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Transforming Nigerian Maritime Business Operations through Digital Strategy Inclusion

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Abstract

Experts' reports on Nigeria's economic analysis show that the maritime sector in Nigeria creates socioeconomic opportunities and contributes significantly to the gross domestic product of Nigeria but misses digital opportunities to capture more value. This article conducts a semi-structured interview with leaders and managers of maritime enterprises in Lagos, Nigeria, through content analysis, to explore how incorporating digital strategy into the business processes of Nigerian maritime enterprises can change the industry to obtain more value. The result showed inclusive values of digital strategy inclusion in transforming Nigeria's maritime business operation through integrating technology-based solutions—both soft and hardware and other digital implements. With this study, I make a step to advance discussion on technology adoption and digital strategy inclusion in maritime business operations in Nigeria for operational efficiency and to address its related influences on business activities in Nigeria. Continuous integration of technology-based solutions, workforce digital upskilling, and strict intervention and support by the government and other stakeholders directed at diminishing the impediments to digital strategy inclusion in Nigerian Maritime businesses, drive compliance, and influence change in process and management of the maritime business operation in Nigeria were recommended. The result may reinforce the awareness of business leaders, institutions, and other practitioners in the maritime sector on the essentials of digital strategy inclusion in business, help bridge the information gap in the literature, and as a decision support tool for business management and practices.

Keywords

Nigerian Maritime Business, Technology Adoption, Digital Strategy Inclusion, Integrated Digital Process, Business Management, Business Transformation, Business Sustainability

1. Introduction

Nigeria's maritime sector, which comprises activities in the shipping, import and export, freight forwarders, cargo (dry and wet product) transportation, and other related activities (Arogundade & Nwani, 2018), contributes significantly to the gross domestic product (GDP) of Nigeria's socioeconomic opportunities and economic progression (National Bureau of Statistics in Nigeria, 2019). Projections by the Businessday Research and Intelligence Unit and elev8 (2020) revealed that the Nigerian economy would grow by $8.79 billion by the end of 2023 if businesses could focus on innovative products and services leveraging digital tools to reskill and upskill the national workforce and business process. While some business leaders and managers in Nigeria and the maritime sector seem to keep up with digital adoptions and transformation agendas to capture more value, many are not (Onwuegbuchunam et al., 2021; Zubairu et al., 2020). Instead, struggle with unchanging business culture, digital skill gap, limited information, and inability to adapt and respond to a technology-led business strategy relevant to maritime business operations in Nigeria. Thus, this study was imperative to explore digital strategies business leaders and managers may include to manage and transform maritime business operations in Nigeria to capture more value and minimize the increasingly detrimental effects of maritime activities in Nigeria.

1.1. Problem and Context

Nigeria has a high concentration of maritime activities, as significant international traffic pass through Lagos, Nigeria (Olajide et al., 2018). However, there is continuous business closure, job loss, and environmental and social inadequacies in Nigeria, given the effect of maritime activities in Nigeria. A significant number of businesses operating in the seaport areas in Nigeria closed operation as of 2018, and 12,000 jobs were lost, with a projected 6500 jobs and $844 million in business revenue lost by 2025, given the intractable gridlock on roads within the seaport communities in Nigeria (Arogundade & Nwani, 2018; Iroham et al., 2019; The Guardian Nigeria, 2018).

Studies associated the cause of congestion and the effects on businesses with failed regulatory and environmental policies, logistics flaws, and non-inclusion of strategic and technology-led approaches in the business process of maritime businesses in Nigeria (Arogundade & Nwani, 2018; Chilaka, 2019; Onwuegbuchunam et al., 2021). In a series of forums and publications (see **Appendix A**), residents in the seaport areas in Nigeria and business stakeholders continued to call for a solution to the problem of maritime activities in Nigeria (TVC News Nigeria, 2020).

Data on technology adoption and the use of digital strategies in Nigeria business revealed a low level of digital literacy and a digital skill gap among some business leaders and managers in Nigeria to transform businesses (Oke et al., 2020; World Bank Group, 2019; Zubairu et al., 2020). The literature revealed that

a significant number of business leaders in Nigeria's maritime businesses focus mainly on exploring business opportunities and the scale of serving the large population in the country with a low appetite for technology adoption and less attention to the realities and values in business digitization (Chilaka, 2019; Fagbe et al., 2020; Onwuegbuchunam et al., 2021). Consequently, a low adoption rate of digital strategies, slow documentation processes, delays in cargo clearance and container examination procedures, congestion at the seaports and on Nigerian roads, inability to access offices for active business, and business closure characterized maritime business activities in Nigeria (Arogundade & Nwani, 2018; Onwuegbuchunam et al., 2021). The need for digital strategies placed maritime businesses in Nigeria at a competitive disadvantage among their digitized counterparts, with an attendant adverse effect on the ability to leverage digital strategies to capture business values. The struggle for operational efficiency and the risk of business closure in Nigeria remains inevitable.

While some business leaders and managers in the maritime sector in Nigeria are giving to digital adoptions (Onwuegbuchunam et al., 2021), a significant number are still looking up to the ability and strategy to accelerate digital strategy inclusion to manage and transform their business operations, drive business growth, and achieve sustainability goals (Ajayi, 2020). Existing studies (Onwuegbuchunam et al., 2021; Oyewole, 2020) focused on technology adoption in Nigerian port terminal operations and the influence of work automation on port performance. Studies on an inclusive digital strategy to extract value from evolving technologies to cover the entire cargo handling process and management of maritime businesses in Nigeria are deficient. Although digital technologies have birthed some critical business opportunities and solutions, Nigeria's maritime business sector has yet to thoroughly evaluate and exploit digital solutions' potential and include digitalization strategies to capture more value (Onwuegbuchunam et al., 2021).

1.2. Purpose of Study

The purpose of this study was to explore digital strategies that business leaders and managers in the maritime sector may include to transform Nigerian maritime business (NMB) operations and in specific exploration:

1) Why digital transformation in NMB operations?
2) What to transform in NMBs.
3) How to digitally transform NMB operations.
4) The prospects of digital strategy compliance in the NMB sector.

With this paper, I make a step to advance the discussion on technology adoption and digital strategy inclusion in maritime business operations in Nigeria. Business leaders, managers, policymakers, and practitioners might benefit from this study by deploying the findings to retool their skills and strategies, redesign their leadership styles for optimal business performance and operational efficiency of maritime businesses in Nigeria, and minimize the related detrimental

effects of maritime activities in Nigeria.

1.3. Research Question

What digital strategies may business leaders and managers in the maritime sector include to manage and transform maritime business operations in Nigeria?

1.4. Conceptual Framework

The conceptual framework for this study includes Wade's (2015) digital business transformation (DBT) concept of change in the framework of why, what, and how to transform business and realize the value of digital technologies. Wade (2015) defined the DBT concept as a "change through the use of digital technologies and business models to improve performance" (p. 3). Kane et al. (2015) argued that technology only provides value by strategically integrating other components to drive digital transformation goals. Based on Wade's DBT concept and Kane et al. perspective, I proposed an integrated digital business transformation process (IDBTP) concept, as illustrated in **Figure 1**, integrating the why, what, and how of Wade's DBT and other implements like digital leadership, team, culture, infrastructure, and business environment to drive digital transformation goals in maritime business operations in Nigeria.

