

# Strategic Investment Decision in High-Tech Business Environment: A Case of the Nigerian Banking Sector

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## Abstract

*The global financial crisis triggered major changes in the approach to the ways business are run with the recognition that in order to ensure survival, management strategies must include employing financial stability through high-tech operations as an additional objective. The banking sector is arguably one of the most active and largest of the services sector in Nigeria playing an important role in the monetary system and the financial frame work of the country. The business dynamics of this sector largely differs from other service sector as it is information technology driven. Information in high-tech environment generally referred to as STEM (Science, Technology, Engineering, and Mathematics) which the banking industry can be classified as is capital intensive and with the world seen today as a global village where transaction are no more done in isolation to a country alone but within a spider web form of connectivity, this drives banks to now requires a sound information technology system to cope with the changing demand. Adequate capital budget is needed to provide sound data management alongside data security for the system to run and meet this trend. This theoretical paper reviews the concept of capital budgeting in high tech environments and how science, technology, engineering, and mathematics can be applied by Nigerian banking industry to reduce costs, improve product quality, and enhance organizational performance and acceptance. The paper attempts to show issues and challenges faced by Nigerian banking sector under the new normal driven by high-tech information system that gives an edge over other competitors.*

**Keywords:** High-tech, New normal, App economy, Disruptors, Customer Service Systems.

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## Introduction

The need to improve services delivery has greatly increased over the years due to customer preferences and the emergence of competitive products which are aimed at increasing profitability in the banking sector in Nigeria. Banks are now being proactive in delivering improved products that can compete favourably with their peers anywhere. Banks uses science, technology, engineering, and mathematics to derive service delivery by re-engineering their services through the internet which

provides various platform to launch new products and enhance existing products by operational remodelling in such a way that they are better appreciated, understood, managed and easy to use. Lauren (2013) asserted that information technology enables greater integration and communication among businesses all over the world. As can be argued Computers and Information Technology (IT) plays a great role nearly in every aspect of human life today. In today business IT enables customer service systems (CSS) and various tasks to be carried in business. Lauren (2013) shows that an educated workforce is needed in STEM environment to maintain networks, create new software, and ensure information security and to keep IT systems running. In addition, the proliferation of smart phones has given rise to a new term “app economy,”. In other words, banks integrate their services in a more high-tech procedure to reduce the operational cost and sustaining their market share and profitability through strategic investment in high-tech IT environment, as shown by Alkaraan (2019) that Strategic Investment Decision-Making (SID) practices in corporation shows art and science of organizing and controlling organisational resources.

The banking sector is one of the most regulated industry in Nigeria, regulated by the regulations of the Central Bank of Nigeria (CBN) and others regulations from other regulators. This puts the banks on edge to equally meet the demands of various stakeholders from the government, investors to their customers. Banks do this by employing high tech information system in their operation and information gathering system from Management Information System (MIS) to Accounting information system (AIS) which are capital intensive in nature. Apart from the wages the next high cost in the sector is the information system MIS and AIS operations. Hence, banks must be proactive in implementing strategies, plans, reorganization and restructuring to prolong their products’ lives span. In the long run, the survival of the service industry depends on the appropriate management of financial resources.

Strategic Investment Decision (SID) is obviously a vital decision which will be backed by series of activity in business, fund can be wasted if the investment becomes uneconomic. The subject matter is difficult to understand given the mathematics cost in the fund involved as it builds on the concept of future value of money to be spent now on the investment. The capital appraisal techniques of net present value (NPV), internal rate of return (IRR), discounted payback and annuities are used in capital budgeting decision considering the timing of cash flows in the new investment. Brian (2019), asserts that capital budgeting is used by

corporation projects which will last one year or go beyond, with a long time duration and will involve much money, capital budgeting becomes a key for the project progress, cost cutting tool, risks guide, and the direction on the return on investment for company financial managers. Strategic Investment Decision (SID) must be carried out in such a way to support a high tech driven banking sector as services in general are technological driven with little or complete absence of humans. This theoretical paper reviews the concept of capital budgeting in high-tech environment and how it can be applied by Nigerian banks to reduce costs, improve product quality and enhance organizational performance.

