Entrepreneur Digital Business Strategy and Efficiency: Intervening Role of Firm's IT Capabilities

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Organizations change their business strategies by incorporating digital technology where their skills make an important contribution to the contemporary and continually changing world. This analysis is intended to examine the relationship between Digital Business Strategy (DBS) and the efficiency of the Small and Medium Enterprises (SMEs) in Nigeria through the intervening role of Information Technology (IT) capability. The survey is therefore quantitative, and the findings show that DBS has a significant positive effect on the business spanning ($p = 0.001$), and the coefficient is positive as well. The direct effect of the IT proactive stance is also calculated as a significant positive impact on the efficiency of SMEs ($p < 0.055$). However, all other direct effects are not statistically significant. A complete intervention of IT capability is assessed favourably by business spanning, IT infrastructure and proactive posture. The intervention effect was evaluated using the Structural Equation Modelling (SEM) method. The research has a variety of management inferences, notably for the proactive posture in which managers will facilitate the transition to improve performance.

Introduction

Companies seek strategies and ways to win more market share and contend with their competitors in the global market.[1] In this case, some firms have centred on Information Technology (IT) strategic planning. The IT strategy is viewed as a complementary part of the business strategy that enables businesses to operate efficiently while also assisting businesses to succeed over time, taking into account globalization, knowledge proliferation, dynamic supply chains, artificial intelligence, big data analytics and cloud computing.[2,3] Information technology, in this study, is applied to entrepreneurial operations. Computer technology and tele-communications are both included in the business needs of IT. It is responsible for ensuring that the firm's systems, networks, data, and applications are all connected and functioning properly. Information technology (IT) is the application of computers, storage, networking, and other networking equipment, connectivity, and mechanisms to generate, process, store, secure, and transfer different kinds of digital information. This means companies today integrate advanced digital technologies into business models, strategies, and policies to facilitate decision-making in general.[4] They incorporate technology, business models, and business strategies into what are called "digital business strategies." A business model is a description and explanation of how a firm operates and generates revenue. A business strategy defines and justifies the adoption of a business model. Štefan & Branislav (2016)[5] state that the business model concept has taken centre stage primarily because of the rapid advancements in IT and the Internet, which have had a significant impact on the business's resources and procedures. These advancements have created new requirements and necessitated new approaches to meet those demands. Business models are representations of business strategy, and they demonstrate how strategy influences the advancement of capabilities that might affect present and future business models.[5] Drnevich & Croson (2013)[6] point out that this approach affects the quality of IT at the business level. As a result, IT and business strategy convergence have transformed conventional approaches used as cross-functional business strategies, improving global structures and expanding decentralised systems.[3,7] Moreover, the implementation of IT strategy as a digital business strategy in Small

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and Medium-sized Enterprises (SMEs) is crucial for the socioeconomic development of an economy, particularly in developing countries.[8]

In this sense, SMEs play a fundamental role in innovation and development in a dynamic economy and they have an indispensable role in job creation.[9,10] In the developed nations such as United States and United Kingdom, SMEs consist of more than 99 percent of job share and contribute more than 50 percent of the nation's Gross Domestic Product (GDP).[8,11] In the developing nations, for example, Ghana, SMEs contribute roughly 70 percent to the GDP and account for around 92 percent of enterprises.[12] In Nigeria, SMEs have 90 percent of enterprises in the nation, however, they contributes less than 50 percent of the GDP.[13] Considering the market competitiveness of specific limitations, SMEs are attempting to get through the cut-off points with their restricted budget and resources.[14]

It is realised that SME managers and owners incrementally apply IT strategies to gain competitive advantages in the global marketplace.[15,16] In spite of the development of digital business strategies for SMEs in developed nations, the pace of IT strategy adoption for SMEs in developing countries has remained moderately low. The low implementation pace of IT in SME front-runners in emerging nations like Nigeria has added to the low pace of economic advancement in these nations.[16] However, research by Bataineh et al. (2015)[17] shows that IT can improve the capabilities and performance of SMEs. Different authors have conducted research in this area.[7,17] The key gap, in this case, has been determined from the literature, focused on the relationship between digital business strategy and the firm's performance in previous studies,[4] and efficiency capabilities in this area are not specifically considered. This postulates a significant and serious theoretical disconnect.[6] Therefore, one of the most important aspects influencing corporate success and efficiency is the capabilities of an organization's IT infrastructure. Furthermore, the focus of this study is more about efficiency than performance. This implies that tasks must be completed as soon as possible, which is an important consideration not only for profitability but also for this study.

