# Chapter 19
# Digital Transformation in the Nigerian Small Business Sector

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## ABSTRACT

*Digital transformation is now impacting businesses in both the developed and developing worlds, and this chapter examines this phenomenon in the small business sector in Nigeria. Adopting an interpretivist philosophy, the methodology combines a survey of small business enterprises (SBEs) with in-depth case studies of three Nigerian companies. Ten critical influencing factors are identified, and a model (Engage-Deploy-Exploit-Transform – EDET) is developed and applied to the case studies to assess the status of digital transformation. The influencing factors provide a checklist for SBEs embarking on digital transformation projects, and the model can be used to assess progress and identify new opportunities for digital transformation at the business process level. The authors believe this to be a useful contribution to the growing literature in this field that can be used by both researchers and practitioners in similar developing-world contexts.*

## INTRODUCTION

The potential of digital transformation to drive trade and economic growth, and bridge inequalities between African nations and the rest of the world, is widely recognised (Department of International Relations and Cooperation, 2019). Digital transformation entails the deployment of new technologies to change an organisation's processes, products, services and even their underpinning business model. Simply put, digital transformation is "the use of technology to radically improve performance or reach of enterprises" (Westerman et al., 2014a, para.1). However, the United Nations General Secretary, Antonio Guterres, recently concluded that although "digital advances have created enormous wealth in record

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time", it was "concentrated around a small number of individuals, companies and countries", and that "we must work to close the digital divide, where more than half the world has limited or no access to the Internet" (United Nations, 2019, p. iv).

In this context, this chapter explores the impact of digital technologies on small businesses in Nigeria, Africa's biggest economy, and puts forward a framework for assessing the status of digital transformation in these businesses. This is in line with the work of other academics working in the field. Sein and Harindranath (2014), for example, suggest that to better understand the role information and communications technology (ICT) can play in developing world economies, it "needs to be conceptualized in its many facets, perceptions, and in its manifold impact in societies", and they propose an integrative framework which "policymakers and donor agencies may find useful in evaluating the potential impact of development interventions using ICT" (p.15). In similar vein, Walsham (2017), referring to ICT research in developing world countries, has stressed the importance of creating "a cumulative research tradition" through "the development and application of theory" which enables "moving from a particular setting or application to more general statements or conceptual frameworks" (p.29).

In Nigeria, the adoption of mobile phones, social media and internet technologies has reached new levels in recent years, with internet penetration increasing at about 10% every year, and active GSM subscriber lines growing from 145 million in 2017 to 184 million at the end of 2019 (Nigerian Communications Commission, 2020). This increased adoption of digital technologies for personal use has engendered a growing demand for digital services and products in the commercial arena. The adoption of digital transformation initiatives by Nigerian businesses, however, is generally still in the early stages, with financial institutions, start-ups and small businesses leading the search for creative and innovative approaches to deliver digital products and services to customers.

In the Nigerian public sector, digital transformation is also considered an essential component of government strategy, aimed at providing more efficient and effective services to its citizens (Oyemade, 2019). Federal and state government digital initiatives have facilitated easier business registration and more efficient tax collection, thereby increasing internally generated tax and duty revenues. Nevertheless, there is only limited research on digital transformation in Nigeria, particularly within the context of small businesses. This article examines this phenomenon in Nigeria in the context of small business enterprises (SBEs), which can be defined as enterprises that employ fewer than 50 persons (European Commission, 2006). Following this introduction, relevant literature, definitions and models are reviewed, and an outline conceptual framework and research questions are set out. The research methodology and design is then explained, and the main findings from a survey and three detailed case studies are discussed. The following analysis section draws on these findings to address the three research questions, and puts forward and applies the Engage-Deploy-Exploit-Transform (EDET) model for assessing digital technology deployment in SBEs. The final section makes some conclusions regarding the contribution of the research project and future work.

## LITERATURE REVIEW

### Digital Transformation

There is no uniform definition of the term "digital transformation" to date. Vial (2019) reviewed 282 digital transformation related academic publications and found 23 different definitions. Based on the

existing definitions, he developed a conceptual definition of digital transformation as "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies" (p.119). Other authors see it as the deployment, redeployment or optimization of existing technologies to improve performance and deliver value to customers and organisations (Westerman et al., 2014b). It encompasses the application of digital technologies to enterprise processes, products and assets to enhance customer value, uncover new monetization opportunities, improve efficiencies and manage risk across the enterprise (Kane et al., 2017).

Digital transformation is a result of digitalization and refers to how the deployment of digital technologies can lead to new, disruptive business and value creation models (Bharadwaj et al., 2013). Riedl et al. (2017) see digitalization as the process of introducing digital technologies and Koch et al. (2016) note that these technologies do not have to be new - rather the newness is created in the context of business and value creation models.

However, simply digitizing services through technology alone does not transform an organization, but rather a balanced interplay of technology, people, and process change is usually required; and Singh and Hess (2017) highlight the need for a digital transformation strategy to guide a company through this change process. In the context of Nigerian SBEs, digital technologies encompass not only the much-heralded disruptive technologies such as cloud computing, Internet of Things and big data/analytics, but also the more widely deployed technologies such as basic internet access, business information systems, and e-business technologies. Digital transformation is thus viewed as the deployment of a wide range of technologies and systems to significantly improve business processes and operations.

## Models and Frameworks

Several theories, frameworks and models have been utilised to assess and analyse technology adoption within business contexts. These include the United Theory of Acceptance and Use of Technology (UTAUT) framework, the Technology, Organisation and Environment (TOE) model, and the Technology Acceptance Model (TAM), which have been developed and applied to examine factors and reasons for technology adoption (Oliveira & Martins, 2011; Van Dyk & Van Belle, 2019). In addition, maturity models such as the Connect-Publish-Interact-Transform (CPIT) model (Department of Trade and Industry, 2003), the Transporter Model (Levy & Powell, 2003) and the Stages of Growth (SoG) e-Model (McKay et al., 2000) have been used by researchers in varying technology and business environments to examine the extent of technology deployment in organisations.

The UTAUT framework was put forward by Venkatesh et al. (2003) to categorize and analyse the human factors involved in the adoption of new information systems. This framework was developed from a synthesis of the TAM framework first proposed by Davis (1989), and includes an analysis of the role of cultural issues in the adoption of new technology. The UTAUT framework had the objective of identifying and understanding the drivers of new technology acceptance and the likelihood of successful deployment, and identified four main drivers of user acceptance and usage behaviour: performance expectancy, effort expectancy, social influence and facilitating conditions. Although the model has been applied and tested, for example by West (2004), Gallivan (2000) has argued that it is not suitable in explaining complex technology adoption decisions, where other factors like senior management commitment influence the decision to adopt.