The terminology high-tech has been difficult to define, as changes in technology continue to give the term different meaning, different authors at several time have attempt to define what can be referred to as high-tech. The definition of high-tech varies, as different group define it according to their usage. According the American Workforce Information Council (2015), high-tech sector can be defined as industries having high concentrations of workers in STEM (Science, Technology, Engineering, and Mathematics) occupations. While the American Bureau of Labor Statistics (2018) classified all jobs under or related to STEM (Science, Technology, Engineering, and Mathematics) as high-tech. These includes all engineers, banking, IT sector, scientists, secondary/college teachers, and managers in charge of units and all science, information technology and mathematics related domain (John, 2014). While Michael and Dalton (2016) argued that any sector that was two and a half times the national average (these includes industries in which at least 14.5 percent of jobs were in Sciences Technology Engineering and Mathematics occupations) as high-tech industries. That is both high-tech manufacturing industries and high-tech service industries. This study focuses on the banking sector, though there are other high-tech industry groups under service industries.

### **Literature Review**

Businesses generally find themselves in continuous fluctuating markets with limited factors of productions and competition for survival, which makes producers to imbibe continuous enhancements of commercial techniques in order to withstand competitive pressures. One of such continuous improvements is by reducing costs while improving product quality and efficiency (Hinckley, 1993). This may be achieved in the banking sector through the use of STEM to reducing cost and improve efficiency of operational processes. According to Piccoli and Lui (2016), Customer service systems (CSS) can give a competitive hedge in modern business

and at the same time, gives a continuous evolution and operational performance improvements when IT capabilities have been employed to enabled the use of multichannel service delivery strategies. IT-enabled customer service systems (CSS) is the new normal given the lockdown caused by the corona virus pandemic which resulted into doing business with little or no physical contact, Nigeria business outfits like multi-choice, Jumia, Konga, banks among others, took their business to a new level during the lockdown as they were able to carry on business using online customer service systems (CSS). CSS provides customers real time online service as the support staff were able to work from home given the industry high-tech information technology platform as the interface to deliver service. Institutions like the Institute of Chartered Accountant of Nigeria ICAN just like their peers in the developed world have since moved their operations such as examinations registration, assessment and committee meetings to online real time. With the future of business transaction driven by data and powered by artificial intelligent (AI) and Cloud supported by big data, where Quantum and High-Performance Computing will make business operations that were once impossible possible, understanding the trajectory of technology today is critical to survival tomorrow (Proust, 2020).

These organisations with science, technology, engineering, and mathematics related businesses were able to carry on business from education, sales to entertainment as a results of the capital investment in IT a vital part of high-tech industry. For most modern businesses, customer service system is a critical source of competitive advantage as argued by (Piccoli Lui 2014). Most recent work has shown that the role of information technology (IT) will be even greater in the future and the So-called omni-channel strategies provide a seamless customer experience through integrated processes enabled by IT (Piotrowicz Cuthbert son 2014). High-tech environment allowed customers to operate a self-service channel with several benefits, such as improved speed of service with customer having a better service experience which gives access to a transaction at any hour of the day. These increases customer satisfaction as shown in (Bitner 2001; Meuter et al. 2000). From the various argument it shows that high-tech in business yields better benefits when compared to the associated cost as evidenced in Meuter et al. (2000). Also Hitt and Frei (2002) show that business continue to implement customer self-service system technology to reduce cost and improve service delivery quality, improve revenue and customer retention technologies such as automated call centers reduce the cost of customer interaction within the firm's customers. This could lead to a significant expansion in overall service consumption and an increase in total distribution costs.

(Campbell et al, 2019). The overall cost-structure implications for high tech firms depend not only on how such technologies affect the marginal cost of providing service but also on how such technologies investment decision are budgeted and carried out. The technology at adoption may not really be ok as it may first disrupt customers' demand for self service in ways that increase the cost and overall customer service resources but in the long run the cost reduction effect are seen as customers get used to the system. Self-service channels during set-up and implementation are widely regarded as having huge capital budget but in the long run will have a lower marginal cost of service as reduction in physical contact with customers and substituting variable cost labour for relatively fixed-cost technology assets as shown in (Sasser, 1976)

Strategic Decision-making on investment with huge capital outlay is increasingly more complex today because of uncertainty in the business environment. Strategic Investment Decision (SID) in high-tech industry will usually involves huge sum and will be on a continue basis to meet up with new technology the volatility and the uniqueness of the business environment as evidenced during the lockdown, high-tech companies and those that has employed high-tech IT based transaction were still able to carry on business even in the new normal. Most capital projects involve numerous variables and control mechanisms which comprise organizational principles and intellectual capacity, professional regulations, standards policies and procedures, compliance and decision makers' inherent judgements and field experience. All these together with a thorough knowledge of contextual factors of the business environment as presented in (Alkaraan Northcott, 2013; Emmanuel et al., 2010; Harris et al., 2009 and Carr et al.,2010). Illustrated by estimating the fund and cash flows associated with an investment involving working capital requirements such as project risk, tax considerations, expected rates of inflation, cost of capital, scrap values and a good knowledge of the existing markets which will help in the ability to forecast projected revenues, measure the impacts of the project, and finally be able to determine the life cycle of the project.