A study conducted by Parnell et al. (2015)[18] argues that Chinese SMEs are experimenting with a more conventional cost-based strategy, particularly for their home business. Nonetheless, this study demonstrates that distinction is not impossible for SMEs in Nigeria to adopt a differentiation strategy. Gierlich et al. (2019)[19] also conducted a qualitative survey on the challenges of SMEs' resource, capability, period, and cost concerns. It is precisely this aspect of SMEs that quantifies the areas that assess whether digital business strategies contribute considerably to efficiency and if information technology capabilities are limited and mediating the SMEs. Accordingly, the research of Chi et al. (2018)[4] focused on the impact of digital business strategy on performance of firm with e-collaboration capability as a mediator. However, they consider only the manufacturing company, which is one of the limitations of the study. Therefore, this paper aims to expand the scope of the investigation by studying various intermediaries and examining the service, manufacturing, and trading sectors in the analysis.

In light of all of the above, this study aims to analyse the impact of Digital Business Strategy (DBS) on a firm's efficiency. The study will further investigate the intervening role of IT capabilities, taking into account the situation of Nigeria's SMEs. In addition, the study establishes the following objectives to achieve these aims: Understand the latest concepts of digital business strategy, IT capabilities, and firm's efficiency; examine the influence of a digital business strategy on the efficiency of Nigerian SMEs; and analyse the intervening role of IT capabilities in between digital business strategy and firm's efficiency in Nigeria SMEs. The main examination question in this study attempts to respond to achieving goals and objectives i.e. "How does the IT capability of businesses intervene in the relationship between the digital business strategy of SMEs and their efficiency in Nigeria?"

The contribution of the study includes a comprehensive analysis of the firm's IT capability and digital business strategy, taking into consideration efficiency measurement. Different from other studies, this research would conduct a quantitative analysis of multi-dimensional factors of IT capability, digital business, and efficiency measurement.

Theory and Hypotheses Developments

This research takes into account two essential parts of the resources and capabilities theory: first, the assumption that resources are heterogeneously dispersed among the various firms; and second, the consistency of these resources after some time. In the literature, the resource-based view was commonly used to describe how businesses would achieve strategic advantages and superior performance.

Although Resource Bases View (RBV) has proven to be a very effective method for understanding differences in the performance of companies, several field researchers have identified a number of issues with the theory. Possibly one of the most substantial critiques of RBV relates to performance measurement, as it is underlined that insufficient theoretical attention has been paid to performance measurement issues.[11,20] Then again, the literature on efficiency has grown significantly over the last decades, generating a variety of studies using several advanced quantitative methods implemented in different methodological settings. Meanwhile, the theory behind technological efficiency was only slightly established, and although the measurement area is evolving dramatically, the scientifically based efficiency work is still missing.[21] Miller & Ross (2003)[22] suggest that resource usage disclosure efficiency is an essential component of RBV reasoning since it expresses productive resource utilization.

Williamson (1991)[23] classifies RBV as an efficiency perspective, suggesting that, as indicated by this theory, only through efficiency and effectiveness will firms establish a sustainable competitive advantage. Resources help firms establish and execute strategies that enhance their efficiency and productivity.[24] Efficiency is integrated into the premise of resource heterogeneity and the development of specialised resources.[22] The production of specialised resources is focused on the efficiency of operations, and various resources are productive at different levels of efficiency, so firms with superior resources are capable of producing more effectively. Observed technological inefficiency therefore emerges from resource and capability formation and heterogeneity.[21,22] Therefore, there is room for entering the literature on resource-based views and efficiency.

According to Barney & Hesterly (2015)[24] corporate assets are classified as physical capital assets, human capital assets, and organisational capital assets. Further, resources include all assets, capabilities, organisational processes, corporate characteristics, information, technical skills, and so on that are managed by a firm and enable it to formulate and execute strategies to improve its efficiency. Accordingly, companies capable of recognising resource or capability characteristics that may not be subject to a competitor's replication can gain a sustainable competitive advantage.[24]

Surely, researchers have acknowledged the significance of IT capability as a fundamental organisational capability and, aligned with RBV's view, observed that an IT capability possesses the attributes of uniqueness and hence increase firm's performance.[25,26] However, in examining how IT capability contributes to superior performance, proof indicates that the variability in the performance of firms can be clarified by how IT capability leverages the importance of certain assets and capabilities within the enterprise.