The TOE model (DePietro et al., 1990) is perhaps one of the most popular frameworks for evaluating the adoption of technologies in a variety of contexts. The model suggests that there are three main sets of factors that affect the adoption of technologies– technology factors, organisational factors and external environmental factors. The availability of relevant new technologies (e.g. internet, cloud computing, analytics), organizational structures and resources (organization culture, human resources, financial capacity, top management support) and the social-political-economic environment around the organization (regulations and economic structures) are seen as fundamental in decision-making regarding the adoption of new technologies. Two examples of the model's use in the African continent include Van Dyk and Van Belle (2019), who have used the TOE framework to evaluate digital transformation in South African retail organisations, and Faloye (2014), who utilised TOE to evaluate e-business in Nigerian companies.

However, TOE only explores the factors that affect adoption, but not the extent to which they are used in different areas of an organisation. The concept of analysing the impact of new technologies at individual process level within an organisation was a key innovation of the CPIT model (Department of Trade and Industry, 2003), which aimed at assessing the progress of e-business in organisations. Taylor and Murphy (2004) suggested that the CPIT model was a more pragmatic way to view and interpret patterns of technology adoption amongst small-to-medium sized enterprises (SMEs) in comparison with other available models. The model comprises a two-dimensional matrix, which examines how new e-business technologies impact upon identified business processes. Within these process areas, e-business technologies can be used to "Connect", "Publish", "Interact" and "Transform" business activities. The Transform stage is reached when a business has used online technologies to fully transform its business processes. This could potentially mean the redesigning of business processes around online technologies or the complete reinvention of the business model (Department of Trade and Industry, 2003).

One advantage of the CPIT model is that it accommodates the varying pace of e-business adoption in different business processes, and it does not assume that businesses are striving to introduce new technologies into all their activities simultaneously. The model has been applied to SMEs in the UK by Wynn et al. (2013), and in an African context, elements of the model were used by Bakeer (2017) in his development of the SCALE (Startup-Connect-Access-Leverage-Enterprise) model for assessing new technology adoption in Libyan universities.

## Benefits, Barriers and Continuous Improvement

Researchers using the TOE framework have identified perceived benefits as one of the key factors that aid digital technologies adoption. For example, Ramdani et al. (2013), after using the TOE framework to study enterprise application adoption by SMEs, identified the perceived advantage of the new systems over their predecessors as one of the technological factors that influence adoption. In SBEs, the thought process around identifying perceived benefit in digital technologies and systems may be quite informal. The owner/manager is often responsible for making such decisions in an SBE, and the identification of perceived benefits or conviction regarding the use of digital technologies is thus critical. Ultimately, the owner/manager's perception of IT influences his/her thoughts about the benefits that could be derived when such technologies are implemented (Ghobakhloo & Tang, 2013). Owners and managers who are IT aware are often very proactive and positive about the deployment of digital technologies in their organisations, while owners with little or no knowledge often have to be convinced by others of the benefits (Chatzoglou & Chatzoudes, 2016).

The adoption of digital technologies must inevitably overcome certain barriers (Wachira, 2014), most of which can be addressed in the pre-adoption phase (Janita & Chong, 2013). Common pre-adoption barriers include cost (Agwu & Murray, 2015), staff literacy and access to the internet (Wachira, 2014) and, in developing countries like Nigeria, the availability of power and internet access and speed (Olayinka et al., 2016). The overall cost of overcoming these barriers may be judged prohibitive (Agwu & Murray, 2015; Ghobakhloo & Tang, 2013), and the company response will differ between companies. For example, instead of purchasing new technologies, some companies may look at alternative ways of acquiring the technology, through rental or by using cloud-based products that offer cheaper short-term solutions (Nguyen & Waring, 2013).

While barriers are evident in the pre-adoption stage, there are some post-adoption barriers that may limit the increased use of digital technologies and discourage further investment (Oliveira & Martins, 2011). Such barriers include technology and systems maintenance costs (Agwu & Murray, 2015), staff training overheads, and the ability to maintain/recruit knowledgeable IT technicians (Janita & Chong, 2013).

In many technology adoption models, the final stage often entails technology integration and process transformation; but because advancement in information technology is continuous, organisations must always be on the lookout for how new technologies may improve their businesses further. Continuous improvement as a theoretical concept has been studied in various disciplines such as manufacturing (Aurich et al., 2009) and Education (Park et al., 2013). In technology-related research, continuous improvement has been explored as an approach to improve work processes and increase competitiveness. Commercial frameworks such as the Information Technology Infrastructure Library (ITIL) also suggest a similar concept in order to ensure that the IT services of an organisation improve over time. Business environments, however, are never static. Business strategies change, business processes changes, and so do the digital technologies that support the organisations. Continuous improvement can be usefully incorporated into the provisional conceptual framework for the research study.

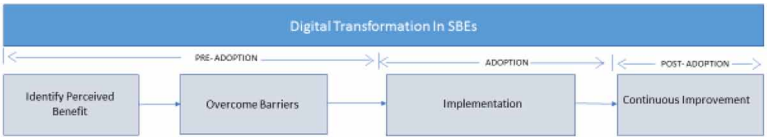
## Provisional Conceptual Framework

Researchers have examined variables, change elements and factors that can be tracked throughout the implementation of new technology as a way to measure progress. McKay et al. (2000) identified a number of key variables in their Stages of Growth model. Heeks (2002), in attempting to explain high rates of failure in technology projects in developing countries, identified people, process, technology and structure as the four change elements that affect technology implementation, but his study also recognised that there are situation-specific factors that will determine success or failure. More recently, Wynn (2018) proposed 12 factors that determine the success or failure of IT innovation projects in SMEs in the UK. Using people, process and technology as key dimensions of change, his research further identifies four specific factors for each of these change dimensions.

This study's conceptual framework (Figure 1) builds on these concepts and ideas and comprises pre-adoption, adoption and post-adoption stages in the technology deployment life-cycle. This is consistent with Zhu et al, (2006) who suggest that digital innovation consists of three phases - initiation, adoption and routinisation. The framework incorporates the concepts of benefits, barriers and continuous improvement discussed above.

Given the above review of the extant literature, this article addresses the following research questions (RQs):

*Figure 1. Provisional conceptual framework for the study*




**RQ1:** To what extent are Nigerian SBEs adopting digital technologies?
**RQ2:** What are the barriers and critical influencing factors affecting digital transformation in the Nigerian small business sector?
**RQ3:** What model can be used to assess digital transformation in Nigerian SBEs?