As started by Wade, the justification of why transformation in business motivates the inquiry of what to transform and what to transform provides a roadmap of how to transform. **Figure 1** illustrates that the connection of why, what, and how to transform formed the DBT process and the DBT process with the integration of other digital implements formed the IDBTP conceptual framework adopted in this study to drive transformation of NMB operations.

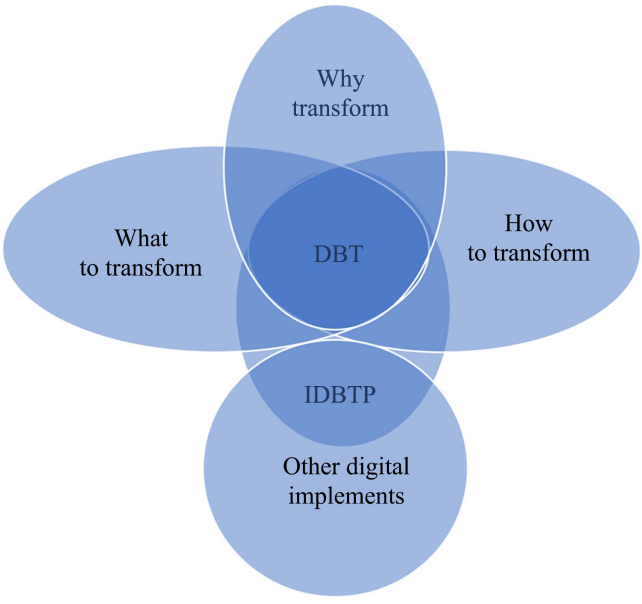

Figure 1. Conceptual framework for Nigeria maritime business transformation. Note. This diagram illustrates the conceptual framework that framed this study.

2. Literature Review

Digital solutions are constantly changing the world and the way of work. The evolution of digital technologies alters business conduct and interactions, broadens the scope of business changes, and places businesses on the radar of digital transformation (Tunç & Aslan, 2020; Wade, 2015). Scholars defined business transformation as a change in business model and process to improve performance (Wade, 2015) or a fundamental change that pivots reinvention of things in business (Freudenreich et al., 2019). The definitions point to business transformation as an inclusive change that exposes businesses to reinvention and transition. The reinvention can be done in operation and process, manually, or through business digitization (Freudenreich et al., 2019).

Business digitization presents opportunities for a business operation to achieve transformational goals (Tunç & Aslan, 2020; Wade, 2015). It creates an advantage in cost, time-saving, and value creation (Loebbecke, 2019; Oyewole, 2020; Rachinger et al., 2019). It presents new ways of thinking, diversity, and multicultural team building to drive better business results (Loebbecke, 2019). Business digitization through an inclusive strategy helps a business shift from its existing fit to a new and improved fit (Wade, 2015).

2.1. Digital Strategy Construct

Many definitions exist for digital strategy. Some scholars view Digital Strategy as a business plan inspired by the power of high-performance and easily accessible technologies in providing unique and integrated business functions that can adapt to changing business conditions to achieve business objectives (Becker & Schmid, 2020; Warner & Wäger, 2019). Sebastian et al. (2017) defined digital strategy as the vision of doing business differently through technology adoption to provide an integrated business function that adapts to ever-changing business and market conditions. Digital strategy is, therefore, a combination of technological tools and well-developed business plans to tactically drive business success.

Using digital strategies to transform business operations provides value-producing opportunities (Nwaiwu, 2018). Rachinger et al. (2019) revealed that implementing digital technologies and strategies pivot business success related to experiencing optimized resource utilization, reduced costs, increased employee productivity, and work efficiency. The lack of digital strategies in a business process negatively impacts business performance and competitiveness in the marketplace (Nwaiwu, 2018; Wade, 2015). The need for digital strategies placed maritime businesses in Nigeria at a competitive disadvantage among their digitized counterparts, with an attendant adverse effect on the ability to leverage digital strategies to capture business values. For example, a marked trend of job and revenue loss in Nigeria and an increased business closure rate was acknowledged in the literature by Arogundade and Nwani (2018), consequent to a lack of digital strategy in the business process of NMBs. "Approximately 40% of businesses located around the seaport areas in Lagos Nigeria have either relocated to

other areas, scaled-down operations or completely closed down," and the cause, not unrelated to the technology adoption gap and non-inclusion of digital strategies in the NMB process and management (Arogundade & Nwani, 2018: p. 4; TVC News Nigeria, 2020).

Accordingly, Onwuegbuchunam et al. (2021) tried to understand the impact of technology adoption in the maritime business sector in Nigeria, focusing on Nigerian Ports Terminal Operations. Onwuegbuchunam et al. evaluated the level of ICT application in Nigerian Ports Terminal operations. They found that the application of ICT strategies in the business operation of maritime companies in Nigeria will be resourceful in transforming maritime business operations in Nigeria. They highlighted some constraining factors responsible for the non-inclusion of ICT in Nigerian port terminal operations. Such factors, they explained to be low ICT investment budgetary allocation, lack of e-skilled workforce, poor infrastructure, lack of integrated ICT facilities operated by other port stakeholders, and absence of Port Community Systems network (PCS) linking all other relevant interests connected to terminal operations within and outside the shores of Nigeria.

Sanchez and Zuntini (2018) reviewed organizations' readiness for digital transformation in the changing business environment to formulate a framework that explains the capabilities necessary to respond to the dynamism of the digital era in businesses. Relatedly to Onwuegbuchunam et al. (2021), Sanchez and Zuntini found that some external and internal conditions influence the path to digital transformation in business. Sanchez and Zuntini pointed out that relevant digital skills, platforms, and digitally-enabled systems are drivers of digital strategy inclusion in businesses. Adequate digital background drives business modernization, digitization, and transformation (Kostić, 2018). Inadequate digitization of business processes negatively impacts business transformation objectives (Westerman et al., 2014).

2.2. Digital Strategy Role in Business Management and Transformation

Adopting digital strategies in business promotes a wide range of innovative practices in business management and modernization (Goerzig & Bauernhansl, 2018). The digitization of the business process could enable automated control and risk profiling to enable risk optimization in business. Digitization of the business process helps to improve time management and information system, given that the automation of information flow systems in a digitalized business process can enhance the decision-making process and corporate control of business operations (Olanrewaju & Willmott, 2013). Digital strategy pivots positive change in service delivery, achieving economies of scale, business transformation, and performance efficiency (Agboola et al., 2019; Agwu & Murray, 2018; World Bank Group, 2019). Relatedly, Vaska et al. (2021) established that digital transformation positively impacted value creation and emphasized the need for

business leaders to deploy digital strategies to find growth opportunities to remain innovative, competitive, and sustainable. Digital transformation presents business-changing opportunities (Sebastian et al., 2017).

