1.012	0 694	5 2 4 9
Pressure	0.049	0.323	1.328	1	0.210	1.915	0.084	5.548
Perceived usefulness	0.721	0.560	1.654	1	0.198	2.056	0.685	6.168
Constant	-13.590	2.823	23.181	1	.000	.000		

# TABLE 15 DEPENDENT VARIABLE IS INTENTION TO ADOPT BIS WHICH WILL AFFECT THEACTUAL FIRM ADOPTION OF BIS.

### FINDINGS AND DISCUSSION

Findings in this study showed a very low level of familiarity with Business Intelligence among the respondents as only 10% were very familiar with it. This conforms to findings in Deng et al., (2014) where it suggested that European nations are more engaged in offering mHealth services than African nations and low adoption of BIS in Nigeria (Salisu et al., 2021). Also, there are issues of less receptiveness of BIS among users in developing countries; making them unfamiliar with BIS and relying on experience and intuition rather than BIS to make decisions (Niu et al., 2021; Pourshahid et al., 2014). Ironically, the results showed that the health facilities of more than half of the respondents were making use of BIS as at the period of this research. Even though this figure is an improvement from the 7.3% in 2017 as outlined in Ain et al. (2021), it still showed the slow acceptance of BIS among business and health facilities in Africa confirming Ain et al, (2019) where it stated that despite the adoption of several technologies in Nigeria, there seems to be little or no adoption and implementation of business intelligence systems in some certain sectors such as healthcare.

The findings of this study negate the situation in advanced economies where the health service delivery has been improved using BIS tools and systems (Chen et al., 2012; Denaxas & Morley, 2015; Wang &Hajli, 2017; Ain et al, 2019; Raghupathi & Raghupathi, 2014). These are some of the reasons why it became very important to identify determinants of Business Intelligence Systems adoption at the organisational level of SME (Puklavec et al., 2014)

### Compatibility

As anticipated from the technology standpoint, findings on objective one revealed a positive association between compatibility and user's intention to adopt BIS, this indicates that compatibility is one important factor that affects adoption of BIS.

This has been defined as the degree to which an innovation is viewed as being in alignment with values, current perceptions, practices, and demands of future adopters (Rogers et al., 2014; Jaklic et al., 2018; Oliveira et al., 2014). The study finding is in tandem with postulation in (Bhatiasevi& Naglis, 2018; Alharbi et al., 2016) where it outlined compatibility as one of the elements that affects adoption of BIS. Also, this is similar with earlier studies that have established a positive correlation exist between compatibility and adoption of BIS (Hart and Ojiabo, 2016; Lai et al., 2014; Wang et al., 2016; Ifinedo, 2011; Chiu et al., 2017). This could be explained by the fact that employees in healthcare organisations choose to use BIS because they think it is compatible and





seamlessly integrates with their current work processes and information systems. Integrating BIS software with their work processes requires insignificant change, therefore, it may not be necessary to change processes to match the BIS software.

### Complexity

According to Grover (1993), technological innovation is always regarded as a difficult and perplexing task by the adopting department. From the technology standpoint, findings showed that there was a negative correlation between complexity and users' intentions to use BI systems in the healthcare sectors. The outcomes of this study are similar to those produced by earlier research, where there was no significant association established between complexity and adoption of technology, as demonstrated by Chang et al. (2007) in the hospital adoption of electronic signature.

#### Relative advantage

Also from the technology standpoint, findings showed that relative advantage was a significant element that influenced the intention to adopt BIS. This finding is consistent with the works of Lin (2014) where they discovered that perceived relative advantage was one of the adoption determinants of BIS.

#### Top management support

From the organisation standpoint, top management support was discovered to have a positive association with the intention to adopt BIS. Findings also pointed out that management support is very key in the decision to adopt BIS in any organization and the health sector in particular and this is in line with findings in (Gangwar, 2018; Wang et al., 2016; Lai et al., 2018; Puklavec et al., 2017; Wang et al., 2016; Verma and Bhattacharyya, 2018; Ramanathan et al., 2017) where top management support was discovered to be a significant predictor of continuous technology adoption.

### Competitive pressure

From the environment standpoint, findings in this study showed that competitive pressure is a major determinant of adoption of BIS; recall that competitive pressure in the context of technological innovation has been defined as the level of pressure that a company experiences from its competitors and it's considered a key factor in adoption (Zhu et al., 2003; Zhu et al., 2006, Lin, 2014). Finding on competitive pressure is in congruence with previous research which found that the adoption of technology is positively correlated with competitive pressure (Lin and Lin's 2008; Chiu et al. (2007). It however differed from the works of Acheampong et al. (2016), where it argued that competitive pressure did not significantly influence the adoption of BIS.

### Perceived usefulness

Finally, from the TAM model standpoint, findings in the study found that perceived usefulness of BIS is one of the key factors that influence BIS adoption, and this is in tandem with works of Soon, (2017) where PU was adduced as crucial factor.



#### CONCLUSION

The research approach adopted, which is quantitative and cross-sectional constrained the understanding from the management perspective on the how human characteristics can pose as factors to BIS adoption at firm level since most strategic decisions are made at this level of operation. Therefore, this study suggests that a qualitative approach which employs a longitudinal study is necessary to establish an association between the crucial determinants of human context and BIS adoption. Longitudinal studies pertaining to the use of business intelligence (BI) by organizations may provide valuable insights into the evolution of variables as this firm progresses and expand. This perspective provides a comprehensive understanding of the process of integrating technology inside evolving organizational structures.

Qualitative methodologies have the potential to elucidate quantitative patterns and provide insights into user perspectives. Increasing the number of businesses and expanding the sample size might enhance the external validity of the study. In addition, since the study population was centered on the south-east of Nigeria, the results of this study cannot be broadly applied across Nigeria. The reason being that Nigeria is country made up of six geopolitical zones. Such a study should be replicated in the remaining zones. Therefore, Comparative studies conducted across various locations and industries may also provide insights into the relative significance of these characteristics.

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