## RESEARCH METHODOLOGY

The research adopts a mixed methods approach, combining a survey of 47 SBEs with three detailed qualitative case studies, based on questionnaires and follow-up interviews, undertaken in the period 2016-2019 (Olayinka, 2020). Interpretivism was adopted as the philosophical approach. This paradigm recognises that the world can be influenced by various actors and factors and, within the context of Nigerian SBEs, this allowed the study of a range of issues affecting digital transformation. Interpretivism has been widely adopted and is a well-established philosophical perspective from which to investigate information technology deployment.

Combining quantitative and qualitative data can provide a fuller understanding of phenomena through comparison and illustration (Creswell & Creswell, 2017). In mixed-methods research, quantitative analysis, such as that provided by the survey undertaken here, can help establish some of the basic findings of the investigation, while the qualitative case studies tend to support the higher-value analysis related to understanding and explaining context, relevance and causality of the phenomena (Mingers et al., 2013).

The case study is a widely used method within business research. Bryman and Bell (2011) argue that the case study is particularly appropriate to be used in combination with an inductive qualitative research method, allowing detailed and intensive research activity. The case study is also appropriate for a combination of qualitative methods, as evidenced in this study of digital technologies in three SBEs, where mapping and profiling techniques were combined with questionnaire and interview material. Saunders et al. (2015) argue that case studies are of particular value for explanatory or exploratory investigation, such as that pursued here. Easton (2010) argues that a case study approach is particularly well suited to situations where there are clear boundaries, but where there are complex questions that are not easily answered through non-contextualized data analysis. The method is also of benefit where interesting phenomena observed during the course of the research may lead to emergent questions and findings, that may add significant value to the research. Data collection can establish patterns and phenomena, and then try to explain the underlying causes. The approach aims to provide opportunity to gain a rich understanding of the research context, which enables answers to the research questions to be formulated (Yin, 2013).

Data collection was undertaken through questionnaires, interviews, and documentary evidence. Yin (2013) suggests that the utilisation of multiple sources of evidence is one way of increasing the construct validity of case studies. A structured questionnaire was filled in by two respondents in each of the three

cases studied, and follow-up interviews were conducted with the questionnaire respondents. A thumbnail sketch of the three cases is provided here. Pseudonyms are used for company names.

GPY Properties is a construction company founded in 2012 and has 23 staff. The interviewees were, firstly, the founder/managing director, a 39-year-old marketing professional with an MBA from Warwick University and a bachelor's degree in accounting. He oversees general activities of the company from day-to-day and drives company strategy. The second interviewee was the head of finance, a graduate in accounting from the University of Lagos, and a member of the Institute of Corporate Accountants of Nigeria. She is responsible for the overall financial management of the company, and has line responsibility for the site manager and construction project managers.

HGB Stores is a retail business founded in 2015 and has just five staff. The interviewees were the owner/managing director, a BSc graduate in economics from the University of Ibadan. She is in her 30s, works full time and manages the company activities from day-to-day. The second interviewee was a 22-year-old graduate who is responsible for managing most of the sales and marketing activities, customer management and some elements of product delivery.

OJ Legal was founded in 1971 and now has 15 staff providing a range of legal services to businesses and private individuals. The interviews were conducted with the managing director/principal partner, who is a dual-qualified lawyer and son of the original founder. He oversees various lawyers and partners in the practices, and is in charge of strategy and overall finance for the firm, which he joined nine years ago. The second interviewee was an administrative assistant, a graduate in business administration. She solely manages the administrative activities of the firm, and her role involves sending out invoices, generating contracts and liaising with new customers.

## FINDINGS

This section presents the findings from the survey of 47 Nigerian SBEs and reports on the three case studies noted above. For each case study, the background of the company and an overview of the processes in the company are presented, after which an initial analysis of the case is provided using the pre-adoption, adoption and post-adoption phases of the conceptual framework. Technology profiling is used to assess digital technologies deployed.

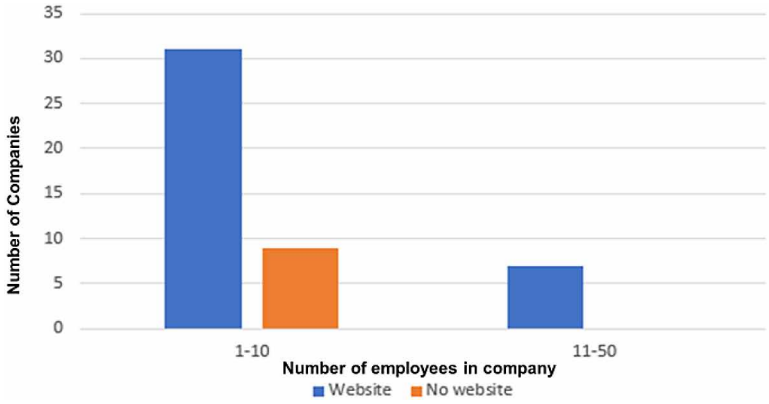
### The SBE Survey

The survey was distributed via email to 80 companies operating in the Lagos region, selected from business directories and web sources. This was a simple survey comprising seven questions, aimed at getting an initial impression of the extent of digital technology deployment in Nigerian SBEs, and at identifying companies that could be contacted for further research. There were 52 responses, of which 47 were from SBEs operating in 20 different sectors, and these were used for further analysis.

From the SBEs surveyed, 95.7% (45) specified that they used IT and digital technologies to support their core operations and business activities. The activities supported by these systems varied from contacting customers via email to automating internal processes and taking orders online. Of the 47 companies, 40 had ten staff or less, with seven companies having between 11 and 50 employees. All the companies with 11-50 employees indicated that they used digital technologies for core operations, while only 95% of the companies with 1-10 employees made use of digital technologies for core business activities.

38 (80.85%) of the SBEs surveyed indicated that they had a website, including all seven companies with 11-50 employees (Figure 2). For most of these SBEs, the website was used primarily to display their services and product offerings, with only a few having the necessary website functionality to accept payments online. SBEs that did not have websites were from the Fashion and Beauty, Health, Household, Travel and Education sectors.

*Figure 2. SBEs with a website classified by number of employees*




The effect of the turnover of a company on technology adoption has been contested by researchers (Daniel et al., 2002; Ghobakhloo et al., 2011). Of the 47 SBE respondents, 16 (34%) had annual revenues of between 1 and 5m naira ($2,400 - $12,000), while only two companies (4.25%) had turnover of in excess of 100m naira ($240,000). Two other companies, which did not make use of digital technologies in their core activities, had revenues less than 1m naira ($2,400) (Figure 3). Both these companies had been operating for less than three years, suggesting that when the age and the income factors are combined, companies in this socio-economic environment may well struggle to effectively deploy digital technologies or embark on digital transformation initiatives.

