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Change Management Strategies for Successfully Managing the Lack of Critical National Infrastructure in the Nigerian Telecommunication Industry

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
2024

Abstract

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by

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MS, Manchester Business School, 2012

BS, University of Ibadan 2001

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The impact of the lack of critical national infrastructure on Nigerian businesses has caused over 50 manufacturing businesses to shut down in the last 5 years. The telecommunication companies in Nigeria, with a contribution of over 15% to the National GDP in 2022, were equally impacted, with over 27 licensees returning their licenses from January 2019 to December 2021. Grounded in Kotter's 8-step change model, the purpose of this qualitative pragmatic inquiry study was to identify and investigate change management strategies telecommunication leaders in Nigeria use to mitigate the lack of critical national infrastructure to avoid financial liquidation. The participants were four senior leaders from telecommunication companies who successfully used change management strategies to mitigate Nigeria's lack of critical national infrastructure. Data were gathered using semistructured interviews and reviews of the company websites during the fall of 2023. Braun and Clarke's model for thematic analysis was adopted to generate three themes: business value, created through a sense of urgency; outsourcing, and power grid instability. Key recommendations for business leaders are to create business values by instilling a sense of urgency, adopting outsourcing, and using alternative power sources like solar energy and hybrid power. The implication for positive social change includes the potential for more job creation, improved standards of living, and enhanced business profitability and competitiveness in the Nigerian market.

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Dedication

First and foremost, I am dedicating this doctoral study to the glory of Almighty God for His mercy and undeserved grace and favor over my life. He has been a helping hand for me since the beginning of my life, and this is another testimony to the fact that there is no impossibility with God. Secondly, I would like to dedicate this doctoral study to the lovely memory of my father (Prince Edatomolaosi Olajide Adeola); he taught me how to focus on goals and always be the best in all that I do. To my mum, thank you for all your dedication and endurance while raising me; I appreciate all your sacrifices. To my lovely wife, Dina, thank you for your love and support on the home front. You helped me focus on this study without much distraction, and I always thank God that I have you by my side. To my kids, Derby, Obadiah, and Reyhane, this is for you all. The platform is set, and you all need to surpass this record set by God's grace. Lastly, I would like to thank Pastor E. A Adeboye for all his encouragement and preaching and God will continuously bless you and keep you. Amen.

Acknowledgments

I would like to acknowledge almighty God for His mercy over my life and for seeing me through the completion of this doctoral journey. I would like to thank my chair, Michelle K. Preiksaitis, JD, PhD; she has been a godsend to the success of this doctoral study. Her help, support, and guidance have been super great and heartwarming. My prayer for her is that God will bless her mightily. The support of my second committee member, Bridget Dewees, PhD, has been great. Lastly, I would like to thank the Walden University community for the opportunity to achieve this vision.

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Section 1: Foundation of the Study

Less than 20% of businesses that started in Nigeria survived after the first 18 months of operation; the size of the business does not provide immunity to this failure (Anudu, 2022). Adelowo wrote that over 50 Nigerian manufacturing companies have shut down in the last 5 years (Adelowo, 2020). Comparatively, the business survival rate in the United States of America remains at 50% following the first five years of operation, and 70% fail within a decade (Delfino, 2023). Adepetun (2022) highlighted that the over $136 billion infrastructure gap is currently the main challenge facing telecommunications services providers in Nigeria. In this study, I explored successful change strategies business leaders in Nigeria's telecommunication industry used to mitigate the need for critical national infrastructure.

Background of the Problem

According to Atoyebi et al. (2019), the challenging business situation in Nigeria forced 322 firms to shut down in 5 years, and at least 1,136 of the 5,833 firms sampled were at risk of closing. The World Bank enterprise survey for Nigeria indicated that the lack of accessible or affordable electricity is the biggest hurdle to doing business in Nigeria (Orjiakor, 2022). The erratic electricity supply was a significant reason why Nigerian businesses shut down; many companies resorted to self-help by generating their electricity through generators, which is expensive to the economy and business (Orjiakor, 2022). Nigerian companies lose $29 billion annually due to inadequate power supply (Olayinka, 2021). Nigeria's telecommunication regulator stated that about 27 licensees returned their licenses from January 2019 through December 2021 because of economic hardship and challenges in the industry (Adepetun, 2022). The infrastructural decay and moribund state of the critical infrastructures prevented Nigeria from reaching its goal for 2020 as a top 20 economy in the world (Banko & Onyekachi, 2020; Ebuh et al., 2019). The impact of the critical infrastructure deficiency is that over 90 percent of the telecommunication companies in Nigeria risk extinction by 2027 unless strategies to manage this deficiency effectively are deployed by business owners (Ajanaku, 2022).

Problem and Purpose

The general business problem was that many businesses in Nigeria were insolvent, resulting in financial liquidation due to a lack of critical infrastructure. The specific business problem was that many business executives in telecommunication companies in Nigeria lacked the change management strategies needed to mitigate their businesses' financial liquidation caused by the lack of critical infrastructure to support their businesses.

I conducted a pragmatic qualitative inquiry to identify and explore change management strategies that some business executives in Nigeria's telecommunication companies used to mitigate the lack of critical national infrastructure successfully. The findings of this research may lead to positive social change by giving Nigerian telecommunication business managers ideas to successfully manage the changes needed to overcome infrastructure deficits, provide more economic stability for the country, and create more employment for citizens.

Population and Sampling

The population for this study was from four major telecommunications companies existing today in Nigeria. I chose four senior leaders from these telecommunication companies operating in Nigeria, chosen through my industry connections as my study's population sample .