Usually, SID making by big corporation last for many years and take a long duration to put in place given the amount of resources at play. Brian (2019) stressed that, with that much time and that much money at stake, capital budgeting becomes a key "go to" barometer for the progress, cost risks, and potential return on investment for company financial managers. Several studies have also been carried out on capital investment appraisal techniques in different business environment as shown in (Dobbs, 2009; Berry et al.,2009; Crittenden and Derregia, 2015).

Alkaraan (2019) examined SID making practices in large manufacturing firms, Miller and O'Leary (1997) shows the changes of capital budgeting procedure in an organization. Carr and Tomkins (1996) elaborated on the importance of non-financial considerations such as value chain analysis as it relates to strategic planning. In an SID environment specific adjustments are made to cope with the high risk associated with strategic investments with high outlays by shortening the payback period and increasing the rate of return (Stark, 1990; Dobbs, 2009). Most companies increase hurdle rates were some applications from the evaluation process are missing, such as real option approach (ROA) analysis (Stark 1990). Similar results reported regarding the use of high hurdle discount rate and low PB thresholds by Dobbs (2009). Crittenden and Derregia (2015) examined the consequences of irreversibility and uncertainty on capital budgeting practices. Northcott and Alkaraan (2007) asserts five strategic approaches which are ROA, Technology Road Mapping, Benchmarking, the Balanced Scorecard and Value Chain Analysis as the future strategic investment appraisal.

Sophisticated techniques for evaluation of capital budgeting have continued; more particularly, the discounted cash flow (DCF) has become the dominant evaluation method over other non-DCF techniques (Bennouna et al, 2010). Several studies have supported this view (Graham and Harvey, (2001); Jog and Srivastava (1995); Arnold and Hatzopoulos, (2000). There's much risk not to use SID, as unpredictability environment coupled with high risk and complexity defines the twenty-first century business environment. All players from investors to government regulators in a high-tech environment that requires using Science, Technology, Engineering, and Mathematics in daily business face a challenge task regarding the future factors involving social, economic, political, technological, legal, financial risk and uncertainty. This calls for both academics and professionals to give attention to managing business risk through SIDM processes (Bui and De Villiers, 2017).

This paper adopts the system theory as the underpinning theory. The theory was developed by Von Bertalanffy (1968). The theory emphasizes the value of incorporation of parts in order to solve problems that ordinarily cannot be achieved if the parts function independently. Systems theory posits that systems are made of interdependent sub-components, each working towards the attainment of an overall goal. In other words, the component parts harmonize one form of high-tech in operations, so as to attain the main goal of the overall system in this new normal where physical contact become less or eliminated. In applying this theory to

organizations with high-tech incorporated in their operations, technology is shown as the sub unit or component part of the overall system that is broken down into parts, understood, evaluated budgeted for and modified into a new operational mode that is expected to meet customers' preferences and enhance organizational performance in these era of this new normal. Strategic Investment Decision-Making (SID) must be aimed at high-tech operations since technology is seen here as a vital component in the banking operational system.

## **Discussion**

**Strategic Investment Decision in the in High-Tech Banking Operations.** In the context of a high-tech business some businesses were able to sustain their operations through online platforms, core staffs were able to attain to customers' needs through special dedicated numbers, through this banks were able to achieve lower costs through "substitution effect" were operations were migrated from costlier offline channels to online channel. Cost reductions are usually carried in two specific ways, first by centralizing labour. Jobs which could be performed by various branches were centralized through automation with information technology. Second, customers are given the platform which allows them to perform certain operations without physical presence at the banks. Both changes would result in a lower use of service resources and hence, cost per interaction will be reduced together with overall service costs (Campbell Frei, 2009). However, customer self-service channel helps to lower significantly the cost of interaction from the customer's perspective, since no mobility cost is incurred and no waiting in queues, also on the side of the bank greater operational cost would be avoided leading to a higher reduction in overall service transactional cost. This raises the possibility of a "volume effect," in which total transaction volume increases because of increased demand for transactions in the online channel more than offset any associated reductions in transaction demand in offline channels. Self-service technologies allow customers to control service delivery in a manner that more closely meets their needs (Dabholkar, 1991). In a high-tech environment were banks provides flexible platforms such as phone applications which provides customers with a multichannel setting to do a lot of banks related transactions such as payments of bills phone recharge, quick access to customer's services part form the traditional banking transactions of payments and the transfers of fund. Bitner et al. (2000) showed that increased customer control of the service production process may allow a customize portfolio. The applications of high-tech in service rendering greatly empowers both the banks and its customers, as the customers enjoyed