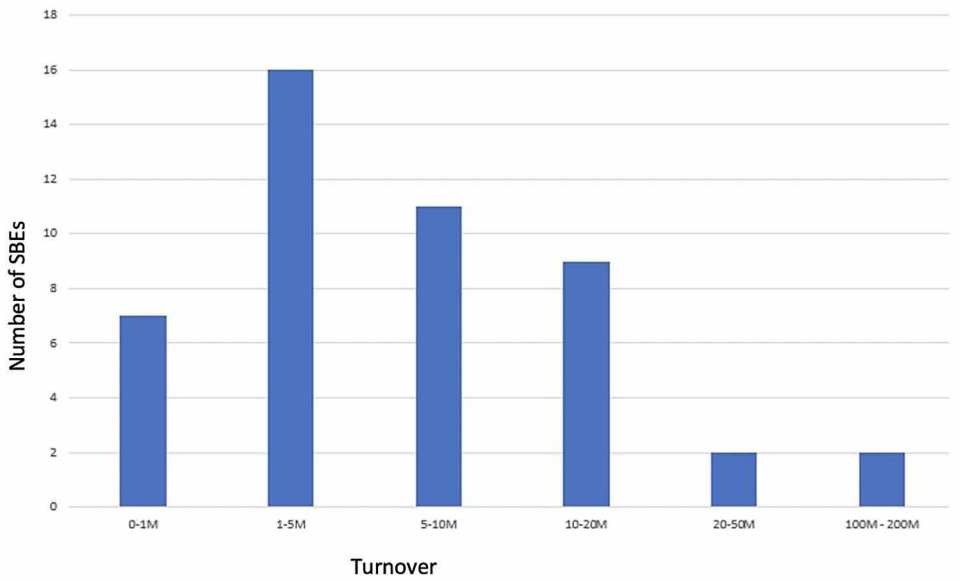
## GPY Properties

### Overview

GPY Properties is a construction company founded in 2012. Its core mission is to rebuild Nigeria's residential landscape through the provision of innovative, high quality and affordable homes. At the time of data collection, the company turned over about 45m Naira ($108,000) and was forecast to increase the following year.

Interview and questionnaire responses indicated six core business processes (financial management; property sales and marketing; constructor liaison; customer services; payroll and human resources management; logistics and procurement). Digital technologies deployed by this company included the use of a Customer Relationship Management (CRM) system for lead management, and company personnel actively made use of Facebook for its marketing initiatives. Other technologies deployed included the company website, MS Excel, Bulk SMS Portal, Email Campaign Manager, other Social Media (Face-

*Figure 3. SBEs classified by annual turnover (millions of Naira; 1m Naira = $2,400US)*




book, Twitter), Internet Banking, Job boards, WhatsApp, QuickBooks and Online Property Aggregators. Some of these technologies were viewed as strategically sound, but the company planned to upgrade or replace others. Internal communication between staff was mainly via email, with phones being used only when necessary. The company had several contract staff and casual workers, and tasks were tracked manually, using a timesheet filled in on the site.

## Pre-Adoption

GPY Properties started its business operations using email as the key tool to communicate with clients. The owner advertised property offerings in national daily newspapers, property magazines and on property listing websites, which were still relatively new to Nigeria. The owner had previous experience in generating leads from property listing sites such as Laumudi and OLX.

## Adoption

In 2013, the company invested in a website for the main purpose of marketing properties for sale. Total investment on the website was 0.5m Naira ($1,200), and this provided an email server and online brochureware site via HTML, where customers can request site visits. MailChimp was used to capture leads and allowed the company to conduct well presented email campaigns with up to 5,000 customers for free.

To achieve increased demand for the properties on offer, the company invested in Facebook adverts. According to the owner, "we wanted to do something that others were not doing at the time. Facebook adverts were quite effective to run targeted campaigns, and we used it to reach these individuals." In particular, the business had a plan to target Nigerians in the diaspora, and Facebook adverts provided a means whereby they could be reached effectively. The company quickly grew its Facebook user base to 10,000, and continued to increase leads to its CRM database. As the company grew and acquired new

property sites for development, the company invested in QuickBooks and a Software-as-a-Service bulk messaging platform that is used to send SMS to various property investors when their payments are due. Digital transformation was instigated by the owner's past knowledge, his perception of digital technologies, customers' requests, and the perceived value to be derived from such initiatives.

### Post-Adoption

The company considered automating its monthly payment system so that people could pay online via their debit cards. However, this was quickly discarded due to payment processing fees. The company was also investing in a new website that would allow content to be easily edited using the Drupal Content Management System (CMS). The initial website had basic brochureware functionality, used primarily to showcase the company's properties and services, but there is a need to integrate this with the CRM system, allowing leads to be captured directly from the website to the CRM system, indicating customer requirements. According to the owner, "we are currently exploring the effectiveness of Google search engine for marketing and, principally, 'display adverts', as we are in the process of investing in another property site. We want more people to know about the brand and put us at the centre of property development for young professionals in Nigeria."

## HGB Stores

### Overview

HGB Stores is a retail outlet that designs, makes and sells children's clothing. Founded in 2015, the company started from humble beginnings at the founder's kitchen. Initially, the business started with her collecting imported materials and reselling to friends and family. This quickly grew into a community of expectant mothers and church members. At the time of data collection, HGB Stores had an average of 20 orders per day and generated 19m Naira ($46,000) in revenue.

Initial findings from HGB Stores indicated that the firm had six primary business processes (financial management; procurement; customers services; sales and marketing; logistics and delivery; inventory management). Digital technologies deployed in the firm included Instagram, MS Access, MS Excel, WhatsApp, Email, E-commerce Sites and Marketplaces, Internet Banking, Third-party Tracking, Canva (graphics design), Paystack Payment Pages, Bulk SMS, and Buffer (social media management). Although a number of systems in the firm still made use of Microsoft office systems, the company made considerable use of social media platforms to generate sales (via social media advertising), and made use of easy to deploy solutions to accept payment from customers online, enable delivery tracking and provide customer updates via SMS.

### Pre-Adoption

From inception, this company started utilising digital technologies for its day-to-day operations as it sold children's clothing on the internet using Instagram. The decision to make use of Instagram was principally based on other people's success and was influenced by cost, as the owner could not afford the initial setup costs for a shop or a website. This decision was also influenced by the customers familiarity with Instagram, and the owner's network of contacts were already using Instagram for purchasing from

the platform. In general, while the company started sales and marketing online from the outset, other processes remained manually operated due to cost and limited knowledge of IT.