Purposeful sampling is a sampling method used to select a specific participant with more likelihood of having the right expertise, experience, and know-how to answer research questions (Rose & Johnson, 2020). I used a purposeful sampling method to find participants. One of the critical determinants for the success or failure of an investigation in qualitative studies is the proper participant selection strategy and criteria (Aksakal et al., 2019). I ensured each participant leads a licensed telecommunication company and successfully navigates Nigeria's infrastructure situation.

To be included in the study, a potential participant (a) had at least 10 years of managerial experience in Nigeria's telecommunication sector, (b) was a decision-maker in the organization, and (c) had at least 5 years of senior operation experience with either telecommunication operator or infrastructure provider. Potential participants were excluded if they (a) had returned their license within the past year or (b) were one of my current employees, coworkers, or supervisors.

Nature of the Study

The specific research methodology was qualitative. According to Korstjens and Moser (2018), researchers used qualitative research to gain an in-depth understanding of real-world problems. I chose the qualitative research methodology to identify and explore the successful change management strategies used by telecom business leaders to understand better how to mitigate the lack of national infrastructure for telecommunications companies in Nigeria. I did not choose a quantitative method because a quantitative study measures variables to examine relationships between them or predict generalized outcomes, often to test a theory or a hypothesis (Bakar et al., 2018). The mixed method combines qualitative and quantitative research into a single study to investigate the research question (Bakar et al., 2018; Molina-Azorin et al., 2021; Yin, 2018). Using a mixed-method methodology complements the limitations of qualitative and quantitative research methods. Still, I did not use the design due to the expense, time-consuming nature, and nonacceptance by this program.

Pragmatic qualitative inquiry was the specific research design that I used to address the study's research questions because I collected in-depth data from professional participants who had previously experienced similar real-world situations, and no participant agreement was required. I originally had planned to do a case study. Korstjens and Moser (2018) highlighted that case studies provided considerable benefits in understanding a specific group of individuals. The multiple case study design is used for numerous types and sources of evidence for comparison and analysis (Diop & Liu, 2020). It involves merging individual interviews from different organizations to obtain various assessments and options of phenomena (Pathiranage et al., 2020). In addition, the multiple case study design is used for triangulation of that data with the literature in the field and technical data collected from organizations supporting or further explaining the change management strategies identified during interviews (Pathiranage et al., 2020). Because there were difficulties in obtaining permission from the organizations, multiple case was not appropriate for the study, and instead, I selected the pragmatic inquiry design.

Research Question

What change management strategies do successful Nigerian telecom executives use to mitigate their business's lack of critical infrastructure to avoid financial liquidation?

Interview Questions

1. What change management strategies did you use to successfully mitigate your business's financial liquidation due to a lack of critical infrastructure?
2. What change management strategies are you currently using to sustain your business operations (in other words, avoiding financial liquidation)?
3. What challenges or feedback did you face from all stakeholders (employees, vendors, managers) while implementing the successful change management strategies?
4. How did you respond to those challenges or feedback from all stakeholders (employees, vendors, managers) while implementing the successful change management strategies?

5. How did you evaluate the change management strategies in terms of their effectiveness and efficiency in financial liquidation mitigation?
6. What strategic changes did you make to address the lack of critical infrastructure?
    a. What did those changes cost financially?
    b. How did those changes benefit (support) your organization's ability to mitigate (avoid) financial liquidation?
7. What other information would you like to add to the change management strategies you implemented to mitigate your company from business financial liquidation due to a lack of critical infrastructure?

Conceptual Framework

I grounded this study using a conceptual framework from the Kotter (1996) 8-step change management model. Kotter based his model on a staged, systematic, and strategic approach that gives clear guidelines to leaders for each step during change management implementation. Kotter studied over 100 organizations engaged in transformation activity, where he analyzed the differences between organizations that succeeded and failed, using features associated with failed transformation processes to formulate a model that gave solutions to those that failed the transformation efforts (Stoller, 2021). Wentworth et al. (2020) affirmed that Kotter's change management process remained relevant, reliable, and popular within organizations and change management research. Many organizations have used it with positive reports of success. The 8-step Kotter's change management model provided the lens for creating the interview protocol and analyzing the data. Kotter's model steps include the following steps in this specific order:

1. Create a sense of urgency.
2. Create a core coalition.
3. Develop a vision and strategy.
4. Communicate and share a vision plan.
5. Empower employees to act on the vision.
6. Generate short-term wins.
7. Consolidate gains and produce more change.
8. Initiate and set new changes.

The Review of the Professional and Academic Literature section includes more detail about Kotter's model and research using the model.

Operational Definitions

Change Management Process: The process involves applying structured methods and tools to manage organizational change to achieve a desired business outcome. (Al-Alawi et al., 2019).

Critical National Infrastructure: Resources, services, and infrastructural assets having a severe impact on the country's society, security, and economy if damaged or destroyed (De Felice et al., 2022).

National Power Grid: The national power grid is an interconnection of all power entities in a shared pool to manage the generation, transmission, and distribution of electricity to all homes and businesses (Liu et al., 2022).

Strategic Management: Strategic management involves formulating and implementing the company's top management goals on behalf of owners by using assigned resources considering both the internal and external environment to sustain competitive advantage and create wealth and value (Palmié et al., 2023).

Assumptions, Limitations, and Delimitations

Assumptions, limitations, and delimitations are critical to peer-reviewed academic and professional research. The following paragraphs include the assumptions, limitations, and delimitations of my study.