Given the strategic imperativeness of digital strategies in the business management and transformation agenda, it is vital that business leaders explore digital strategies to transform businesses, manage, and improve business processes. Business leaders can leverage digital strategies to build digital capabilities, rethink, and renew their business processes, customer experience, and business models (Becker & Schmid, 2020; Wade, 2015; Vaska et al., 2021; Westerman et al., 2014). Business leaders who included digital strategies in the business processes provided a digitally enabled platform and practices that improved business performance (Zubairu et al., 2020). Business leaders who exclude digital strategies in business processes expose their businesses to miss value-producing opportunities to transform the business and increase efficiency (Schneider & Imai, 2019). Including digital strategy in business stimulates innovative activities, business transformation, efficiency, and sustainability (Agboola et al., 2019; Agwu & Murray, 2018; Goerzig & Bauernhansl, 2018). Digital strategy innovates rapidly, helps products and services gain market share, and businesses to achieve their transformation agendas (Wade, 2015).

2.3. Capabilities and Architectures for Digital Strategy Inclusion

The business architecture is the blueprint of the enterprise that provides a common understanding of the organization to align tactical business demands with the organization's strategic objectives (Schneider & Imail, 2019), while digital capabilities define the business digitization or digitalization process (Tunç & Aslan, 2020). Sia et al. (2016) discussed that business leaders need to develop the right digital capabilities and architecture to respond to the dynamism of the digital era to incubate and accelerate emerging digital innovations to deliver business values. The lack of digital capabilities and architectures adversely impacts the value realization of digitization initiatives, and the development of digital capabilities enhances business digitization and digital transformation readiness (Binuyo et al., 2019; Sanchez & Zuntini, 2018).

In the view of Tunç and Aslan (2020), digital capabilities in the business context are themed digital congruence. Digital congruence Tunç and Aslan explained as people, culture, structure, systems, tasks, and processes. Kostić (2018) discussed that the essential components of digital capabilities and architects that deliver business value in the business digitization process include, among other things; 1) having exemplary digital leadership, 2) the right digital team, 3) the right attitude, 4) the right digital culture, 5) the right technology and infrastructure, and 6) digitally enabled systems.

Digital architectures, including software and hardware solutions, are the vital tools needed for organizations' modernization and realization of the potential of digital investments (Olsen & Trelsgård, 2016). Warner and Wäger (2019) as-

serted that business leaders with dynamic digital architectures and capabilities delivered business digital transformation values. Sebastian et al. (2017) stated that such architecture entails defining the right digital solutions and emerging technologies, building technical support and infrastructures to facilitate operational excellence, and adopting digital platforms and architects that enable rapid innovation and responsiveness to new market opportunities. The alignment of digital capabilities and architectures with strategic thoughts by maritime business leaders to improve maritime business operations and deliver values is essential.

3. Research Methodology

An exploratory multiple-case study approach was adopted to provide an in-depth insight into the digital strategy inclusion and transformation processes. The literature review comprises a review of peer-reviewed professional and academic literature on different aspects of digital strategies related to the study's phenomena. Data collection was through semi-structured interviews, document reviews, and reflective field notes. An interview guide (see **Appendix B**) guided the interview. The interview participants were the top executive management officers (business leaders) and managers of five selected maritime companies. The companies selected were those that met the listed criteria and the criteria included those in the maritime industry within Lagos Island, Tincan, and Apapa areas of Lago, Nigeria, have been in operation for at least three years, and had successfully implemented digital strategies to transform their businesses. Those that transitioned from manual processes to digital processes in their business operations and included both software and hardware technologies for process improvement and architectural built.

To ascertain those that met the listed criteria, I referred to the updated list of shipping companies, terminal operators, and clearing & forwarding companies licensed by the Nigeria Ports Authority, Nigerian Maritime Administration and Safety Agency, and Customs to engage in maritime activities in Lagos, Nigeria and the renewals to identify those in operation within the cut-off years of 2018 to 2021. I also referred to the published annual returns of the participating companies within 2018 to 2021 to review the CEO's note on strategies deployed to achieve their milestones to determine those that included digital strategies in their business process. The document review included digital process supporting documents, technology adoption and updates, and digital process sustainability plans. Field notes included reflective notes taken during the interview.

The study was conducted in Lagos Island, Apapa, and Tincan areas in Lagos, Nigeria, given that Lagos is the home for maritime activities in Nigeria as over 70.61% of international traffic and 70% of total National cargo freight pass through Lagos, and significantly impacted by the effects of maritime activities in Nigeria (Office of the Lagos State Government, n.d.; National Bureau of Statistics in Nigeria, 2019; Olajide et al., 2018). Apapa port remained the leading port

of operation in Nigeria with transaction values of about N1.3trn, followed by Tincan port with N701.0bn in 2019 (Onwuegbuchunam et al., 2021).

The study population was purposefully sampled. I explored the digital strategies used by the five selected companies within the maritime sector in Lagos Island, Apapa, and Tincan. The selected companies were treated on a case-by-case basis. CMPY 1 to 5 abbreviation was used to represent the sampled companies, and P1 to P20 to represent the participants. **Appendix C** reflects the demography of the participants. The views of 20 participants from the selected companies with about 4 participants from each company were explored with nine interview questions. The interviews explored the perspectives of the participants on the relevance of digital strategy (why transform), areas requiring transformation (what to transform), and processes (how to transform). The challenges and success factors of digital strategy inclusion in NMBs and the prospect of digital strategy compliance in the NMB sector were also considered. The data collected were transcribed and coded for analysis. The participants were engaged through member checking to certify the accuracy of the transcript before data analysis.

4. Data Analysis, Findings and Discussion

The data analysis in this study was through content analysis, given the need to generate codes inductively from research participants' recurring statements. Codes and themes were developed to interpret the data and to discuss the findings. The coding was according to the text lines and emergence narratives. The codes were placed into categories and common themes as the significant headings for reporting the findings. The themes were aligned with the study's conceptual frameworks of why, what, and how to transform NMB operations in presenting and interpreting the results.

4.1. Why Digital Transformation in Nigeria Maritime Business Operations

The why transform question is the primary point of business transformation as the answer justifies transformation (Wade, 2015). The why of digital transformation in Nigeria Maritime Businesses (NMBs) is the understanding of the relevance, roles, and benefits of including digital strategies to transform maritime business operations in Nigeria. In the framework of why digital transformation in NMB operations, the values of digital strategy inclusion in NMB operations were identified.

The Value of Digital Strategy Inclusion in NMB Operations

With the digital era revolutionizing the ways businesses operate, business leaders seek to adopt innovative strategies to enhance business operations. Digital strategy creates value in the business by applying digital resources in business operations (Warner & Wäger, 2019). Adapting to digital strategies may help place NMBs in competitive advantage as a significant number of the participants

stated that adapting to digital strategy helped differentiate and put their business at an edge over their counterparts less inclined to digital strategies. The participants highlighted operational efficiency and timely service deliverable as the inclusive value of digital strategy inclusion in their business process. Value creation in NMBs may improve with the inclusion of digital strategies in the business operations, as 100% of the participant affirmed that positive changes in value creation witnessed in their business stemmed from digital strategy inclusion in their business process.