### Adoption

As the company grew and its client base and sales revenue began to increase, it needed to standardise and automate its processes. Microsoft Excel was adopted as a low-cost approach to digitise several process areas, while sales and marketing made use of cloud-based systems such as SMS live and Mailchimp for customer communication. The company also invested in Android tablet computers, due largely to the unreliable supply of electricity, thereby allowing staff to make use of these battery based machines for most of the days' activities.

The company initially accepted payment via direct bank transfer and cash on delivery only. However, the company also accepted online payments through Paystack payment pages, which allowed Nigerians in the diaspora to easily purchase gifts for friends and family in Nigeria from the company's Instagram Store. Payment through debit cards had become the second most popular source of payment after cash on delivery, and this had increased international patronage. Digital transformation was influenced by initial market research, competitor activities, customers' perception and IT knowledge.

### Post-Adoption

The company continued to invest in digital technologies, notably in a website with the aim of increasing revenues significantly. The owner/managing director had also invested in digital marketing courses as a way to get herself ready for the next phase of business growth. She believed that the website would be the catalyst for improving processes across the company. This company was open to the use of digital technologies to transform the business primarily as it was seen as adding to revenues and profit. The role of the owner in promoting technology deployment was also critical.

## OJ Legal

### Overview

OJ Legal is a Nigerian law firm, which has three branches across Nigeria and employs 15 individuals across these locations. Its practice areas are litigation and arbitration, regulatory enforcement, acquisition and takeovers, and intellectual property. The original partner (now deceased) founded the firm in 1971, as a sole practitioner, when the practice of law in Nigeria was still in its infancy. At the time of data collection, the company reported a turnover of 36m Naira ($86,000).

The company has five main business processes (financial management; customer and case management; business development; research and paralegal; administration and human resources management). Digital technologies utilised include a website, MS Excel, Case Management, Email, Sage Accounting, Internet Banking, Facebook, Dropbox, and MS Word. The firm's case management system operates as both a record-keeping system for cases as well as a CRM tool to manage customer data. A self-hosted email system is used for external communication with clients, while Sage Accounting is used for managing the company's account. Dropbox for Business allows operational documents to be viewed and exchanged across multiple locations.

### Pre-Adoption

In the company's early days in the 1970s, processes were entirely manual. The company started in only one location, with two staff - the owner and an administrator who did most of the filing. Customers' accounts were opened using a physical filing system, with invoices and receipts handwritten. Barriers to adoption included the cost of IT infrastructure (the expense could not be justified), the lack of technical know-how in the company, and the owners' knowledge.

### Adoption

The employment of a former bank accountant in this firm in the 1990s led to the purchase of the first computer and gradual transition of the manual operations to make use of Microsoft Office packages. Then, in 2010, the relocation of the current principal partner to Nigeria, having gained valuable experience working in the UK legal sector, led to new initiatives to introduce more up to date systems and technologies into the firm. A website, a case management system, the Sage accounting system and Dropbox for Business (web-based document management) were introduced. This gave the company a point of difference compared with many of its competitors, leading to its expansion to other locations. Digital technologies deployment in this firm was gradual and staged over several years. Rather than digital transformation initiatives being driven by the owner, it was driven by the addition of new staff who brought in the knowledge of tools and technologies, based on previous experiences.

### Post-Adoption

Although some of the company's core processes were supported by digital technologies, there was still scope for integration of systems to benefit both the company's clients and its own staff. For example, the Sage accounting system could be integrated with case management, thus allowing for easier billing. Further training was also required.

The firm have, to date, been quite cautious, deploying proven systems and technologies to support mainstream processes, to improve efficiencies and lower overheads. Now, however, the adoption of digital technologies is motivated more by the need to compete and outperform the competition. According to the principal partner, "we believe that if we adopt digital technologies in our organisation effectively, we will be in a better place than our competition."

## ANALYSIS

This analysis is structured around the three research questions set out above. The extent of digital technologies used in the SBEs is discussed, and the barriers and critical influencing factors that affect digital transformation in these businesses are presented. Then, the EDET model, to assess digital transformation in this business environment, is set out and discussed.

## Extent of Digital Technologies Adoption in Nigerian SBEs

In the context of RQ1, analysis of the survey responses indicated that most of the SBEs made use of a wide variety of digital technologies to improve their core business operations and improve customer experience. The technologies utilised ranged from simple solutions, such as the use of SMS to communicate with customers, to the use of social media to interact with customers, e-commerce sites to take online orders and accept payment, and the use of complex systems such as CRM and analytics solutions. The survey findings also indicated that the adoption of digital technologies is not limited to a particular industry; digital technologies were put to use in all the 20 industry segments represented in the survey.

The technology profiling of the case study companies revealed that the majority of main business processes utilised digital technologies. Social media was used widely to actively engage customers, and many of the business systems were cloud-based, running as part of Software-as-a-Service arrangements with cloud service providers. For HGB Stores and GPY Properties, the increased digitisation of their business processes was mainly to improve sales revenues and internal efficiencies, while for OJ Legal, the motivation was rather to outperform competition as well as improving efficiencies.

Findings from both the survey and the case studies suggest that the proliferation of digital devices, particularly smartphones, has resulted in an increased demand for digital services and products in the corporate environment. The prevalence of social media, as well as the reduced cost of digital technology adoption made possible by cloud-based applications, have had an impact on how SBEs in Nigeria perceive and embark on digital transformation initiatives. Nigerian SBEs are adopting digital technologies for a wide range of activities, and this is expected to increase as technology advancements continue, and access to the internet improves.

## Barriers and Critical Influencing Factors

To address RQ2, data obtained from the case study companies was analysed using both thematic analysis and the TOE framework. The TOE framework was adopted given its wide use in information systems literature, and its increased use in digital transformation research in Africa. For each case study company, the barriers and critical influencing factors which affected digital transformation were identified through thematic analysis and categorised into technology, organisational and environmental factors (Figure 4). Across the three case studies, several recurring issues were identified, which are presented below as ten critical influencing factors.

### Digital Technology Adoption Costs

Digital transformation normally requires the deployment of new technologies and systems in organisations. As with any infrastructure project, often an initial cost could include staffing cost, the cost of software, cost of hardware devices and general operational and maintenance costs. In the SBEs studied, the average initial costs in the adoption phase were about 0.9m naira ($2,200). Although this may seem a relatively small amount, when compared to the revenue of each of the companies, it constituted a sizeable investment that could deter some SBEs from embarking on digital transformation initiatives. Government incentives to invest in such technology would be of benefit, as would the encouragement of in-country production of appropriate hardware and software systems.