Assumptions

Assumptions are concepts of the study researchers take for granted and accept as accurate without any scientific evidence and cannot be verified scientifically (Brinkmann, 2016). My study's assumptions included the following:

- The participants' responses to the interview questions would be honest, truthful, authentic, and reliable.
- The participants understood the interview questions based on their experience in the organization and provided knowledge-based answers to all questions.

Limitations

Limitations are potential drawbacks of a study outside the researcher's control, potentially impacting the study's outcome and weakness (Queirós et al., 2017). Acknowledging limitations helps readers evaluate the research findings for applicability and transferability (Theofanidis & Fountouki, 2018). My study limitations included the following:

- Relatively few successful telecom executives exist in Nigeria, and thus, finding enough participants for the study was difficult;
- The competitive nature of the Nigerian telecommunication industry meant that some leaders may not have revealed trade secrets that successfully differentiate their businesses from others.

Delimitations

Delimitations are a set of boundaries set by the researcher within his control to achieve the research objectives (Theofanidis & Fountouki, 2018). The study results were delimited to Nigerian telecommunication organizations and should not be considered transferable to other countries' telecom organizations or industries in Nigeria.

Significance of the Study

This study was significant because it included needed insights for Nigerian telecommunication business leaders to develop and execute successful change management strategies to mitigate the lack of critical infrastructures in their businesses, such as poor power grid availability. In this study, I identified strategies successful business leaders use to support economic growth and improve employment opportunities for telecommunication workers.

Contribution to Business Practice

Telecom business leaders could benefit from this study's result, which could successfully provide change management strategies to mitigate the lack of critical national infrastructure in the telecommunication industry. The practical study result could contribute to good business practice by successfully identifying the right change management strategy to mitigate the telecommunication industry's lack of critical national infrastructure.

Implications for Social Change

The inherent economic losses coming from the lack of critical national infrastructure are very high; according to Olayinka (2021), Nigerian businesses lose $29 billion annually due to inadequate power, and other impacts of the critical infrastructure deficiency. Over 90% of the telecommunication companies in Nigeria risk extinction by 2027 unless strategies to manage this deficiency effectively are deployed by business owners (Ajanaku, 2022). Mitigating this risk could create a positive social change in human and social conditions. More businesses could thrive, companies could increase the employment rate, the reduction of social vices because of unemployment would improve, and citizens could improve their living standards.

The study's findings could lead to positive social change by improving job opportunities for telecommunication industry workers or could help reduce the annual losses suffered by businesses in Nigeria due to inadequate power supply, estimated to be $29 billion by Olayinka in 2021.

A Review of the Professional and Academic Literature

I conducted a pragmatic inquiry study to explore the change management strategies used by successful telecom companies in Nigeria to mitigate the lack of critical national infrastructure. In this literature review, I examined, analyzed, and synthesized peer-reviewed literature on change management strategies and the business problem in Nigeria of the lack of strategies to overcome the national infrastructure deficiencies by the telecommunication industry. I focused on three main segments: (a) analysis and synthesis of the conceptual change management framework, (b) critical national infrastructure, and (c) telecommunication industry in Nigeria and other subsections, including the impact of critical national infrastructure, causes of critical infrastructure deficiencies and change management strategies to mitigate business liquidation.

Reviewing relevant literature and existing knowledge is the fulcrum for constant contribution to academic scholarship. Seeking perspectives from different and multiple researchers may help other researchers gain insight into the research question and help prove the quality and validity of the research (Snyder, 2019). In a literature review, a researcher needs to identify discrepancies, improvements, gaps, and contradictions in existing works and a path to build on the existing work toward improvement in academic research (Yarnold et al., 2023). I conducted this literature review to contribute to existing knowledge and scholarship on change management strategies adopted to mitigate critical national infrastructure in Nigeria's telecom industry.

Literature Review Search Strategy

I reviewed the related literature for this study for insight into why critical infrastructure deficiency harms the telecom industry's survival and how telecom business owners strategize to mitigate the critical infrastructure deficit’s impact on their businesses. The keywords that I searched included *change management, critical infrastructure, power-grid, Kotter's framework, strategy management, McKinsey 7S, Lewin’s framework, Nigerian infrastructure, telecommunications*. I accessed the peer-reviewed articles through ProQuest Central, EBSCO Open Access Journals, SAGE Journal, and Thoreau. Ulrich web global serials directory was the primary verification source for peer-reviewed articles. Table 1 includes the number of peer-reviewed articles within five years for the research study, and Table 2 includes the same information for the literature review.

Table 1

Data for Research Study

Source	Total	Total within five years	% within five years
Peer-reviewed	190	175	92%
Non-Peer reviewed Journal	28	17	61%
Total	218	192	88%

Table 2

Data for Literature Review

Source	Total	Total within five years	% within five years
Peer-reviewed	108	98	90%
Non-Peer reviewed Journal	15	9	60%
Total	123	107	87%

Analysis and Synthesis of the Conceptual Framework

Researchers use a conceptual framework to provide the focus and direction to the knowledge of research exploration. Change management is a systematic approach that business owners use to change their businesses from the current state to a desired state to achieve organizational goals. The change model can be observed and executed in numerous ways (Khodeir & Nabawy, 2021) and is a comprehensive approach to achieving organizational change. Change management is a complete approach adopted to change the organization from a current situation to a desired one through a coordination process with the stakeholders (Hamdo, 2021). Change management is an inclusive approach that includes preparing, directing, and supporting employees to achieve the organizational desire for change (van Hilten, 2021). Change management models give business leaders the required guidance on enhancing their effort's effectiveness for a desired change within their organization or business (Hussain et al., 2018).