In the study's findings, technology adaption in the business process was seen as resourceful in enhancing business functions. As 100% of the participants emphasized, digital technologies helped remodel their business function, created new business opportunities, promoted digital skill acquisition, and enhanced operational efficiency, competitive business edge, readiness for the digital future, and the overall value chain of maritime business operations in Nigeria. The participants (P5, P17, and 19) pointed out that the automation of their business processes through digital implements has been resourceful in meeting their work demands and customers' expectations related to real-time operational efficiency and improved service delivery. The findings collaborated with Kobus et al.'s (2018) emphasis that digital strategy through lean IT management (LIM) eliminates activities that consume time and resources in the organization without creating value. By adapting to digital strategies, NMBs will benefit from technology facilitation and transformational values to improve maritime business operations in Nigeria.

Digital strategy inclusion was also seen as a business management tool. The result revealed that NMB leaders used digital implements, digital leadership, team, culture, structure, enabled-digital systems, and software and hardware solutions to manage and transform their business operations. It was evident in the results that NMB leaders that implemented digital strategies optimized their business processes and strengthened their business management strategy to realize the values of business digitization. Thus, they connected with the workforce more creatively, made decisions based on digitally analyzed data, reduced information exchange costs through collaboration with other organizations, improved information flow, and streamlined operation processes for efficiency. Business leaders use digital strategies to manage and address the challenges of traditional-based and manual data management systems (Onwuegbuchunam et al., 2021). The participants pointed out digital applications as resourceful in managing traffic, port logistics, trucks, ship vendors, chandlers, and avoidable delays in shipping operations. Similarly, tracking shipments, container examination procedures, and documentation processes such as manifest submission and clearances are better with online processing than manual processes. The results signified that digital strategy adaptation helps in data management, timely information processing, business communication, planning, and ship operation management.

Time management and diminished logistics flaws are other inclusive values identified by the study accrued to digital strategy inclusion in the NMB process. By integrating logistics management solutions in the NMB process, as confirmed by P8 and P12, value creation may extend to eliminating time wastages, reducing logistics flaws, and facilitating a better tracking and truck call-up system in the entire cargo handling process and supply chain management in NMB sector. The study results indicated that adapting to digital strategies provided a better logistics plan through digital call-up systems and addressed the challenges and delays associated with manual processes in shipping operations. The findings revealed that adapting to the digital strategy could provide NMBs with a better logistics plan for ship-to-ship, ship-to-land, and land-to-ship operations through electronic data exchange applications and logistics software for digital call-up systems compared to the manual process. Transactions and attending to business demands could be achieved at a faster speed and turnaround time with the adoption of digital strategies. A massive volume of information could be processed in a timely and cost-effective way without delays.

As Onwuegbuchunam et al. (2021) pointed out, technology adoption in maritime business operations is vital in restructuring and reshaping business activities and addressing the challenges of using traditional-based and manual data management systems to process and manage information. Digitizing the business process can reshape every aspect of modern business (Olanrewaju & Willmott, 2013). Digital strategies inclusion in NMB operations could facilitate seamless and timely shipping and cargo document processing, customs clearance, booking instructions, and logistics procedures to ensure efficient service delivery. Digital strategy inclusion in NMB operation may help reduce operational flaws and other maritime business success limiting factors in Nigeria.

Relatedly to McKinsey's analysis (Olanrewaju & Willmott, 2013) on How Digital Process Can Reshape Every Aspect of Modern Enterprise, the maritime sector in Nigeria may need the digitization of the business processes to reshape every aspect of business operations. Business leaders who decline to adopt new technologies to articulate digital strategies lag in capturing the value of digital transformation in business (Goerzig & Bauernhansl, 2018). The maritime business sector in Nigeria essentially needs a digital strategy to:

Keep pace with the changing business world. Digital transformation drives the digital transition of businesses and helps businesses shift from their existing fit to a new and improved fit (Wade, 2015). The maritime business sector in Nigeria needs digital transformation to keep up with the digital shifts and changes in the competitive landscape. The maritime business sector must keep pace with the changing business world to capture business values and remain competitive. The NMB sector needs business process transformation to fit into the digital business ecosystem.

Reposition for growth. The participants emphasized the need for NMB leaders to capitalize on the rapidly growing digital economy to reposition the maritime

business sector for growth. Digitally transformed organizations are more profitable than their non-transformed competitors within the same industry (Westerman et al., 2014). Westerman et al. discussed that business leaders leverage digital transformation to build capabilities to remodel their business and drive efficiency in their existing processes and business growth. Ezeokoli et al. (2016) also attributed the digital business transformation to the need for profitability, revenue growth, customer satisfaction, operational efficiency, business agility, employee productivity, and competitive advantage. It was evident in the result that Nigeria's maritime business sector needs digital transformation to enhance customer satisfaction, increased operational efficiency, business agility, productivity, competitive advantage, revenue, profitability, and growth.

Mitigate the risk of losing access to significant opportunities. The maritime business sector needs a digital strategy to mitigate the risk of losing access to significant opportunities accrued to the digital transformation of businesses. Businesses that lack digital transformation suffer exposure to missed value-producing opportunities to increase efficiency and capture business values (Nwaiwu, 2018; Schneider & Imai, 2019). The result did not reveal anything different from the need for the NMB sector to transform to a technology-led way or risk losing access to potential market opportunities.

Adequately manage business interactions and transactions. Pagani and Pardo (2017) and the participants noted the importance of digital solutions in managing business interactions and transactions. It is essential to equip the NMBs with digital solutions and emerging technologies to transform the business processes—interactions and transactions to enhance operational efficiency. Transforming the NMB sector with digital solutions may improve service provision, transaction volume, and customer satisfaction, enhance operational efficiency, and minimize the detrimental effects of maritime activities in Nigeria. Based on the findings, NMBs would have considerable value to extract from digitally transforming business processes and operations.

4.2. What to Transform in Nigerian Maritime Businesses

The study identified different areas that need digital transformation in NMBs. The findings revealed that business structure, leadership, process, workforce, culture and practice, infrastructure, and customer experiences are the key areas requiring transformation in NMBs, given that transformation in these areas will affect other aspects of the organization in realizing digital transformation goals. The participants highlighted the engagement of digitally inclined leaders and teams, investment in skills and capabilities essential to achieving increased performance, and competitive advantage pertinent to digital transformation in NMBs. As advocated by the participants, digital awareness by the workforce and sensitivity to digital culture and practice are essential components in building a digital team, adaptive workforce, managing, and achieving digital transformation goals in NMBs. Given the insight gained from the participants and literature

review, the NMB sector may need digital transformation in the aspects of:

4.2.1. Leadership Style

There is a need for agile and scalable digital leadership abilities to respond to the dynamism of the digital era (Becker & Schmid, 2020). The leadership style adopted for business management influences the organization's performance (Northouse, 2016). A transformational leadership style inspires optimal performance and organizational efficiency (Northouse, 2016). Relatedly, there is a need for business leaders in the Nigerian maritime sector to change the way of thought related to business management and process change, interaction with the team, customers, partners, and suppliers to capture business values leveraging emerging technologies. The need for business leaders with the competencies to key into the global vision and the ability to provide direction for businesses to take advantage of opportunities presented by digital technologies is essential in the leadership frame of maritime businesses in Nigeria.