Digital Business Strategy and Efficiency

Digital business strategy has emerged to be among the most important models in the corporate industry, known as the intersection of strategic management and information technology.[7] In the current period, digital technologies that are typically integrated into the system include cloud computing, artificial intelligence, business intelligence, big data, and similar technologies that can help businesses gain significant value.[2–4] Chi *et al.* (2018)[4] argue that DBS is an organizational-level strategy, not an IT or functional strategy. The purpose of an embedding strategy is to create business value through technology. The research carried out by Kahre *et al.* (2017)[27] supports the integration of technologies. Its importance is focused on pointing out that DBS is interested in restructuring the company's business model to achieve transformation and generate the expected financial outcomes for the business. The study by Nadeem *et al.* (2018)[28] emphasises that DBS leads the digital transformation, but the ability of companies to contribute to it is still unclear. Bataineh *et al.* (2015)[17] highlight that the IT capability of the company has to improve the business efficiency of this issue, regardless of the industry in which it operates.

In the context of transformation, DBS has reformed the company's infrastructure and improved the firm's communication and coordination patterns.[29] For instance, companies that tend to do digital transformation are redefining their business strategies. IBM, Microsoft, Google, Oracle, and others are driving digital capabilities to increase market efficiency. For instance, why did blockbusters fail and Netflix succeed? Blockbuster was formed in 1985 as an American supplier of household movie and video game rental companies. Services were first offered essentially at video rental shops, but later choices included DVD-via-mail, real-time, video on request,

and movie theatres. Blockbuster was a video-rental firm that peaked in 2004. They weathered the transition from VHS to DVD, but neglected to improve, innovate, and digitalize their business into a market that considered conveyance, considerably less streaming. Netflix is an American subscription streaming service and production business. It was founded on August 29, 1997, and offers a library of films and television programmes through distribution arrangements as well as its own creations. While Netflix started distributing DVDs to its customers' homes, Blockbuster believed that their physical stores were sufficient to satisfy their clients. Management saw no need to adjust their strategy because they had been the market leaders in movie rentals for years. Netflix suggested collaboration with Blockbuster in the year 2000. Netflix wants Blockbuster to market its brand in shops while Netflix would manage Blockbuster online. Blockbuster rejected the proposal because it believed it was ludicrous and Netflix's business model was "*niche business*." Blockbuster had no notion that the Netflix proposal would save them. Blockbuster declared financial insolvency in 2010, the same year Netflix was worth $28 billion. There is no doubt that going digital and the use of DBS benefits the organisation over traditional strategies that provide superior customer experience, retention, operational performance, and efficiency.[4] From these aspects, this study led to the premises of the following hypothesis: this research has tested the case of Nigeria SMEs.

H1: Digital business strategy has a significant positive effect on the firm's efficiency.

Digital Business Strategy and IT Capability

Schryen (2013)[30] argues that DBS can help companies determine their IT capabilities, thereby gaining a competitive advantage in the market and ultimately creating value. According to Nadeem *et al.* (2018)[28], DBS enables firms to enhance their capabilities, especially the ability to lead the digital transformation, but the capabilities affected are vague. Moreover, the research by Turulja & Bajgoric (2016)[31] shows that companies can increase market value through digital strategies that improve IT-related capabilities. As already explained, Chae *et al.* (2014)[32] opine that IT capabilities from a proactive stance, business spanning, and infrastructure enable companies to benefit from market efficiency and ultimately help to achieve a competitive advantage. According to the quantitative research of

Bataineh *et al.* (2015)[17], the company's business strategy has excellent IT capabilities and the effective result turns in terms of productivity and profitability in the Jordanian telecom organizations. Based on personal experience, it is indicated that the digital position of a company is a function of its organisational IT capabilities, which means that IT capabilities are needed to pursue an effective digital business strategy. Businesses that are capable of developing a digital business strategy with advanced IT capabilities by reconfiguring and modifying current market structures and turning conventional product, service, and consumer services into digital services are bound to develop from traditional information technology systems to emerging new digital technologies. Therefore, this leads to the hypothesis that:

H2: Digital business strategy has a positive and significant impact on IT capability.