I used Kotter's (1996) 8-step change management model in this study. This model is used to understand the change and transition process. It is a stepwise, hierarchical model that gives clear guidelines for each step and bases itself on a staged approach and change plan. The model is used by organizations to successfully implement change by providing a structured approach to address challenges encountered during the execution phase. As part of this literature review, I compared and critically analyzed Kotter's framework with other change management models, such as ADKAR, Lewin's theory of change, and McKinsey 7S change management. I did this to ensure that Kotter's model was the best to investigate change management strategies used by business leaders to successfully mitigate the business financial liquidation, which occurred due to a lack of critical infrastructure to support their businesses.

Kotter's Change Management Framework

Multiple researchers have noted that Kotter's change management process remains relevant, consistent, significant, respected, and popular within organizations and change management research (Wentworth et al., 2020). Kotter's change management process is applicable in healthcare, including executing a heart-failure disease management system (Casey et al., 2016).

Kotter's model works at both the micro and macro levels, and it works best when the change manager uses all eight steps in the order recommended (Baloh et al., 2018). Steps include the following:

1. Create a sense of urgency.
2. Create a core coalition.
3. Develop a vision and strategy.
4. Communicate and share a vision plan.

5. Empower employees to act on the vision.
6. Generate short-term wins.
7. Consolidate gains and produce more change.
8. Initiate and set new changes.

In the following sections of this literature review, I analyze literature and research studies that pertain to each of the specific steps of the model. I provide examples of how I documented the steps, highlighted them, or explained them in the literature review.

Creating a Sense of Urgency

Kotter's first step of the change process begins with creating a sense of urgency essential for any organizational change (Kotter, 1996). Researchers studying the Kotter process implementation have provided varying ideas about how creating a sense of urgency works in starting a change management project. When analyzing a change process at the University of Khartoum, Onia (2022) noted that the sense of urgency step folded into a generalized theme, create a change climate, that included other steps (i.e., setting a vision and creating a coalition). Eller et al. (2023) used Kotter's model to analyze healthcare system changes and found that creating a sense of urgency was a critical first step. They noted that referring to major medical issues, such as women having extensive bleeding during childbirth or bringing mortality report trends to the attention of the change team, will help demonstrate the need for urgent change.

In a federal health center in rural Kentucky, Carman et al. (2019) highlighted the application of Kotter's model in creating a sense of urgency to improve preventive care service delivery and reduce health discrepancies among patients. Kotter's model was used to create a sense of urgency regarding the benefits and reasons for the change process in the medical program at Charité Universitätsmedizin Berlin. Creating a sense of urgency was the critical step to successfully deliver the change process (Maaz et al., 2018).

Creating a Core Coalition

Philip (2020) argued that the successful application of Kotter's model in executing the quality improvement program in the Canadian surgical department, especially in head and neck surgery, showed a compelling reason for the Canadian hospital department to adopt the change process. This stage involves a coalition team, including executive leaders and volunteer employees with credibility, authority, connections, the right skills, and reputation to provide the expected change leadership (Mansaray, 2019). During the execution of the change process in the Canadian Hospital, Champion et al. (2017) identified two main issues: a quality gap regarding surgical site infection (SSI) and a communication gap within the team and they formed a coalition team comprising nurses, surgeons, and hospital administrators to solve these issues.

Developing a Vision and Strategy

The vision and strategy are blueprints that give a view of the organization's future after implementing change. Eller et al. (2023) developed the in-situ simulation (ISS) program to guarantee the safety of patients in the healthcare system. The program faces numerous challenges, from implementation to sustainability; however, Eller et al. used Kotter's model to identify missing critical components of vision development and strategy of the program that helped deliver the program's purpose for healthcare. The University of Khartoum used Kotter's model to develop the vision and strategy for its change management process. It was critical to convince a staff member to participate in the change process (Onia, 2022). Leaders are required to develop innovative, measurable, simple, and achievable goals that turn vision into reality, and this prevents resistance to change by the employee (van Den Heuvel et al., 2017).

Communicate the Vision

An organization's vision needs to be shared and communicated with the employees in a well-coordinated and simplified format with a focus on the frequency of communication so that the employees would completely understand the changing motive (Kotter, 1996). Aitken and von Treuer (2021), Bayraktar (2019), and Busse and Doganer (2018) stated that clear communication throughout the change process enhances the perception of trust. Vietnam Ho Chi Minh City's private university's change management process was successful because it followed Kotter's change processes. Wentworth et al. (2020) highlighted the step of communicating the vision as crucial because the faculty realized that providing correct, apt, and accurate feedback when sharing goals with the team helped secure faculty buy-in. The faculty acknowledged the significance of transparency and communication during the successful change of faulty participation in a business school's accreditation efforts. The quality of change communication significantly influences the employee's commitment to change, which positively impacts the change's success (Faupel & Süß, 2019; Ouedraogo & Ouakouak, 2018; Yahaya, 2020).

Empowering Employees to act on the Vision.

An employee requires the leader's support to remove all obstacles, such as lack of leader support, fear of persecution, and misaligned organizational structure to the change vision affecting innovation and recommendations (Kotter, 1996). Qatar Foundation deployed a change process using Kotter's change management process to analyze the barrier responsible for the unsuccessful implementation of the change process (Aronowitz et al., 2022). In Qatar Foundation, Kotter's change model helped determine a few barriers responsible for change failures, including fear, lack of uncertainty management, and the apprehension of criticism and uncertainty. Qatar Foundation's change process would have succeeded if Kotter's change model had been followed (Aronowitz et al., 2022).