4.2.2. Business Process and Operation

Business process digitization is an essential part of business transformation. A significant number (60%) of the participants emphasized digitalization of their business process as the primary factor contributing to the successful implementation of digital strategies in their business because digitalization of the business process impacted other aspects of their business function. This result collaborated with the report of Kostić (2018) and Warner and Wäger (2019) that realizing business transformation objectives requires business digitalization, strategic initiatives, digital capability, and proactive measures to deliver business values. This finding also confirmed the assertion of Wade (2015) that the use of digital technologies in the business process drives digital transformation and helps a business shift from its existing fit to a new and improved fit. Business leaders digitize business processes to enhance customer experience and satisfaction, which may lead to revenue increase, profit, and chances of business sustainability (Becker & Schmid, 2020).

The studies of Arogundade & Nwani (2018) and Onwuegbuchunam et al. (2021) identified slow documentation processes, delays in cargo clearance, container examination procedures, and congestion on roads as characterizing maritime business activities in Nigeria. The maritime business sector in Nigeria needs to transform the business processes, products, and services in a digitally oriented way. The maritime business sector in Nigeria needs business process innovations facilitated by technologies' disruptive potential to transform and interact in new ways to create value. Emerging technologies designed to obtain high performance and competitive advantage to reduce waiting time and logistics flaws in the business process and adapt to the business process that can foster efficiency and value creation are needful in the Nigerian maritime sector. Technology adoption and digitalization of the business process were seen as re-

quisite factors to drive digital strategy implementation in NMB operations.

4.2.3. The Workforce

The insight gained from the problem and context of this study revealed the digital skill gap in many businesses in Nigeria. Relatedly, during the conference on Enabling Digital Nigeria, Microsoft (2020) noted inadequate digital skills as a significant impediment for businesses willing to transform digitally in Nigeria. The participants identified digital upskill of the workforce as pertinent in the maritime sector's business operations and transformation agenda. The workforce should be inclusive in the digital transformation journey.

4.2.4. Business Practices

About 70% of the participants believe that digital strategy remodeled their business process and propelled a wide range of innovative business practices. The redefinition of the B2B and B2C relationship leveraging digital technology is essential in the business transformation drive. Yeow et al. (2018) emphasized the importance of having a structured digital formation and alignment among businesses and customers to ensure customer satisfaction and deliver business value. A more customer-centric approach by providing end-to-end customer experience, personalized solutions, and multifaceted services to individualized preferences is essential in the DBT drive (Becker & Schmid, 2020). It is vital to develop and enforce digitally inclined standards of operation and best practices among maritime businesses in Nigeria.

4.2.5. Infrastructure

It was evident in the findings that Nigeria's business ecosystem requires infrastructural enhancement to drive digital business transformation. The participants identified poor power supply, innovative solutions, digital architectures, and enabling systems for business digitalization as areas of concern in driving digital strategy inclusiveness in NMBs. The finding aligned with Olurode et al.'s (2018) assertion that inadequate power (electricity) supply is a major infrastructural factor affecting Nigeria's business digital transformation agenda, given the poor electricity supply and cost to power businesses for digital connections. As noted earlier, technological solutions are required to track vessels and smooth shipping operations. Such solutions, the participants noted, include modern radiographic solutions for receiving signals, energy monitoring solutions, and critical indicators for the best route and weather optimization, which help track vessels, predict emissions, and manage the vessel's maintenance costs and operations. The findings revealed that some ships do not have or put the implements as required in place. In effect, manual processes or in-person confirmations prevail over digital solutions. It was evident in the findings that NMB leaders that transformed their business leadership style, process, workforce, culture and practice, infrastructure, and customer experiences optimized their business processes and achieved their business transformation goals.

4.3. How to Digitally Transform Nigeria Maritime Business Operations

The question of how to transform is essential in any business transformation initiative (Wade, 2015). In the DBT journey, it is essential to have a clear idea of where transformation is required and what needs to be transformed (Wade, 2015). Wade noted that the justification of why transformation in business motivates the inquiry of what to transform. What to Transform provides a roadmap of how to transform. In the framework of how to transfer, this study revealed the barriers and success factors to the digital transformation of NMBs.

4.3.1. Digital Strategy Inclusion Barriers in NMBs

Though Nigeria and Lagos, in particular, are considered an ICT hub of West Africa, daunting challenges impeding the inclusion of digital strategies in NMBs were evident in the study's findings. Responses from the participants confirmed the description of Adetunji et al. (2017) and Onwuegbuchunam et al. (2021) that lack of vision, strategy, digital divide, digital skill gap, infrastructural deficit, poor investment in digital solutions, perception, unwillingness to change, data insecurity and regulatory challenges are common barriers to implementing digital strategies in NMB operations.

The findings revealed that some NMB leaders struggle to understand what direction to lead their organizations digitally. As a result, they make decisions that do not favor adapting to digital resources to transform their business, and digital strategy implementation becomes a challenge. The participants also stressed that the digital skill gap and unwillingness to change adversely impact technology adoption in NMBs. It was evident in the study's findings that some NMB leaders are unwilling to adapt to digital strategy, arguing that digital solutions or strategies could fail to deliver as presumed and stressing that the poor state of digital infrastructure, the safety of data, and the regulatory framework increase the fear and risk of data insecurity and feeds people's perception negatively on the potency of digital strategies.

The finding also affirmed that a digital divide exists in Nigeria among businesses and individuals and has been instrumental to the consistency in the inability of some NMB leaders to access digital resources and use the Internet, computing facilities, and digital solutions to transform their businesses. For example, the participants stated that in the heat of the COVID-19 pandemic, many NMBs could not adapt to virtual or telecommuting work patterns due to poor internet availability and the high cost of internet resources and other required digital implements to access online facilities. The result revealed a poor level of technology adoption among regulatory bodies, emphasizing the Nigerian Ports Authority (NPA), Nigeria Maritime Administration and Safety Agency (NIMASA), and Nigerian Customs as needing to live up to expectations.

4.3.2. Digital Strategy Inclusion Success Factors in NMBs

The result revealed having a digitally inclined leader, change in mindset, digital

skill upgrade, and understanding of customers' needs and expectations as vital factors that facilitated digital strategy inclusion in NMB operations. About 20% of the participants asserted that digital skill upgrades and engagement of digitally inclined leaders and teams leaped the successful implementation of digital strategies in their organization. They stressed that having the required digital capabilities is essential to adapting to digital strategies and technology use, as evidenced in the responses of P12 and P16 that they trained and engaged the workforce with the required digital skill and those with the requisite knowledge to maintain digital implements. Digital capability fosters digital business agility and enables organizational leaders to be hyperaware of the future digital trend, make informed decisions, and promptly execute the necessary changes (Wade, 2015). The required digital capabilities are essential to implement digital strategies in NMBs successfully.