IT Capabilities and Efficiency

Bassellier *et al.* (2001)[33] say that IT capabilities have the ability to capture, expand, link, and transform enterprise IT-based resources to improve operational efficiency and the firm's business strategy. Essentially, it presents a unified view of organisational resources, including human resources, infrastructure, IT-based resources, and the company's intangible assets, including IT skills, synergies, consumer-oriented knowledge, and related knowledge. Many companies attain superior business efficiency because they have a stronger knowledge of the expectations and preferences of consumers, offer better services, are established in terms of IT capabilities, have improved strategies than their rivals, suit conduit requirements and IT capabilities, and are exposed to the competitive climate. To put it plainly, implies that they are better than their competitors at handling tangible and intangible resources efficiently. In particular, firm's sustainability and efficiency are premised on becoming more able to recognise possibilities for the development of a company's value by using its capabilities as a means of improving its performance in an ever-changing landscape of the industry. The main capabilities of pre-entry into diversification strategies that illustrate survival for SMEs during an industry shakedown include technology and integrative capabilities at the corporate level. IT capabilities are part of this dynamic cycle in the global environment; technical approaches are essential to meet the needs of customers by supporting information management

activities for SMEs.[34] Companies need to develop new business, product, and technology awareness and incorporate all of this knowledge in order to develop more sustainable capabilities.[34] Joint SME and IT research has contributed to new methods, such as DBS.[35] Little attention has been paid, however, to how small and medium-sized leaders can respond to changes in the competitive environment by integrating their activities and IT capabilities as the basis for attaining efficiency when companies encounter industrial instability. The manner in which businesses merge SME and IT capabilities is proposed as an indicator of the efficiency of firms in this research. Hence, it is proposed that:

H3: IT capability has a significant and positive impact on the efficiency of the Nigerian firms.

Digital Business Strategy, IT Capability, and Efficiency

The independent structure of this study is Digital Business Strategy (DBS), whose computational metrics relate to the use of artificial intelligence, cloud computing, big data analytics, cloud computing, the use of technology in business models, and others. A study by Lu & Ramamurthy (2011)[36] specifically supports this variable. The study by Bataineh *et al.* (2015)[17] shows the mediation of an IT as capacity building tool. From this perspective, the dependency structure of the study is, for example, the efficiency of the company, taking into account certain indicators (sales growth, work efficiency, and productivity enhancement, customer satisfaction, and customer churn reduction). Likewise, Rehman & Anwar (2019)[1] also examined these indicators. As mentioned earlier, DBS is an important strategy for improving the viability and efficiency of enterprises in terms of cost reduction, integrated digital technology, and updated business models. Research that considers DBS as an enterprise-level strategy and investigates the impact on the firm's efficiency is limited because most of the past studies focus on IT alignment.[4] A review shows that DBS integration helps companies show positive characteristics.[2,3]

The studies of Chae *et al.* (2014)[32], Lu & Ramamurthy (2011)[36] show the benefits of enhanced IT capabilities in terms of accuracy, reduced costs, increased sales, and increased market value. Various studies claim that IT capabilities play a vital role in improving business agility and efficiency, so studies by Bataineh *et al.* (2015)[17], Lu & Ramamurthy (2011)[36] claim to have the ability to hold companies back sanctioning. It also grows and further expands IT capabilities into infrastructure capabilities, a business-spanning and proactive stance.

An IT capability from a proactive stance, a business-spanning infrastructure enables companies to benefit from market efficiency and ultimately help to achieve a competitive advantage.[32] The infrastructure aspect of IT capabilities is seen as a trend in the line that covers the solid phase of IT resources and architecture to manage data, its relative processes, and the formation of interconnected channels.[18] IT business, on the other hand, extends to the ability to visualise and optimise available IT resources to create enterprise value and effectively support enterprise goals.[26] Another aspect of the IT function is the proactive stances that can be referred to as the company's active engagement and opportunistic attitude. In short, indulge in innovation and use available IT resources to generate new ideas to support your business and steadily explore new ideas.[36]

Since IT capabilities are based on specific resources, RBV is widely used in the literature supporting information technology or systems. In the case of RBV, a company's success is *sine qua non* to the skills it possesses and the resources it has available, but these resources are sparse, vary from organisation to organization, and are difficult to forge in the market. In the context of small and medium enterprises, access to resources is limited due to financial and similar constraints, and this further limits the acquisition of resources to enhance the firm's capabilities, affecting the ability to achieve business performance. Nwankpa & Roumani (2016)[26] found that in the case of RBV, the firm's IT capabilities are stable, but IT capabilities are scarce, sustainable, and non-reproducible and can be organised in the long term by creating value, efficiency, and profitability, especially for SMEs. The critical challenge is that because IT capabilities facilities, hardware and software, are widely available in the market, they are difficult to replicate and could have a significant effect on the firm's sustainable competitive advantage. Complex, hard-to-understand, and hard-to-replicate IT capability facilities can help a company maintain a long-term advantage in the marketplace. The reasoning behind this is straightforward. Without knowledgeable personnel or knowledgeable personnel unwilling to use these facilities, these facilities would not generate any value to the organisation. It is obvious that knowledge,

operational readiness, and facility accessibility are required for a competitive advantage. From these aspects, this study led to the premises of the following hypotheses:

H4a: *An Infrastructure capability significantly and positively intervenes in the relationship between DBS and the firm's efficiency.*

H4b: *Business spanning significantly and positively intervenes in the relationship between DBS and the firm's efficiency.*

H4c: *Proactive stance significantly and positively intervenes in the relationship between DBS and firm's efficiency.*

Methodology

In this investigation, the data collection method is primary and the target population is based on managers and owners working in Lagos State, Nigeria SMEs. The researchers surveyed managers and owners of SMEs in light of the fact that they are increasingly worried about the company's strategies and performance. In Nigeria, despite the fact that SMEs have no single concept, they may very well be characterised by two qualities: the quantity of workers and asset value (except land and buildings).[11] SMEs in Nigeria are unmistakable as companies with personnel of up to 199, with total assets (excluding land and building) of up to N1 billion.[11] In this examination, we concentrated on companies that had employees in Nigeria, up to 199. Consequently, the exploration data was taken from the SMEs data in Lagos State. According to NBS/SMEDAN (2017)[37], the total population of SMEs in Lagos was 8,395. Randomly, the study was carried out. The study was conducted in Lagos state because it is the country's economic hub, with a diverse range of businesses and industries; additionally, the majority of company headquarters are located there, and it has the highest number of SMEs in the country.

A sample size of 561 surveys was administered with 370 results. Nine surveys were incomplete in the sense they skipped important details. These surveys were omitted from the dataset before analysing the results. A total of 361 surveys were deemed necessary for a final data review, with a 64.3 percent response rate. In view of the study site, the researchers found that the sample size offers sufficient details on the implications and validity of the findings. Considering this, because the nature of the industry is a categorical variable, multiple groups (PLS-MGA) are found in the second group (service) and the third group (trading), and the results were similar to the overall results. However, for Group 1 (manufacturing), the impact and importance of the results are similar except for the proactive stance towards a firm's efficiency. In other situations, proactive posture variables were important. However, Group 1 shows that manufacturing companies do not directly affect business efficiency. Furthermore, if compared the effects of residuals that are not standardised in these three industry groups, insignificant results were produced. Therefore, it is speculated that the effect does not change across the groups and that the association of the control variable is insignificant. Therefore, the control variables are not explicitly included in the final model.

Operational Measures of the Variables

The mediating variable, IT capabilities, was measured using business spanning, infrastructure capabilities, and a proactive stance. These dimensions are further operationalized. The survey tool consists of two parts: the first part deals with demographics, and the next section focuses on study variables using a 5-point Likert scale. The indicators are similar to those described in the research conceptual model in this study. Measurement scale items from the previous literature were adapted for the constructs. The IT capability analysis was attuned from various studies and the variables have been taken from different studies[26,36], with each of the three dimensions, infrastructure capability, proactive stance, and business spanning, being measured separately using four items each. The DBS measurements have been drawn from relevant studies[3,4,26], comprising six factors. Efficiency is seen as the input-output relation. High efficiency is accomplished by generating a given output with minimal input or by achieving maximum output at a specified input. The first and seemingly most significant advance in the appraisal of a firm's efficiency is the recognition of the variability of input-output. Kapelko (2006)[21] noted, "Measured inefficiency might be an impression of an inability to consolidate the correct factors and the correct requirements and to indicate the economic target of a production unit." It is worth noting, however, that there is no agreement on practical factors that should be included in the examination. Therefore, this study applied Data Envelopment Analysis (DEA) using Partial Least Squares-Structural Equation Modelling

(PLS-SEM) to identify the most important variables in measuring the efficiency as applied in previous studies. The choice of the efficiency input and output of DEA models is an endless debate. Hence, the study investigated the dependent variable, which is the firm's efficiency, using 10 factor items adapted from relevant works[1,21,26], as discussed in the literature.