Generating Short-term Wins

To demonstrate the practicability of change, short-term wins, and successes motivate the team to build on the momentum of the achieved short-term successes; it gives a sense of urgency that the vision is achievable and supports the achievement of the bigger and longer-term change goals (Abraham et al., 2023; Hee & Shanmugam, 2019; Kotter, 1996; Ong & Walker, 2022). Kotter's change model was used in a dental school in Vietnam to implement the change in dentistry education. Thi Thanh (2022) highlighted that the school's change process was a success because it generated the new change system in little bursts and generated short-term wins to gain the trust of the faculty members. The dental school defined the short and long terms goals with the measurable metrics that define critical success for those goals using Kotter's change model.

Consolidating Gains and Producing More Change

The team sees all small successes recorded in the change process as a prospect to leverage on the drive and produce more change with optimized actions and initiatives so that the gains achieved before the change process implementation are not reverted. When the faculty of the Education University of Khartoum successfully engaged, enabled, and executed the change process using Kotter's change model, all faculty departments received information about why changes were necessary and the continuation of the change process in all departments (Onia, 2022). Similarly, several change processes were applied using Kotter's model in diverse healthcare sectors, such as the execution of nursing bedside handoffs in orthopedic trauma units and heart disease management system facilities (Casey et al., 2016).

Initiating and Setting New Changes

The last step in the process, initiating and setting new changes, involves anchoring the changes made to become a permanent part of the organization's way of doing things. It is the most critical step in creating a real practical change. Several small rural hospitals in Iowa, United States of America, used Kotter's model while implementing Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS). TeamSTEPPS is a comprehensive safety customizable program developed for patient safety by the US Department of Defense and the US Agency for

Healthcare Research and Quality (AHRQ), where hospitals have complete autonomy in developing their implementation objectives and strategies. (Baloh et al., p.573) The change was piloted in a few departments, generating early wins and producing other reasons for further implementation across different departments. The hospital institutionalized the change process as part of the improvement process within the hospital safety framework and the process became part of the hospital culture (Baloh et al., 2018). The successful execution of the change process in small rural Iowa hospitals emphasized the importance of Kotter's change process and discipline in following all the steps sequentially (Baloh et al., 2018).

The following alternative change models were explored, compared, and analyzed with Kotter's model, including Lewin's, ADKAR, and McKinsey's 7S.

Lewin's Theory of Change

Lewin's theory of change has three major phases: unfreeze, change, and refreeze. The initial phase, unfreezing, includes the preparation for the next phase, which is the change phase, indicating when the actual change takes place (Lewin, 1951; Shaikh, 2020), and the third phase is refreezing, indicating the phase the change was acknowledged and executed (Davis & Fifolt, 2018; Rosenbaum et al., 2018). Lewin's three-step process has remained influential in change management research for several years (Eriksson & Fundin, 2018).

Paquibut and Al Naamany (2019) highlighted Lewin's model of change during the debut accreditation process of the High Education Institute (HEI) in the Sultanate of

Oman. The phases of unfreeze-change-refreeze hinged on a better perspective of the change process in the educational institution in the Sultanate of Oman. In the unfreezing phase, the HEI performed self-checks to identify all Oman Academic Accreditation Authority (OAAA) requirements and criteria for accreditation, including all requirements executed within the "changing phase." The result of the model was evident when OAAA accredited the educational institution (Paquibut & Al Naamany, 2019). Hussain et al. (2018) stated that the "refreezing stage" lacks documentation, an issue for organizations that are determined or committed to sustaining the change process.

Unfreeze

The first stage of Lewin's model involves preparing the organization to accept that changes are needed, embracing the change, and articulating, as a matter of urgency, the need for a change in the current status (Lewin, 1951; Shaikh, 2020). At this stage, effective communication is critical to getting the support and buy-in of the people in the change management (Galli, 2018). During the execution of a fall prevention improvement project in the United States of America, Igharosa (2021) used the model's first stage, "unfreezing," to determine the goals, expected barriers, and timelines for this project. Igharosa used these to communicate and educate the staff and all stakeholders regarding the importance of the change, which contributed to the successful execution of the fall prevention improvement project.

Changing

The second step of Lewin's model is the most critical stage because resistance from the team members is noticed due to a lack of acceptance of the change (Galli, 2018). The leader must empower the team to engage employees in this process and, dispel rumors through constant communication, identify a balanced approach to showcase the usefulness of the change to all the stakeholders (Amarantou et al., 2018; Lewin, 1951). Igharosa (2021) used Lewin's model (change stage) to analyze the change process during the fall prevention improvement project in the United States of America. Igharosa discovered the importance of the "change stage" of the Lewin model. Igharosa used this stage to determine the responsibilities of all staff members in implementing the fall program and all related actionable points.

Refreezing

The third step of Lewin's model required positive feedback, recognition, and encouragement of the employee to prevent them from returning to their previous behavior. Ribeiro and Kruglianskas (2020) asserted that this step stabilized the process through the implementation of the course of action by proper analysis. Constant improvement uses the results during the change process execution. Igharosa (2021) used Lewin's (refreezing stage) model to analyze the needed re-education for all staff so that implementing the improvement program could be fluent and stabilized.

ADKAR Model

The ADKAR change model was used to identify why changes are required and made and the necessary steps to make such changes successful (Shaikh, 2020). Jeff Hiatt developed the ADKAR model, one of this century's most used and known change management models (Agazu et al., 2022; Birbirsa & Worku, 2022). Al-Alawi et al. (2019) highlighted that 411 companies with effective change processes resolved that the main reason for resistance to change and change process failures was more understanding and communication about why a change was required and performed.