## IT Skills

Digital technologies deployment regularly requires specialist IT skills, which are rarely present in SBEs in Nigeria. For an SBE to effectively embark on digital transformation initiatives, it will likely need access to third party IT professionals. Some company staff will also need to be proficient in the use of IT, and this is problematic in many Nigerian SBEs, where 90% of staff are semi-skilled and have little or no IT skills or experience. In the case of GPY Properties, the company made good knowledge of IT a pre-requisite for the recruitment of most employees, and in OJ Legal, all the relevant staff in the organisation needed to be trained in the use of computers and in specialised software such as the case management system.

## Perceived Benefits

SBEs generally have limited resources, and there is a need to adequately utilise those resources in areas where the business expects value to be delivered. For an SBE to embark on digital transformation initiatives, the firm needs to have clear perceived benefit for it to be worth investing in. In the cases studied, the perceived benefits were clear, and this clarity in expectations allowed for top-management buy-in and resource commitment to such initiatives. For HGB Stores and GPY Properties, the primary perceived benefits were to increase sales and improve in-house efficiencies.

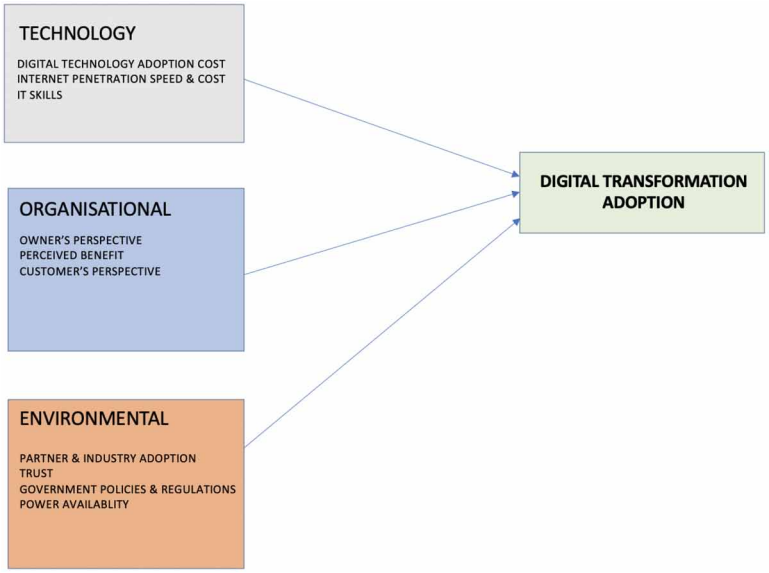
## Partners and Industry Adoption

The adoption and use of digital technologies in a particular industry sector often acts a key influence for new entrants to deploy similar technologies. Similarly, when trading partners utilise digital technologies for their core business processes, particularly in the buying or selling processes, this may act as an incentive to invest in new technologies. In the case of HGB Stores, the logistics partner company, which it made use of to deliver goods nationwide, already offered a shipment tracking functionality, and thus the company was obliged to offer this digital service to its customers. The use of Instagram and WhatsApp by other retailers influenced the choice and use of these technologies by the owner of the business. In OJ Legal, the use of cloud-based case management systems by other local law firms and the principal partner's personal experience, influenced the firm in their adoption of a similar approach.

## Owner's Perspective

Most SBEs in Nigeria are run by one individual or at most, a partnership of two people. The key business decisions are made solely by the owner, and his/her perspective is thus critical to digital transformation initiatives. In the three cases studied, the company leadership was very much in favour of the deployment of digital technologies to improve efficiencies, outperform competition and improve customer experience. Lack of such leadership buy-in or limited perception of the productivity gains that digital transformation initiatives offer will likely lead to non-adoption, as was the case in OJ Legal for several years.

*Figure 4. Critical influencing factors affecting digital transformation in Nigerian SBEs*




## Internet Penetration, Speed and Cost

For SBEs in Nigeria to ultimately digitally transform, the internet needs to be suitably available at their office and work locations, at an acceptable cost. The three companies in this study attested to the importance of internet penetration in their areas. Although this is on the increase in Nigeria generally, it remains one of the critical issues affecting digital transformation in Nigerian businesses; and with tight cost control often of paramount importance, internet costs are particularly relevant in an SBE environment.

## Customer and Consumer Perspective

Many digital transformation initiatives aim to improve customer experience, digital services and product offerings. Customer and consumer perspectives are essential to most aspects of an SBE operation and in Nigeria, they often influence the adoption and use of digital technology. Nigerians are increasingly using smartphones through which they expect delivery of digital services. In some industry sectors, notably those focused on retail sales, consumers expect a range of mobile-based and web-based services. The growing IT awareness and day-to-day familiarity with digital devices of a company's customers is driving the adoption of digital technologies in SBEs.

## Government Policies and Regulations

Currently, in Nigeria, there are no government policies or incentives regarding the adoption of digital technologies by SBEs. The move to digitally transform SBEs in Nigeria could be promoted and progressed through Government subsidies for appropriate technology investment, support for skills development and also by acting as an exemplar by digitally transforming some of its parastatal authorities and government ministries – for example, for online bidding for government contracts.

### Trust

Another vital issue affecting digital transformation in Nigerian SBEs is trust. Trust can be seen as a multifaceted factor as it relates to both staff trust and confidence in the digital technologies being utilised in the company. In addition, customer/consumer trust in online payment systems, online purchases, and the technology regulatory environment is relatively low. This lack of trust has impeded the progression of online order capture, as evidenced in these case studies.

### Power Availability

Power availability is paramount amongst the key issues influencing digital transformation in Nigerian SBEs. All the SBEs studied identified power availability as one of the main problems affecting digital technology adoption. On average, Nigerian businesses lose about 10 hours a week to power cuts. This has a significant impact on businesses reliant on digital technologies and IT systems, making it very difficult to work productively in these periods. Many companies have sought alternative sources of power, such as the use of generators, solar panels and inverters. All the companies studied had backup generators, but in HGB Stores, they had resorted to the use of tablets with long-lasting battery power, as this was a more cost-effective backup alternative to the use of generators in the event of power cuts.