Control Variables

The research by Rehman & Anwar (2019)[1] demonstrates that the age, size, and nature of the industry can affect the results. This analysis is undertaken among small and medium-sized enterprises employed in manufacturing, trading, and service industries of various ages and sizes. In this manner, the study controlled the nature of the industry, firm age, and firm size to mitigate any false outcomes. The researcher in this study used ANOVA analysis to test the effect of each control factor. ANOVA is the most appropriate method because it does not distinguish between control and experimental groups. The results suggest that none of the control variables had a major effect on the efficiency of SMEs. Likewise, the study also tested the effects of the control variables in the structural model.

Analysis Technique

In addition, data analysis strategies integrate respondent demographic profiling with SEMmodels to answer research questions and test hypotheses. Rehman & Anwar (2019)[1] & Chi *et al.* (2018)[4] provided more support for mediation research methodologies. The researchers used PLS-SEM for the analysis. PLS is adaptable in terms of data distribution assumptions. Therefore, skewed data can be employed, and PLS can be used for exploratory and confirmatory investigations. Since the data distribution in this investigation was discovered to be slightly skewed, PLS-SEM was chosen.

First, the researchers carried out pilot testing to analyse the indicators utilised for each variable in the survey. Certain indicators had extremely low variable loads. Due to this, these indicators were deleted and were not used in the final survey. Firm efficiency consisted of ten elements, and infrastructure elements consisted of four. However, two components were removed from the firm's efficiency and one component was removed from the infrastructure, respectively. Following this, the remaining components were retained and used in the analysis. Other pre-testing techniques were used for the final aggregate data, in addition to the methods described above. The following is the pre-testing depiction:

By comparing early and late responses, the researchers controlled the no-response bias analysis. The researchers, then again, arranged acceptable dates to visit a few small and medium-sized enterprises and visited two firms consistently. The possibility of delayed replies has been recognized. To decrease the vulnerability related to online replies, analysts reached out to respondents iteratively and completed the questionnaire as soon as possible. Subsequently, this strategy is useful for accumulating complete data over the designed timeframe. However, as the final data accumulated, the analysts looked at the results of the late and early reactions and established that there was no significant difference between them. Thus, this implies that the data contains a non-responsive predisposition.

If a substantial loss of data occurs, it will be omitted from the analysis and will have no effect. In the overall data set, however, there were only a few incomplete data indices; this can be attributed to proper engagement with the respondents. The occurrence of outliers is another significant factor that contributes to falsified results. As a result, the Mahalanobis distance was used to deal with outliers. The data was put into further analysis using structural equation modelling. In this situation, one (1) outlier was eliminated, lowering the number of samples from 362 to 361. Therefore, 361 individuals were sampled for this investigation.

Results

To understand the sample, demographic analysis indicated frequency analysis of categorical variables and descriptive statistics on scalar variables. Accordingly, this study found that the male concentration was as high as 74.5%, while the female concentration was 25.5%. Besides, the majority of respondents belong to the middle-aged group of 26–40 years old, accounting for 49.3% of the total sample. Regarding the position in SMEs, it can be seen the managers' account is 70.4% and the owners' account is 29.6%. From this perspective, the manufacturing SME industry accounted for 31.3%, the services industry accounted for 47.1%, and the trade industry accounted for 21.6%. However, the average age of SMEs in Lagos, Nigeria is calculated to be 13 years, and the average job size of each company is 120 employees.

Path Analysis

Confirmatory Factor Analysis (CFA) was performed to verify the use of the factors in the model. However, first, the effectiveness and reliability of the indicators are evaluated using different measures: Cronbach's Alpha and Composite for reliability, Average Variance Extracted (AVE) for convergence effectiveness, the Heterotrait-monotrait ratio of correlations (HTMT) ratio for the discriminant effectiveness of the constructs. However, factor loading metrics have been used to analyse correlations. The results associated with the model constructed in this study are presented in Table 1. In a study by Eniola *et al.* (2019)[38], Eniola & Entebang (2017)[39] in the context of the factor loading, indicators below 0.4 should be ignored, and factor loading above 0.4 is considered acceptable, but the preferred minimum is 0.6. To explain this condition, all factor loadings present in the final model are within tolerance. Cronbach Alpha is a measure to check the internal integrity of a structure using a certain number of indicators. Therefore, in the context of the studies of[38,39], to declare a variable statistically reliable, the minimum value is at least 0.6. All values are greater than 0.6, which demonstrates the reliability of each construct. In addition, the composite reliability has

been calculated for the reliability and its threshold is 0.6. In respect to constructing the structure of the survey, each value exceeded 0.6, indicating the reliability of the composite material. Another important aspect of CFA is convergence effectiveness, which describes the convergence between constructed structures and their relationships in simple terms. In this study, AVE was performed with a threshold of 0.5, but 0.4 can be considered an acceptable value if the composite reliability exceeds 0.6.[38,39] Therefore, all construct have valid convergence values.