The Ministry of Education in Gulf Cooperation Council (GCC) countries used the ADKAR model to detect the difficulties in change management. The results showed that effectively communicating the change to the stakeholders could reduce resistance to change (Al-Alawi et al., 2019). The change model's name is an acronym ADKAR: It begins with awareness of the change and the desire to engage, support, and contribute to the change. After the awareness and desire, providing knowledge to people about the impact of the change process, the ability to implement the individual required skills and behavior through an improvement in capabilities, skills development, and associated resources are critical in this stage; reinforcement is the last element, and this includes all actions required to sustain the change within an individual and organization and building the new culture necessary for the desired change (Cai et al., 2018).

After the merger and acquisition of Corus Strip Product (CSP) in the UK, the employees showed low optimism, mismanagement of resources, and poor logistical issues within the UK. Bose (2020) highlighted that CSP change was inevitable because of the organization's inefficiencies. Executing the change process at CSP highlighted the importance of using the ADKAR model. During the first step of awareness, the CSP embarked on a campaign to demonstrate the need for a change to the employees and managers through a video recording of the poor working conditions and lousy environment at the plant. This awareness campaign helped the workers realize the importance of the change and helped to make a desire internally to support the change.

CSP arranged for several workshops to disseminate the message to all workers. During the change process, all participating workers empowered themselves by taking on a vital role while redesigning the plant control room to improve worker safety. This new role helped to build the ability and knowledge of the workers and improve their confidence level in terms of their capabilities to meet the required level of performance. CSP used video campaigns, billboards, and one-on-one discussions to reinforce these new changes as the organization's unique culture (Bose, 2020).

McKinsey 7S Framework

Two consultants (Robert Waterman and Tom Peters) at the McKinsey consulting firm developed the McKinsey 7S model (Demir & Kocaoglu, 2019). It is a valuable framework implemented by many organizations to assess efficiency and productivity. The McKinsey 7S framework merged three hard and four soft change elements (Masilela & Nel, 2021; Westney, 2020). The hard change elements included the system, strategy, and structure, while the soft change elements included skills, style, staff, and shared values, which generally take more work to manage (Park et al., 2021). The McKinsey 7S model could be applied in different organizations to analyze, assess, and monitor the change process within the organization.

The security and stability of airports are of great significance to the economy and government (Park et al., 2021). The 7S McKinsey framework was deployed in an airport infrastructure as a critical tool to evaluate and establish the strengths and weaknesses of the infrastructure, changes required for implementation leading to strategic re-organizations, system developments, resources skillset uplift through developmental training, and new acquisition of skill and knowledge (Park et al., 2021). The airport's strategic intent was to build a competitive advantage by merging a group of structures that is well-designed in a well-coordinated manner by introducing new flight routes, airlines, hotels, restaurants, duty-free shopping centers, and faster and more convenient delivery of information through electronic and information technologies. The airport systems were combinations of multiple companies and airlines, and making them function interdependently required new technologies and different professionals with various skills. This complexity comes with frequent changes of top managers as demanded by the dynamic of the competitive landscape. The airport systems included quality and control systems, check-in systems, baggage handling systems, in-flight entertainment systems, and security systems, which preserve the safety and stability of all passengers and personnel (Kukkamalla et al., 2020).

The staff and skill aspect of the airport organization is fundamental and crucial to delivering the demanded services. Employees with superior skill sets, capabilities, knowledge, and qualifications were required for continuous improvement of security and safety at the airport (Kukkamalla et al., 2020). Airport managers were responsible for showcasing a good image and brand to the external world, including all clients.

Lastly, the staff's commitment, professionalism in delivering high customer-centric quality services, and a secure and safe environment at the facility demonstrated the shared values of the airport. The airport managers would influence the style as part of the model. At the core of each department was shared value, which included staff specialization, commitment, quality of services, safety, and security of the environment (Kukkamalla et al., 2020).

BMW decided to change its offering by integrating digital services into the market. The expectation was to generate revenue through the new revenue channel and expansion of the digital customer solution - ConnectedDrive services. BMW used the McKinsey 7S Framework to implement its new business model process. The company based its structure on the arrangement of the business transformation, allowing continuous monitoring of the digital service adaptabilities and the associated quality services improvement based on feedback from the customer (Kukkamalla et al., 2020). BMW's primary strategy was to improve its competitive advantage in terms of customer service offerings through collaboration with stakeholders like developers and third-party established IT firms (Kukkamalla et al., 2020).

The BMW digital services system was a product of innovation, such as intelligent personal assistants that helped drivers with all related driving issues and proactive engagement of customers during the customer service designing processes. The innovation led to meeting customer expectations through a collaborative relationship with the customer. BMW appointed an experienced staff to guide digital products and services. He created a "virtual innovation agency" that fostered an innovation hub from selected people for services development and start-ups for new development. The innovation hub offered research grants to institutions to develop products and services for BMW to meet the skill demand gap (Kukkamalla et al., 2020). BMW's commitment and motivation to innovation are from the top senior management of the company because of behavioral rollback processes if there is no sustained reinforcement and support (Bartholomeusz & Edirisooriya, 2021).

BMW defined its business transformation and style within the organization's cultural context. It moved from a conventional luxury car manufacturer to an innovative technology company with automated digital connectivity. BMW sensed the need for digital innovation services was new to the industry; hence, it had to hire technologically skilled resources from outside to lead this innovative project. In addition, it leveraged the collaboration of the technology eco-system like IBM and established IT firms to acquire new technological know-how, analytical capabilities, and skillsets. BMW's shared value was to create a new stream of revenue, better customer relationships, and expand digital services. These additions played a key alignment role for all the other elements to sustain an effective organization (Arieli et al., 2020).