## The EDET model

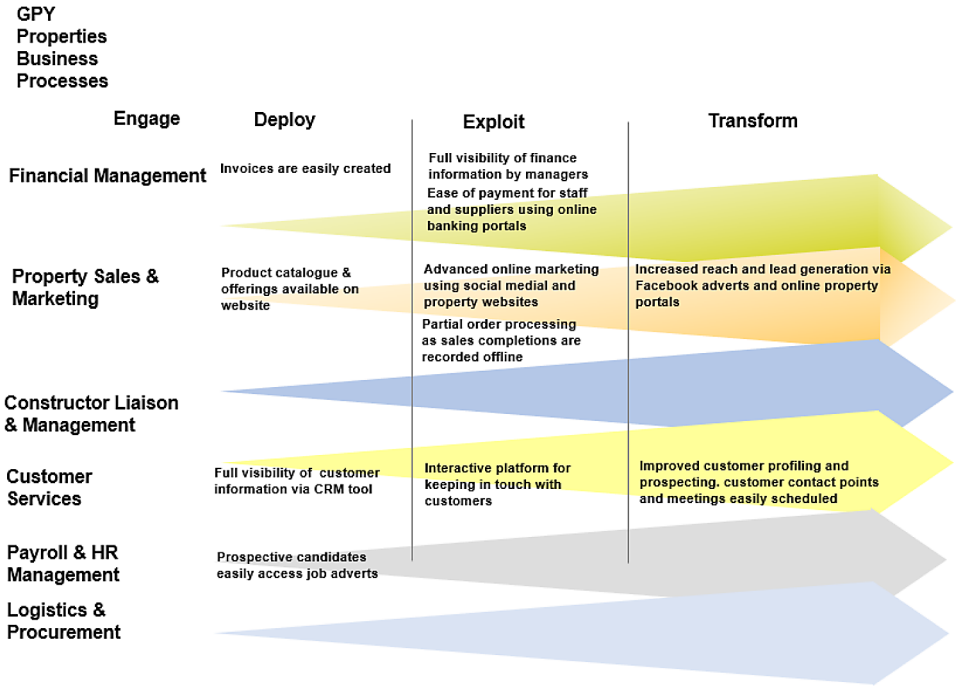
Maturity models have long been used to assess technology adoption. However, most of the existing models are not designed for assessment of digital transformation, which often involves multiple business processes and a balanced interplay of people, processes and technology. Building upon the provisional conceptual framework (pre-adoption/adoption/post adoption) and utilising detail emerging from the in-depth cases, a new model is put forward here to assess the level of digital transformation in Nigerian SBEs. This addresses RQ3, building upon concepts evident in other maturity models, notably the CPIT model discussed above.

The EDET model consists of four key stages - Engage, Deploy, Exploit and Transform, through which the digital transformation of an SBE can be assessed. The value derived from the digital transformation can vary from process to process, and the model allows individual assessment at process level. The Engage stage is when an organisation begins to explore the use of digital technologies in some business processes, and will typically be running early pilots and trials. The Deploy stage refers to investment in digital technologies in certain business processes with the active engagement of the company management. In the Exploit stage, there is increased investment in digital transformation initiatives across the majority of process areas, accompanied by staff training, and benefits delivery and payback are clarified, with strong leadership and support from company management. Finally, at the Transform stage, digital technologies and systems are fully integrated across the company, processes are radically changed, and the customer experience is enhanced by new digital services.

At GPY Properties, the EDET model indicates that the Sales and Marketing process was well supported by digital technology, with the use of Facebook and online selling and marketing transforming the process. Similarly, in the Customer Service process, the organisation had full visibility of leads and contact points to both existing and prospective customers. There was also improved customer profiling, and future contact points with a customer could be easily scheduled. Overall, the assessment indicated

that these two processes were at the Transform stage. Most other processes were at the Deploy or Exploit stages (Figure 5). Principally, GPY Properties has transformed how it interacts with its current and prospective customers through the use of Social Media, CRM, Online Property Malls and targeted advertising. In addition, within the Financial Management process, the company is now able to analyse customer default patterns, and uses this to inform its operations on property affordability. The firm did not have a clearly written digital transformation strategy document, and in the main just reacted to evolving business needs. However, according to the owner, these investments have had a direct and positive impact on the company's turn over.

*Figure 5. GPY Properties: EDET model assessment*

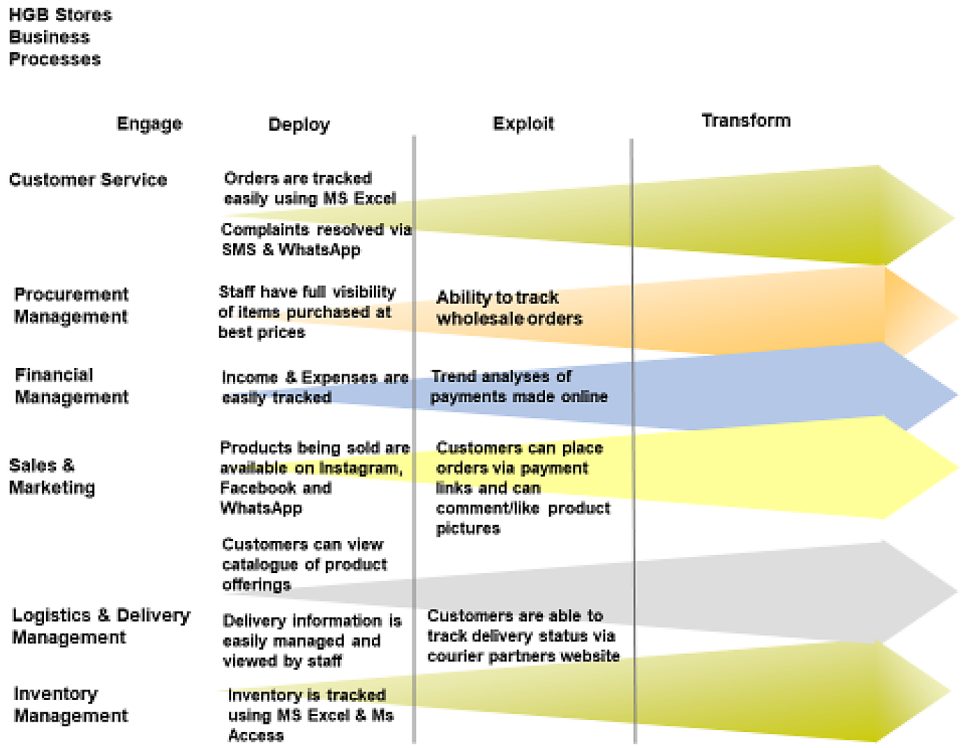



The EDET model indicates that four of HGB Stores main business processes were at the Exploit stage while the other two remained at the Deploy stage (Figure 6). In the Sales and Marketing process, customers can place orders online and expect the delivery of the service to be almost entirely digital. In the Logistics and Delivery process, and through a partnership with a third-party, customers and internal staff are able to track order statuses, delivery dates and time of their shipment. Within the Procurement process, staff members in the company can source wholesale items, compare prices, place orders and track deliveries entirely digitally.