Making investment decisions adaptive to digital strategies was also identified as an impelling factor for successful digital strategy inclusion in NMB operation. About 15% of the participants indicated that making investment decisions that replaced old and underperforming digital implements, both software and hardware solutions, with new and innovative ones was instrumental to their digital strategy implementation success. The participants also reiterated perception, change in mindset, and alignment to global digital culture and best practices as pivotal to the successful implementation of digital strategies. The process documents reviewed highlighted the commitment to change and willingness to learn as critical factors for successfully implementing digital strategies in organizations. The findings, therefore, signified that acquiring the relevant digital skillset, capabilities, fit-for-purpose technologies, change in mindset, and culture inclined to digital fruition are needful implements to thrive in digital strategy inclusion in NMBs. The study also revealed adopting an integrated digital business transformation process, and intervention measures supportive of digital strategy inclusion in NMBs as other ways of transforming NMBs digitally.

4.3.3. Adopting an Integrated Digital Business Transformation Process

Business leaders integrate digital objectives into business functions to align all the business components in driving digital transformation goals (Kane et al., 2015). The participants reiterated that integrating the organization's digital objectives into their business process and systems, leadership, team and capacity building, culture, and service delivery was resourceful in their digital strategy inclusion and transformation process. About 75% of the participants highlighted having a clear vision, a definition of the aspects of digital transformation that the business need, and the needed digital solutions, both software and hardware fit-for-purpose solutions, as instrumental to driving digital strategy inclusion in their business. Notably, the responses from the participants underscored that integrating digital objectives into the business process could enhance the development of a holistic strategy that will affect all areas of the business operation and readiness for the digital future.

To integrate digital objectives into the business function and develop business models adaptive to digital strategies and technology adoptions are needed to manage and drive an inclusive digital strategy in NMB operations. Business leaders must be clear about how digital strategies will create added value in the NMB's digital future for inclusive management and transformation of NMB operations, and understanding how to transform, given the peculiarity of business operations, could place business leaders and organizations on the verge of DBT.

Modern technologies for unique business needs, like logistics and customer management software and artificial intelligence, were seen as enhancing operational efficiency, as 65% of the participants confirmed that using such implements is resourceful for solving business problems. Digital tools like email, discussion boards, chat rooms, telecommuting platforms, and local and offshore capacities for data repositories were also identified by 100% of the participants as being resourceful. Eighty percent of the participants confirmed using offshore data repositories, while only 20% relied on local (within Nigeria) data repositories. It was imperative from the study findings that having an inclusive digital strategy to manage and transform NMB operations requires adopting an IDBTP. The participants described the technologies they included for better service delivery and to improve business performance, as shown in **Table 1**.

A framework that supports digital transformation in business using an integrated process helps organizations minimize their risk of failure (Butt, 2020). The results showed no less approach among the sampled companies to using an IDBTP for digital strategy implementation in NMBs. The Digital strategies inclusion process in all the companies sampled showed no significant difference in design but IDBTP as an inclusive framework that could support digital strategy implementation in NMBs. However, the extent of digital strategy inclusion in NMBs operations depends on the business size, business model, and financial capability, given the prevalent constraints such as the digital divide, infrastructural deficit, and high-cost effect of business digitalization.

Table 1. Technologies included to manage and transform maritime business operations.

Technologies included	Company	Participants	Percentage
Data-driven solutions	1, 2, 3, 4	1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14, 15, 16.	70%
IT infrastructure	1, 2, 3, 4, 5	All	100%
Cloud-based solutions	1, 2, 3, 4, 5	All	100%
Modern technologies for unique business need like logistics, customer management software, and artificial intelligence for solving business problems.	1, 2, 4	1, 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15, 16.	65%
Digital tools like e-mail, discussion boards, chat rooms, and telecommuting platforms	1, 2, 3, 4, 5	All	100%
Local capacity building for data repositories	2	5, 6, 7, 8.	20%
Offshore capacities for data-based solutions	1, 3, 4, 5	1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.	80%

Transforming NMB operations, as revealed in the study's result, requires funding ability, digital skill upgrades, infrastructural enhancements, and developing a digital ecosystem in the spectrum of maritime business operations in Nigeria. The ability to respond to changes caused by technological evolution positively emits innovation and business digitalization (Tunç & Aslan, 2020; Wade, 2015). To transit to automated and paperless procedures, innovative business models adaptive to digital strategy, and responding to technological changes for value creation is needful in IDBTP. It is needful that NMB leaders continue to respond to needful changes caused by technology evolution and adapt the entire business process to technology implements and digital requirements to capture business values. However, some key findings to keep in mind include the state of digital infrastructures in Nigeria, the digital divide, and funding constraints to drive and achieve digital transformation objectives.

4.4. Intervention Measures Supportive to Digital Strategy Inclusion in NMBs

The description includes internal (organizational) and external (government and other stakeholders) intervention measures supporting digital strategy inclusion in NMBs.

4.4.1. Organizational Intervention Measures

The findings revealed engagement of digitally inclined leaders and teams, alignment of digital objectives with the business model and the organization's overall objectives, and investment in skills and capabilities essential to achieving increased performance and competitive advantage as internal intervention measures supportive of NMB transformation. Creating digital leadership roles like Chief digital officer, IT manager, or Digital process support officers, and investment decisions adaptive to digital strategies and capabilities essential to achieving increased performance was seen as helpful in enhancing the organization's commitment to business process digitization and implementation. It means that digital leaders, teams, and investment decisions adaptive to digital strategies and the capabilities essential to achieving operational efficiency are supportive recipes to achieve digital strategy inclusion in NMBs.

The process documents (CMPY 1 & 3) reviewed highlighted training the workforce as part of the intervention measures to enhance the business's competitive edge, as P4 emphasized training and engaging digitally skilled personnel as one of the drastic measures taken to drive digital strategy inclusion in their organization. This finding affirmed the assertion of Oke et al. (2020) that to bridge the digital skill gap to support business transformation and help minimize business closure rates in Nigeria, a digital skill upgrade is paramount. Actively shaping the business's competitive edge through employee training to meet the demands of the digital era is an essential measure to prepare NMBs for digital strategy inclusion in operations.

Changes in the structure and business process of the organization often lead employees to assume roles conventionally outside of their functions. Making structural changes to build a framework for an inclusive digital strategy implementation was seen as an intervention measure to support digital strategy inclusion in NMB operations. Again, as indicated by 30% of the participants, building internal digital networks for knowledge and information sharing and technology-enabled work pattern to maximize employee engagement and performance were interventional to the barriers to digital strategy inclusion in NMB. As revealed in the findings, effective practices like adjustment in organizations' structure and developing the required skills and platforms to create a pivotal framework for the fast response to business demands and technological changes will support digital strategy inclusion in NMBs. External measures related to government and other stakeholders' interventions were also highlighted.