Analysis of the Change Models

Each change model available for business practitioners or researchers has benefits and challenges. Many work better in specific circumstances than others. This section reviews all the discussed models, explaining the final choice of Kotter's model. The section highlights how ADKAR and Lewin's models map into Kotter's model and their differences while reviewing similarities and differences among all the change models.

Table 3 shows how the steps in Lewin's model relate to those in Kotter's model.

Table 3

Lewin's Model Versus Kotter's Model

Lewin's Model	Kotter's Model
	Creating a sense of urgency.
Unfreeze	Creating a core coalition.
	Developing a vision and strategy.
	Communicating and sharing a vision plan.
Change	Empowering employees to act on the vision.
	Generating short-term wins.
	Consolidating gains and producing more change.
Refreeze	Initiating and setting new changes.

Table 4 shows how the steps in ADKAR's model relate to those in Kotter's model.

Table 4

ADKAR's Model Versus Kotter's Model

Adkar's Model	Kotter's Model
Awareness	Creating a sense of urgency.
	Creating a core coalition.
Desire	Developing a vision and strategy.
	Communicating and sharing a vision plan.
Knowledge and Ability	Empowering employees to act on the vision.
	Generating short-term wins.
Reinforcement	Consolidating gains and producing more change.
	Initiating and setting new changes.

Table 5 shows how the steps in the ADKAR's model relate to those in Lewin's model.

Table 5

ADKAR Model Versus Lewin's Model

ADKAR's Model	Lewin's Model
Awareness	Unfreeze
Desire	
Knowledge	Change
Ability	
Reinforcement	Refreeze

Lewin's change model emphasized why people resist change and provided the mechanism to drive people to accept and support changes. In contrast, the ADKAR model primarily focused on the importance of people (Das, 2019). Finally, Harrison et al. (2021) postulated that the McKinsey 7S model focused more on identifying areas in an organization where leaders could implement change.

Most organizations widely use Kotter's model for the change process because of its versatility and proven track record for change success (Wentworth et al., 2020). It gives stepwise wins, which enhances confidence and boosts the team's morale, and it highlights the significance of quick wins that employees need to move to the next high level of employee engagement in the change process (Onia, 2022).

Rawson and Davis (2023) articulated that there are many change management models, but there is compelling limited evidence of choosing one model as being effective in all circumstances. Rawson and Davis proposed a framework that builds on the organizational preferred change management models based on the change and the environment that blend the main features between models. Lewin's model focuses on change without considering the environment and leadership style. In contrast, Kotter's model focused on the cause of the failures, focusing on leadership and the people involved in the change process. Rawson and Davis's four-part framework includes:

1. identify the desired change
2. analyze the change
3. understand the organizational context
4. adapt the change model.

I used two cases to illustrate the framework, including implementing the standardized reporting template for clinical and radiological results and the COVID endemic leading to the remote working environment.

Case 1: Standardization of Reporting Template

Step 1: Identify the desired change.

Over the years, there has been no standardized template for reporting the imaging findings and recommendations of the radiologist analysis; hence, standardizing this report is a leading change requirement to enhance efficiency and clarity.

Step 2: Analyze the change.

Change management could be viewed and analyzed as organizational change and focal change depending on different factors, including expected features change and additional infrastructures or tools. During the pragmatic inquiry study, the focal change perspective viewed the change as an isolated radiologist workflow that does not require input from other departments and stakeholders. However, with an organizational change perspective, other stakeholders and leadership would be involved from the planning stage to the execution stage, and this could be seen as a loss of control by radiologists because they will have to follow all recommendations that did not come from them hence resistance would be built and need to identify and mitigate such resistance would require resources (Galli, 2018).

Step 3: Understanding of the Organization

The change to a standardized template was made because of inherent problems with existing reports that need more efficiency, clarity, and the same level of understanding and interpretation across all the stakeholders. Understanding the need and involvement of all the stakeholders and the type of people within the organization that could be an influencer for or against the process will determine the success of the change (Amarantou et al., 2018; Ellis et al., 2023).

Step 4: Adapt the change model.

The result of the change produced a better understanding of the need for the change and an increase in the promoters of the change within the organization. The success of this change laid a foundation for adopting more changes to improve the department's continuous delivery.

Case 2: The second case is during COVID-19 and transitioning to a remote working environment

Step 1 – Identify the desired change

During the COVID pandemic, it became challenging for many hospitals to keep all their staff working; hence, there was a strategic decision to adopt remote work for many staff.

Step 2 – Analyze the change

The leadership team identified the change process as an organizational change, and the focus was on the digitalization of all the workflow processes and delivery, which was very rapid. Enormous organizational resources, including all stakeholders and leadership "buy-in," were committed for the process to be successful (Gaetke-Udager et al., 2023; Recht, 2023).

Step 3 – Analysis of the organization

Identifying all critical stakeholders according to their requirements and needs for remote work, ranging from furniture, workstations, training, internet bandwidth, and secure physical and virtual space for their clinical work, was a critical success factor for the change (Recht, 2023). The rate of change was rapid, with some challenges of some hardware equipment because of the logistical issues and adaptation of new software tools used to respond to the challenges of remote delivery (Al Fannah et al., 2022). During the pandemic, they modified the organizational communication model to adopt an incident command structure where they defined roles, authority, and bi-directional communications to facilitate rapid changes.

Step 4 – Adapt the change model

The nature of the change process during the pandemic was very rapid, and it involved incorporating elements from another change model to deliver the expected change.