On the other hand, the SEM model also requires the discriminatory validity of the constructed structure. This implies that each structure must be different from each other.[38] The HTMT ratio has been used to evaluate the discriminative validity of the research structure. Researchers argue that the HTMT ratio should be less than 0.9, in this concern; all structures are discriminatively valid because all structures are calculated to be less than 0.9. The results can be viewed in Table 2.

After verifying reliability, convergence effectiveness, and discriminant validity, we performed a path analysis and printed the results in Table 3, Table 4, and Table 5. According to Table 2, the direct impact of

Table 1 — Reliability and Convergent Validity Testing

Variables	Indicators	Factor Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Digital Business Strategy	DBS1	0.72	0.93	0.95	0.75
	DBS2	0.90			
	DBS3	0.93			
	DBS4	0.94			
	DBS5	0.86			
	DBS6	0.85			
Firm Efficiency	FE1	0.83	0.83	0.86	0.45
	FE2	0.84			
	FE3	0.70			
	FE4	0.51			
	FE5	0.45			
	FE6	0.71			
	FE7	0.70			
	FE8	0.84			
Business Spanning	BS1	0.96	0.88	0.93	0.76
	BS2	0.93			
	BS3	0.95			
	BS4	0.64			
Infrastructure Capabilities	INFC1	0.93	0.92	0.95	0.87
	INFC2	0.94			
	INFC3	0.93			
Proactive Stance	PS1	0.75	0.73	0.81	0.52
	PS2	0.82			
	PS3	0.59			
	PS4	0.78			

each variable was calculated. The study by Wasserstein *et al.* (2019)[40] supports a 0.05 or 5% significance threshold measured by the p-value considered in this study. With respect to direct impact assessments, DBS has a significant positive effect on the business spanning (p = 0.000 <0.05) and the coefficient is positive as well. In addition to this, DBS also had a significant positive effect on SME IT infrastructure and IT proactive stance (p-value <0.05). With this in mind, the direct effect of the IT proactive stance is also calculated as a significant positive impact on the efficiency of SMEs (p-value <0.05). Therefore, no other direct effects shown in Table 3 are statistically significant.

Since the study also includes mediating variables, IT capability was divided into three dimensions: proactive stance, business spanning, and IT

Table 3 — Analyzing Direct Effect

	Coefficient	T-Statistics	P-Values
Business Spanning –> Firm Efficiency	−0.134	1.560	0.119
Digital Business Strategy –> Business Spanning	0.709	19.936	0.000
Digital Business Strategy –> Firm Efficiency	−0.200	1.926	0.055
Digital Business Strategy –> IT Infrastructure	0.799	30.074	0.000
Digital Business Strategy –> Proactive Stance	0.410	2.205	0.028
Infrastructure –> Firm Efficiency	0.061	0.651	0.515
Proactive Stance –> Firm Efficiency	0.549	7.638	0.000

Significant level at *0.05, **0.01, and ***0.001

Table 4 — Analysing Specific Indirect Effects

	Coefficient	T-Statistics	P-Values
Digital Business Strategy -> Business Spanning -> Firm Efficiency	−0.095	1.557	0.120
Digital Business Strategy -> Infrastructure -> Firm Efficiency	0.049	0.649	0.516
Digital Business Strategy -> Proactive Stance -> Firm Efficiency	0.225	2.429	0.015

Significant level at *0.05, **0.01, and ***0.001

Table 5 — Analysing Total Indirect Effect

	Coefficient	T-Statistics	P-Values
Digital Business Strategy –> Firm Efficiency	0.178	1.964	0.050

Significant level at *0.05, **0.01, and ***0.001

infrastructure. These were tested to ascertain the indirect impacts on the variables. The results shown in Table 4 show the indirect impact of DBS on the efficiency of SMEs by incorporating three aspects of IT capabilities. The IT proactive stance indicates that the indirect impact on the DBS firm's efficiency is significantly positively correlated (p-value = 0.15 <0.05). This shows that a proactive stance completely mediates the relationship between DBS and the firm's efficiency.