improve product quality and the banks in turn enjoys enhance organizational performance and acceptance.

The Financial Brand (2018) stated that Technologies will shape the future of banking as opposed to technology taking over, with high-tech environment the driving force in the future of banking is a sound SID which will redefine operations to be more competitive and responsive to marketplace needs. Atos (2018) developed a global technology radar that provides a perspective on the technologies anticipated for the future, which provided a short description of each technology for better understanding with the business impact of the technologies and the timing of integration. 10 technologies which will disrupt business in the futures are depicted in the figure 1.

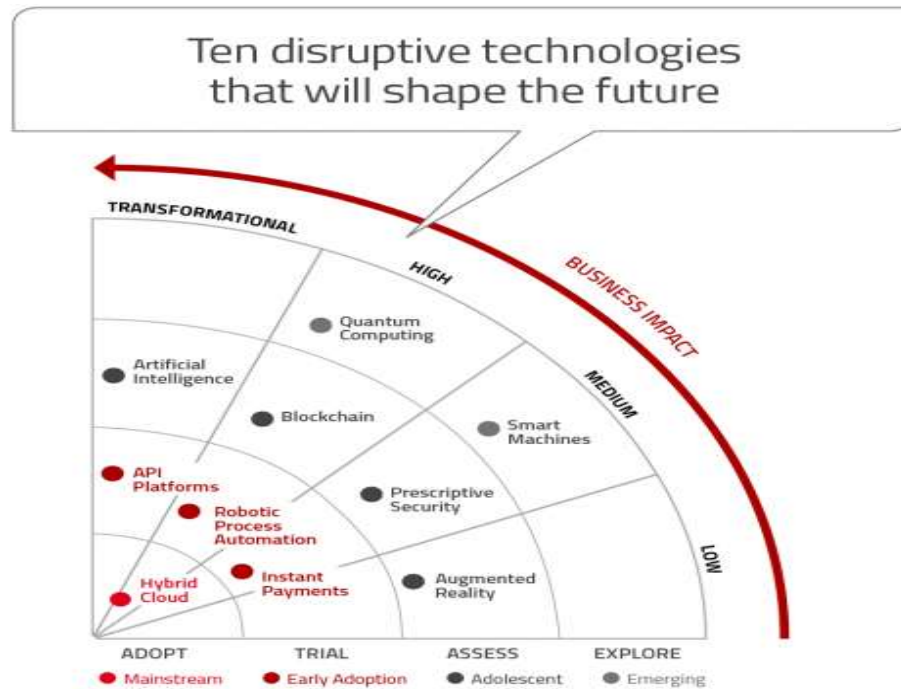


Figure 1

Source: Atos (2018)

Atos (2018) classifies these 10 disruptors into four categories with their stages of business impact as shown below;

“-Transformational technology which consist of Artificial Intelligence (AI)and Application Programming Interface (API), with AI applications at the adolescent stage i.e. being discussed more widely by analysts and thought leaders on its usage and accessibility to the banking sector to easy operations. While the API platform is at its trial stage with some early adoption where clients are starting to look for solutions.

-High technology which are Hybrid Cloud, Robotic Process Automation, Block chain and Quantum Computing. With Hybrid cloud there’s a clear need and many clients are implementing solutions through big data backed operations. While Robotic Process automation are already at the trial stage with clients already using it to search for solutions. Block chain which is at the adolescent stage where its discussed more widely by analysts and thought leaders and Quantum Computingis still Mainly seen in academia and specializedbusiness.

-Medium technology comprises of Instant Payment, Prescriptive Security and Smart Machine. Instant Payment at the trial stage is already in used in providing solution to operations while, Prescriptive Security at the adolescent stage being discussed more widely by analysts and thought leaders and the third under medium technology is Smart Machine which is used in academia and some specialized markets.