Overall, digital transformation in this firm has been very much customer-focused. Although the firm is yet to fully achieve the Transform stage in any of its processes, as average daily orders grow, the expectation is that more advanced systems and technologies will be implemented. Transformational information that could be delivered to customers include product recommendations and personalised discounts and improved customer purchase trend analysis. There has been no clearly documented digital

transformation strategy to date, but the company owner is fully committed to the continued adoption of digital technologies to offer value to the customers.

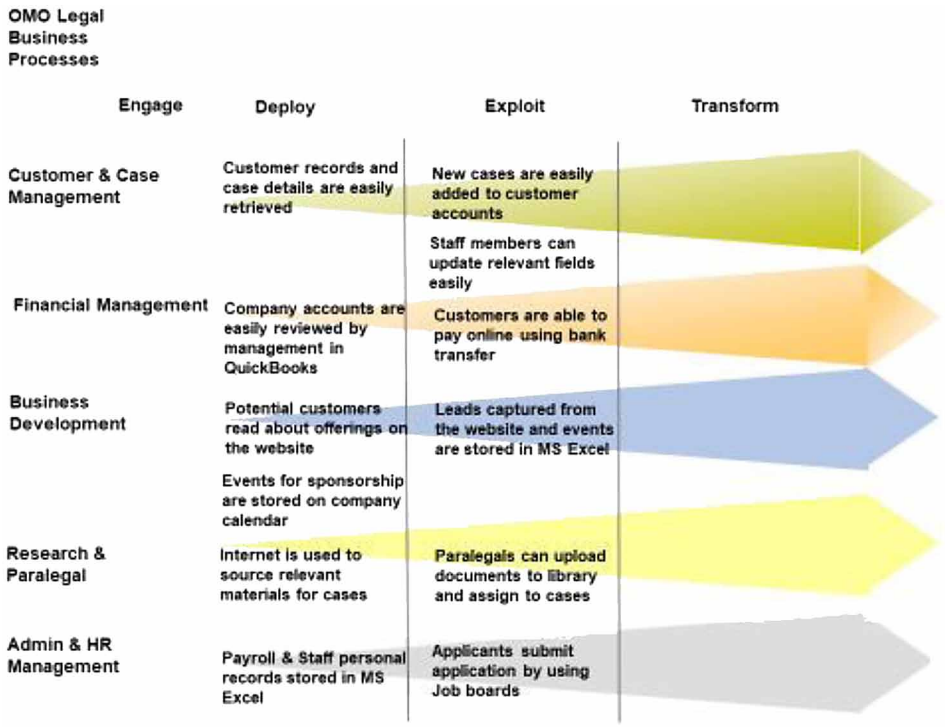
*Figure 6. HGB Stores: EDET model assessment*




Assessment of OJ Legal using the EDET model indicates that four processes were at the Exploit stage, with one process at the Deploy stage (Figure 7). Unlike in the other two cases, the digital transformation capabilities of this firm focused more on internal efficiency than on direct customer benefit. Within the Customer and Case Management process, staff members can now easily access information about a case, and retrieve and update customer account details. The digitalisation of customer and case records, through the deployment of the case management system, and the use of a website to showcase company services, has reduced customer waiting times, improved customer experience and made it possible for prospective customers to easily interact with the firm.

To improve both staff and customer experiences, the firm has automated and re-engineered several of its processes, which were previously paper-based. Most staff members in the firm have undergone appropriate training. Most processes remain at the Exploit stage with most value from digital transformation being internally focused, with the knock-on effect of improved customer service.

*Figure 7. OJ Legal: EDET model assessment*




## CONCLUSION

This chapter has examined digital transformation in Nigerian SBEs, using a simple conceptual framework derived from the literature, and building upon existing models. This has identified ten critical influencing factors in the deployment of digital technologies, and supported the development and application of a new model (the EDET model) to assess the status of digital transformation in SBEs. The case study analysis indicated that digital technologies were being successfully exploited in most process areas in all three companies, with some of the customer-facing processes being radically changed.

One of the primary advantages of the model is its ability to analyse the impact of technology deployment in each process area in a company, so that areas lacking digital technology innovation can be easily identified. Compared with other models, the EDET model is simple to use and, along with the critical influencing factors, can be used as a checklist and method of assessment to prepare, plan and monitor digital transformation strategies. Nevertheless, this study has some limitations. Firstly, in order to understand the extent of technology adoption in Nigerian SBEs, the research made use of a survey to gather data and help with the selection of case study companies; the survey was short, contained limited questions, and the survey sample was limited to Lagos. Secondly, critics have pointed out that one of the limitations of case study research is generalisability (Saunders et al., 2015), and often argue that the mere fact that a few cases share certain common ground does not mean that the whole population being studied is the same. Although this research adopted a multiple case study approach, it is still regarded as a limitation. Thirdly, qualitative research is often seen as subjective (Blaikie, 2007), with the possibility that multiple researchers can interpret the same data differently. In this research, while

a rigorous process was followed to reduce subjectivity, another research team may have interpreted the data collected in different ways.

At a recent conference of African ministers responsible for information and communication technologies (African Union Commission, 2019), Dr Amani Abou Zeid, the African Union Commissioner for Infrastructure and Energy, highlighted the need for African countries to work together to ensure connectivity and internet access for all Africans before 2030. She also emphasised the importance of adopting the Digital Transformation Strategy being developed by the African Union (African Union, 2020) as a blueprint and master plan for transforming Africa's economy and societies. At country level, in Nigeria, government agencies such as the National Information Technology Development Agency (NITDA) and the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), are actively involved in technology policy making and diffusion. It is hoped the findings presented here may be of interest and value to those pursuing such initiatives.

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## KEY TERMS AND DEFINITIONS

**Connect-Publish-Interact-Transform (CPIT) Model:** An early stage model developed by the UK's Department of Trade and Industry to assess e-business, particularly in small to medium sized enterprises. It assessed progress at individual business process level, a new dimension in comparison with previous models.

**Digital Transformation:** Generally seen as the application of digital technologies to an organisation's processes, products and assets to enhance customer value, uncover new revenue generation opportunities, improve efficiencies, and manage risk across the organisation.

**Engage-Deploy-Exploit-Transform (EDET) Model:** Model developed from this research study to assess digital technology deployment in SBEs.

**Small Business Enterprise (SBE):** Normally viewed as enterprises with less than 50 employees. There are also turnover limits but these evolve with time and inflation.

**Technology, Organisation, and Environment (TOE) Model:** Developed by DePietro, Wiarda and Fleischer in 1990, this is one of the most used frameworks for evaluating the adoption of technologies in business. The model includes three sets of factors that affect technology adoption of technology factors, organisational factors, and external environmental factors.