Based on the calculation of direct and indirect effects, the overall impact was combined to investigate the overall influence of DBS on a firm's efficiency. The computed overall influence is significantly positive and is presented in Table 6. An assertion was made because the p-value was 0.05. According to the studies of Grabowski (2016)[41], if the p-value is found to be equal to 0.05, then it is considered significant relevant. Therefore, we can conclude that the overall impact of DBS on the efficiency of SMEs is positive and that improvements in the DBS of firms through IT capabilities can improve the efficiency of SMEs in Nigeria. It further entails the IT capability needed to fully mediate and effectively coordinate the link between DBS and the firm's efficiency.

Hypotheses Evaluation Summary

As per the initial recommendations, this section describes the results and summary responses based on the findings and results of the survey. Regarding the results, two hypotheses are fully accepted, two are partially accepted, and two are rejected. However, the research shows that the aim of this study has been achieved because the mediation of IT capability between DBS and the firm's efficiency has been realized. A summary can be viewed in Table 6.

Discussion

This study expanded the results of previous studies on DBS and the firm's efficiency or performance by testing IT capability mediators. However, to obtain specific results, an empirical assessment was performed by accumulating data from SMEs, which are considered emerging markets in Nigeria. The results of this study indicate that DBS will not only affect the efficiency of the firm but that DBS will have a significant impact on the firm's efficiency through its business intermediaries and IT capabilities. This means completely mediating IT capability. In the previous studies by Chi *et al.*

Table 6 — Hypotheses Assessment Summary

Hypotheses Statement	Decision
H1: Digital Business Strategy (DBS) has a significant positive effect on firm's efficiency.	Partially accepted on the basis of the overall indirect effect.
H2: DBS has a positive and significant impact on the IT capability.	Accepted
H3: IT capability has a significant and positive impact on firm's efficiency.	Partially accepted in terms of the proactive stance
H$_4$: IT infrastructure significantly and positively mediate the relationship between DBS and firm's efficiency	Rejected
H5: Business spanning significantly and positively mediate the relationship between DBS and firm's efficiency.	Rejected
H6: IT proactive stance significantly and positively mediates the relationship between DBS and firm's efficiency.	Accepted

(2018)[4], it was believed that DBS improves the company's viability and efficiency. However, the analysis of this study is controversial because the direct impact does not work directly with DBS. This implies that in SMEs, IT capabilities must be actively accumulated, including IT infrastructure, a business spanning and specifically an IT proactive stance, to improve the firm's efficiency positively. Therefore, using social media, cloud computing, IT-driven artificial intelligence, a robust IT plan, a clear digital vision, and pro-active actions in implementing DBS will bring efficient performance to SMEs.

In addition, the findings suggest that IT capabilities play a mediating role between DBS and the firm's efficiency. In line with the work of Bataineh *et al.* (2015)[17], the results are therefore consistent. However, the study points out that the proactive stance of SMEs is more important than IT-based infrastructure or business spanning. The study by Lu & Ramamurthy (2011)[36] emphasises that all three aspects affect performance and that IT capabilities reflect a unified picture of the company's resources and is therefore consistent with RBV theory. Therefore, companies doing business in Nigeria must first adopt a beneficial position in implementing DBS to support profitability, productivity, and overall efficiency.

Conclusions

This research establishes a framework for testing and demonstrating the mediation between DBS and firm efficiency in proposing improving IT capabilities to improve firm efficiency as well as the possibility of comprehensive mediation. Nigeria's SMEs, in particular, must rebuild and reaffirm their position on DBS integration. The RBV theory also suggests that businesses can operate efficiently with limited resources. Taking into consideration that information technology capability is a three-dimensional concept,

DBS can be optimised to the optimal level that corresponds to the environment, particularly for SMEs. In addition, because Nigeria is an emerging market, it can be promoted in other developing markets. This research in regards to DBS fills knowledge gaps; it was previously thought to be a functional strategy rather than an organizational-level strategy. Significantly, SME managers, and especially CEOs, need to develop a DBS that can be used positively to influence a company's capabilities and increase its potential for efficiency. Likewise, other aspects of IT capabilities, such as business spanning and information technology infrastructure, must not be overlooked. The exploration is confined to one mediator assessing the relationship between digital business strategy and the firm's efficiency. Other dimensions of a mediator or moderator should also be considered.

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