-Low technology is made up of Augmented Reality alone and it’s still being discussed by analysts and thought leaders”.

Banks which SID are focused towards these high tech item reduces cost to more than 50% and operations can be easy from a remote location other than the office. This gives the banks operational hedge during the lockdown. As quickly as possible past technology are being replaced with high-tech which combine digital technologies and the power of data to set new standards. The prioritization of SID in each of these technologies will vary based on the business model and strategic goals of each organization. According to PWC (2018) respondents say skills in their organization lag across a range of highly important areas, including cybersecurity and privacy, business development of new technologies and user experience and human-centered design. Worse, skill levels have declined even as the demands of digital keep advancing.”

### **Relevance of High-Tech in Today Organizations**

Part of the new normal is using technology in the total running of organizations, the corona virus came with it a new style of life changing the narratives from homes

to businesses. Things which were considered relevant were rendered irrelevant, business were kept running from homes other than offices, schools were run from homes and smart phones and other electronics devices kept away from schools in the past were returned to schools, restaurants and bars were reduced to take away services and even doors of place of worships were shut and congregational meeting were limited to online virtual meetings. The term app economy become the relevance term as business and all forms of meeting were done through several applications on our phones and computers, individuals and business had no choice but to go virtual or become irrelevant. High-tech incorporation spreads across sectors within STEM or related to STEM. Education, health, business, banks among others imbibe technology with high-tech criteria in their operations became the beneficiaries of the new normal given their high-tech environment with little to do on improvement.

The banking sector which were one of the pioneer and frontier of doing business through applications installed on hand held gadgets like phones, palmtops and laptops were the major beneficiaries as some banking hall staffs were seen as surplus to requirement. According to PCW, (2020) Digital capabilities and an effective allocation of resources will be key to meeting shifting demands. KPMG (2020) further asserts that COVID-19 may lead to a crisis in the real economy, but the impact on the banking system and on the bank customer relationship can also be defined as a 'positive discontinuity' for the purpose of digitization of the sector and the ability to offer an excellent customer experience. Banks and their branches are forced to encourage the use of high-tech channels located at the branches but operated from the head office. A more centric position with few staffs to provides services in an unusual way to meet customers demand. This phase would be particularly complex; with banks addressing and meeting customer needs by demonstrating real proximity with their customers not in the physical normal way but through a virtual means as the new normal so feared by many businesses turnout to be a blessing in disguised to banks customer relationship and commercial models by the use of high-tech interface. The clear understanding by banking operators of the gap in the provision of services, becoming more tangible than ever before with COVID-19, could make them even more inclined to accelerate the digital transformation path through partnerships and collaborations within the fintech community (KPMG, 2020). The Operational resilience and business continuity management of the banking sector demand capital investment in high-tech platforms which will play an important role in guaranteeing the business survival of the banks in critical time as such as the COVID 19 lockdown. The activation and

enhancement of robotics solutions or artificial intelligence by manufactures and service industries are the panacea for survival as cost are critically reduced. With the third world poor infrastructures the necessity to have an unpredictable availability of infrastructural resources will be key to harnesses the opportunity in the financial sector through applicable Cloud technologies.

### **Conclusions**

As the impact of COVID-19 spirals across the Nigerian economy, the banking industry is impacted by the associated challenges. Unlike the producers of consumables that are usually distributed across the value chain are unable to source for raw materials from both local and international suppliers, the banks still drive comfortably with technology term like the app economy, finch, robotics and artificial intelligence which drives the banking sector to still be able to provides services in the new normal just like the past normal at minimum cost, this was possible through SID in high-tech operations. COVID-19 which also resulted in a local lockdown that impacted wholesale, retail, and distribution operations. Consequently, has impacted budget in the banking industry and as a result, led to increased lay-off and redundancy of operational staffs as they become surplus to requirement not because of the absence of profit, but cost is reduced due to the SID in high-tech operations. Volume of online and app transactions continue to increase and the banks increase the budget for more technology.

Reacting to the effect of SID on the banking operations and services measures geared at sustaining sound services to consumers innovative measures include the use of Automated Teller Machines (ATM) to dispenses cash to customers, strategic partnerships between road side pay intermediaries who receive and give cash with the use of point of Sales machines (POS), mobile apps and online platform for payment and cash transfer among others enables the banks to continue to run as usual and making profits on bank charges for every operations.

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