4.4.2. Government and Other Stakeholders' Intervention Measures

The external intervention measures described the how of digital strategy inclusion in terms of how government and other stakeholders' involvement can support digital strategy inclusion in NMB operations. The result revealed the role of the government through the regulatory bodies' involvement as essential to digital strategy inclusion in NMB operation. The majority (90%) of the participants considered government and other stakeholder's investment in the provision of both soft and hardware solutions like internet infrastructures with high bandwidth, electronic cargo inspection software as opposed to manual and in-person inspections, online clearing and documentation procedures, and technologies that can gather and process a massive amount of information cost-effectively as required interventions. Other measures, as revealed in the result, include:

Local Capacity Building. About 30% of the participants indicated a need for the government and other business stakeholders in Nigeria to build public institutions like ICT centers for digital capacity development. The essence is to help bridge digital skill gaps and foster local capacity building rather than dependent on offshore capacities for data repositories and solutions. The results aligned with Adetunji et al. (2017) discussion that Nigerian businesses depend majorly on offshore data repositories that are often not cost-effective and present the need for the government and other business stakeholders to promote the building of local ICT hubs for digital capacity development and data repository. An intervention by the government and other stakeholders to make policies and investment decisions that will foster local capacity development for practical cost effect on digital strategy implementation is essential.

Funding. Digitalization of NMBs in the framework of technology adoption, digital infrastructural acquisition, and meeting operational needs requires funding, and the study's result (P11), indicated that the majority (80%) of NMBs finance digital transformation in their businesses through internally generated funds and emphasize the need for the government to fund digital infrastructural

developments. The study showed that digitalization is majorly financed by the cash flow generated from trading activities, services, or defined budgets, underscoring that digitalization in NMBs has been majorly through internally planned projects and private financing. NMBs need financial intervention from the government and policymakers to finance digital infrastructural development. The need for government intervention funds and a budget to support the funding of ICT projects and the provision of a digitally enabled environment is essential.

Government Regulations. Businesses are increasingly exposed to cyber threats due to the intensive use of new technologies and no possible protection to ward off cyberattacks completely. Appropriate regulations and countermeasures supportive of anti-cyberattacks and data security to encourage an appetite for digital strategy adoption was seen as another needful intervention measure by the government. As evident in the digital strategy inclusion barriers, the decline in compliance with the required standard and operating rules is traceable to failed regulatory and enforcement procedures (Arogundade & Nwani, 2018). Compliance with regulatory policies and skills committed to digital strategy implementation were highlighted as essential in NMB operations. The government must develop and enforce digitally inclined standards of operation and best practices among all stakeholders.

4.5. The Prospect of Digital Strategy Compliance in NMB Sector

The study's findings revealed that responding to digital strategy demands, such as making investment decisions adaptive to business innovations, could propel digital shifts and positive changes in the competitive business landscape. About 20% of the participants believed that making investment decisions that replace old and underperforming digital implements with new and innovative ones could help NMBs to keep pace with the changing business world. Businesses that exclude compliance with a digital strategy in their sustainability agenda experience lag in realizing business sustainability objectives (Sanchez & Zuntini, 2018). However, timely responses to the demands of the digital era expose businesses to value-producing opportunities to increase efficiency and enhance competitiveness in the marketplace (Nwaiwu, 2018; Schneider & Imai, 2019).

Meeting future work demands is another prospect identified from the findings on digital strategy compliance in NMBs. About 15% of the participants stressed that using technologies helps shape future business strategies through digital optimization and continuous investment in bridging the digital skill gap to meet future work demands. This emphasis confirmed the description in the literature that implementing digital strategies promotes a wide range of innovative practices, business modernization, transformation, readiness for future work demands, and business survival (Agboola et al., 2019; Goerzig & Bauernhansl, 2018; Loebbecke, 2019; Wade, 2015). Compliance with digital strategies prospectively allows business leaders to retool their skills and strategies for operational

efficiency, optimal performance, meeting future work demands, and business sustainability.

Business Growth was also considered as a possibility emanating from compliance to digital strategy. The findings revealed that compliance with digital strategy could help mitigate the risk of losing valuable opportunities and repositioning NMBs for growth. This finding underscored the need for business leaders to capitalize on the rapidly growing digital economy to reposition their businesses for growth and mitigate the risk of losing access to significant opportunities. Mitigating the risk of losing opportunities accrued to compliance with digital strategy and repositioning the NMB sector for growth are prospects of digital strategy compliance in NMBs.

Achieving an inclusive business management process through adequate management of business interactions and transactions was also identified as another key possibility of compliance with a digital strategy in NMB operations, as one of the participants specified that compliance with digital strategies has been pivotal to inclusive business management in their organization. This finding confirmed the assertion of Pagani and Pardo (2017) that complying with digital strategy equips businesses with digital solutions and emerging technologies to transform the business interactions and transactions process. Compliance with digital strategy is prospective to improve service provision, information sharing, operational efficiency, and logistics management and minimize the detrimental effects of NMB activities in Nigeria to achieve the sustainability goals of businesses in the seaport areas.

The majority (65%) of the participants also see compliance with digital strategy as an enabler to the integration of more evolving concepts such as Big Data, Artificial Intelligent, telecommuting, cloud computing, and Blockchain in NMBs to provide more innovative ways to collect and manage data exchange. It is evident in the result that digital strategy compliance in NMBs is future-oriented as NMBs could generate increasing values through digital strategy inclusion in the business process, which may continue to deepen in the future.

5. Conclusion

This study explored digital strategies that business leaders and managers in the maritime sector may include to transform maritime business operations in Nigeria. Participants' perspectives, in line with the related literature reviewed, framed the study's findings. Some NMB leaders have invested in and included digital strategies to transform their business operations, while many are yet to advance technology adoption and digital strategy inclusion as expected. Managing and transforming NMB operations is achievable through the inclusion of soft and hardware digital solutions and other digital implements at all levels of the business process using an IDBTP. With digital strategy inclusion, values were generated, which could continue to deepen with continuous compliance to digital strategies in the entire framework of maritime business operations in Nigeria.

This study revealed a dearth of research on digital strategy inclusion in NBM operations and the study's scope was limited to perspectives from business leaders and managers in five maritime companies in Lagos, excluding those in other cities in Nigeria and other stakeholders. These limitations may be recognized as the deficiency of the study and need for further studies. However, through digital strategy inclusion, business leaders and managers could develop technological architects and entrenched change in the management process and practice focal to operational efficiency and transformation of NMB operations and enhance business sustainability in Nigeria.

6. Recommendations

Based on the findings of this study, the following recommendations were made:

1) Continuous integration of technology-based solutions—both soft and hardware to manage and transform NMB operations in Nigeria.

2) Upskill of the workforce with digital skills that match emerging technologies to help support digital strategy inclusion, compliance, and optimal performance of NMBs.

3) Strict intervention, funding support by the government and other stakeholders, and investment decisions that can spur the appetite for digital strategy inclusion, and enforce compliance to digital strategy inclusiveness at all levels in maritime business operations in Nigeria.

4) Consider an integrated digital solution that could offer a one-stop solution to shipping and other maritime-related information repository needs to improve service provision, collaborations, and information sharing.

5) Business leaders and cargo handlers in NMB operations to consider using digital platforms like MyKN, Challengers Flexport, and Tradeshift, launched in Europe and other continents (Lehmacher, 2020) to coordinate cargo load operations, logistics, clearances, and cost management to maximize cost, enhance operation efficiency, and streamline communication and collaboration to capture values.

6) Further studies to include the exclusions in this study and consider a quantitative method to replicate the study in a similar or different setting to create a more comprehensive understanding of the dynamics around digital strategy inclusion in NMB operations, given that the study's scope was limited to perspectives from maritime business leaders and manager in Lagos, excluding other stakeholders and cities in Nigeria.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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Appendix A: News Publications on Gridlock Situation in Lagos

Electronic Call-Up System Sabotage Worsens Apapa Gridlock

Customs agents decry policy failure, extortion

Eromosele Abiodun

Traffic has worsened in Apapa and its environs following the disruption of the electronic call-up system (ETO) introduced about two months ago by the Nigerian Ports Authority (NPA) with the support of the Lagos State Government to ensure free flow of vehicular movements.

THISDAY's investigation showed that security agents, who were said to have frustrated all efforts to restore sanity to the port city, have cashed in on the situation to extort articulated vehicles' drivers.

Even the efforts of a presidential task team failed with tales of corruption trailing its assignment.

However, following the return of sanity to the roads in Apapa last month as a result of the Electronic Call-up System, the Lagos State Governor, Mr. Babajide Sanwo-Olu, had vowed to expose the cabal behind the Apapa gridlock if they did not desist from sabotaging the government's

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Analysts Back Presidential Economic Council's Call for Subsidy Removal... Page 8

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Apapa gridlock: Lagos, NPA look away as businesses bleed

Chuka Uroko May 6, 2021

TheGuardian
Home Nigeria World Politics Sport Opinion

More worries as Apapa gridlock worsens, defies e-call up solutions

By Adaku Onyenucheya
22 April 2021 | 3:36 am

PUNCH
Most Widely Read Newspaper
Home News Metro Plus Investigations Videos Sports Politics Business HealthWise Editorial Columns

Apapa gridlock persists, Lagos blames NPA, MAN laments losses

21st September 2021

Traffic bottleneck at Apapa, Lagos

Stephen Agwaibor and Oladayo Adenubi

Appendix B: Interview Guide

Dissertation title: Transforming Nigerian Maritime Business Operations Through Digital Strategy Inclusion.

Research design and method: A qualitative explorative multiple case study.

Participant's recruitment strategy: Purposeful sampling

Interview format: Telephone interview

Procedure for Participants Recruitment

The participants are business leaders and managers of maritime industry in Lagos, Nigeria. The first step for recruiting the participants for the interview would be to identify organizations and individual participants that can provide relevant and sufficient information to answer the research question. The participants must meet the stated selection criteria. The procedures I will follow to recruit the participants includes:

1) Develop a list of criteria for the required participants

- Must be in the maritime industry within Lagos Island and Apapa areas of Lagos State
- Been in operation for at least three years
- Have implemented digital strategies to transform and sustain their businesses
- Use both software and hardware technologies for process improvement and architectural built
- Must be business leaders and managers
- A male or female adult of at least 20 years and above
- Live in Nigeria but could be of any nationality
- Ability to speak English fluently for easy communication and understanding

2) Selection Procedures for the participants

- Obtain information about potential individual interview participants from the HR of the selected companies
- Do a background check to identify participants that meet the stated criteria
- Purposefully make selections based on the stated criteria
- Target an average of four persons in each of the five companies selected to reach the 20 interviews required
- Contact the selected persons in writing through e-mail to inform them about the details of the interview, forward the Informed Consent Form for signing, and to schedule interview dates and time
- Request from those contacted to suggest other participants
- Check on the list of suggested persons, make elimination and produce final list of participants

3) Preparation

- Send letters of invitation via e-mail to the participants to confirm their participation
- Send a follow-up letter to the respondents with Informed Consent letter for signing
- Schedule interview appointment dates and time

- Conduct the Interview

4) Conducting the Interview

- Use the developed interview protocol to ensure uniformity and consistency in obtaining rich information
- Use semi-structured interview and the timing of the interview to be about 30 minutes
- Start by completing the basic information about the interviewee related to location, organization, position, date, and timing
- Introduction (open statement) and share with interviewee the purpose of the research
- Explain the keywords and terms used in the context of the study and the usage in the interview questions
- Explaining the central research question to the interviewee
- Explain how the result will be used and safety of the identity of the interviewee and the data collected
- Use open-ended questions to encourage participants' self-expression and balanced view of the study phenomenon
- Audio-record the interview using telephone
- Make a closing statement in appreciation of the participation in the interview and further actions that may be required
- Conduct member-checking and peer debrief through telephone

Interview Questions

The research questions include:

1) What are your views on inclusion of digital strategies in maritime business operations in Nigeria and closing the digital skill gap among business leaders and managers in the maritime business sector in Nigeria?

2) What is your perspective on integrating organization's digital goals into the business model, process, team building, service delivery, and addressing digital skill gap?

3) How do you explain digital strategies related to your business management and transformation?

4) How do you view digital strategies transforming maritime business sector in Nigeria?

5) What do you view as the successful digital strategy included in your organization to manage and transform your business operations?

6) What challenges might maritime sector businesses in Nigeria face in including digital strategies in their business operations and what support may help?

7) What do you view as successfully approach to implement new technologies, digital infrastructures, digital business process, and up-skill of workforce digital competences to support maritime business operations in Nigeria?

8) How is your organization addressing the need for continuous digital compliance for future of work and business sustainability?

9) Do you have anything else you may want to share or question to ask?

Appendix C: Participant Demographics

Company	Participant	Position	Years in Position	Location	Gender	Level of Education
CMPY 1	P1	CEO	10	Apapa	Male	Master's degree
CMPY 1	P2	Manager	12	Apapa	Male	Master's degree
CMPY 1	P3	Manager	6	Apapa	Male	Bachelor's degree
CMPY 1	P4	Manager	8	Apapa	Female	Master's degree
CMPY 2	P5	CEO	9	Lagos Island	Male	Doctorate Degree
CMPY 2	P6	Manager	9	Lagos Island	Male	Master's degree
CMPY 2	P7	Manager	7	Lagos Island	Male	Master's degree
CMPY 2	P8	Manager	6	Lagos Island	Male	Bachelor's degree
CMPY 3	P9	CEO	7	Lagos Island	Male	Master's degree
CMPY 3	P10	Manager	5	Lagos Island	Female	Bachelor's degree
CMPY 3	P11	Manager	6	Lagos Island	Male	Master's degree
CMPY 4	P12	MD	5	Apapa	Female	Master's degree
CMPY 4	P13	Manager	15	Apapa	Male	Master's degree
CMPY 4	P14	Manager	9	Apapa	Female	Master's degree
CMPY 4	P15	Manager	11	Apapa	Male	Master's degree
CMPY 4	P16	Manager	7	Apapa	Female	Bachelor's degree
CMPY 5	P17	CEO	8	Apapa	Male	Master's degree
CMPY 5	P18	Manager	7	Apapa	Male	Master's degree
CMPY 5	P19	Manager	8	Apapa	Male	Master's degree
CMPY 5	P20	Manager	6	Apapa	Female	Master's degree