Rawson and Davis's (2023) framework assumed that required skills to assess, select, and adapt to the type of change within the organization. Organizations with the right leaders and leadership skills to create and share the vision and resources to support the change would succeed in delivering the change. However, the limitation of this framework was that there is a high potential for complexity with the change impacting the organization's resources due to the high demand for resources. Hence, for a change to be successful, the right leader and leadership skills are required to create the vision and disseminate it to the team, allocating the resources for the change based on organizational priorities.

Bala (2022) highlighted the negative impact on business revenue because of ineffective change management strategies during research on "strategies to implement a change management process for public sector management in Nigeria." Bala articulated the focus area for ineffective change management strategies emerging from research, including company culture, leadership, communication, and behavior (Seamons & Canary, 2017). Ememe (2017) emphasized in a study on "strategies for managing change in the Nigerian financial sector" based on semi-structured interviews with 30 practitioners in the Nigerian financial industry with organizational change experience that the importance of effective communication, culture, and leadership in change management success is critical. In his research "Implementation strategies for change initiatives," Jones explored strategies used by aerospace manufacturing managers in the Midwest region of the United States to implement successful changes (2019). Lewin's change management model and Kotter's 8-step change model grounded his research. Jones found that communication is one of the critical strategies for change management success. Some other studies indicated that these focus areas are essential to successful change management and mitigation against resistance within an organization, provided the proper process and policy are in place (Schwarz et al., 2021; Shulga, 2020; Vos & Rupert, 2018).

Edwards Brown (2020) argued in his research on "successful strategies to lead change initiatives" that business leaders who lack sustainable change management strategies are highly susceptible to business closure. He highlighted that some of the change management strategies used by business leaders to remain operational include improving communication, providing leadership, strengthening the organizational culture, and mitigating people's resistance (Galli, 2018; Rosenbaum et al., 2018; Vos & Rupert, 2018).

Omorodion (2021) discussed operational change management strategies used by business leaders in Nigerian refineries to remain sustainable and achieve operational efficiency to mitigate business failures. He highlighted a few methods, including influential organizational culture, purpose-driven leadership, and people (Sweis et al., 2019). Omorodion (2021) further found that the dependency of the economy on fossil fuel and the lack of political will of the government to repair all Nigeria 4 major refineries, despite the allocation of billions of dollars over two decades, has pushed most businesses into a state of bankruptcy, especially that one required energy to deliver their services. He further proposed an operational change model as an alternative source of energy (solar energy), which is cheaper, readily available, energy independent, and less dependent on the government's reckless policies on energy delivery (Abdullahi et al., 2017; Heng et al., 2020).

Solar energy is thought to be the most adaptable energy source of all renewable energy because of its limitless potential, and it is abundant; it comes from energy radiated from solar energy (sun), and it is 3.8 x 1023kW/sec (Babatunde et al., 2019). Babatunde et al. (2019) highlighted that Nigeria collects 5.08 x 1012kWh of solar energy daily, which is available for almost 26% of the day. Ndagijimana et al. (2019) and Wakeford (2018) highlighted the importance of solar energy in Africa, especially in the rural communities and most urban cities in Nigeria, because of the unavailability of electricity from the grid. Other reasons include total independence from changing prices in oil markets, coal, gas, or external factors like war and international disputes that affect the oil price (Gaille, 2018). Gaille's (2018) research also found that the savings accrued to households that installed solar over 20 years is as high as $30,000, demonstrating that solar energy is more profitable over the years than other energy sources. Moreover, strategies common to change management are reviewed below, including organizational culture, communication, leadership, and behavior.

Organizational Culture

Lewin (1951) indicated that change management would be successful if the new culture became the way of life, an integral part of the change process in the organization, and a critical factor to consider when scholars were developing change management practices (Lovelace & Dyck, 2020). In her research, Bala explored different ways leaders used the existing knowledge of culture to promote organizational change despite various challenges of cultural change within the organization (Daniels & Tenkasi, 2017). Further viewpoints on the organizational culture showed that aligning the vision and strategy with action and the guiding principles to harmonize culture within the organization is very important to the success of the change management process. Bala (2022) failed to shed more light on this viewpoint using Lewin's model because of its limitations of cost and few details in identifying specific steps to implement change. However, Kotter's model provided more detailed steps to implement the change. Kotter clearly understood the linkages between the vision and organizational culture from steps three and eight of Kotter (8-steps), reinforcing the change management success dependency with sustained organizational cultural change and strategic vision (Galli, 2018).

Communication

Communication is an effective tool leaders use to deliver a successful change management process, and it is one of the most prominent strategies used in change management (Fronzo, 2018; Hussain et al., 2018). The direction of the communication flow must be bidirectional (top-down and bottom-up) with stakeholders; it must be about the change process to gather valuable information for the process, to mitigate the resistance, and must be continuous throughout the entire process (Arnaout & Esposito, 2018; Botez, 2018; Faupel & Helpap, 2021; Royce, 2018;). According to Petrou et al. (2018) and equally highlighted by Bala (2022), communication is a potent strategy used in change management to mitigate employee resistance and boost their morale towards adopting change management in an organization. Furthermore, getting employees involved through communication at the very early stage of the change management process is crucial to the success of the change management because it increases their buy-in and participation (Ahmad & Cheng, 2018; Kanitz & Gonzalez, 2021). In their research, Seamons and Canary (2017) indicated how communication impacted team performance and job satisfaction during the change management process carried out in an ophthalmological surgical department.

Lewin's model could only highlight that during the change process, communication should be about change (Lewin, 1951). This statement was too vague and lacked a deep dive into communication strategy. Kotter's model (Step 4) delved into why communication is required, the frequency of communication, steps to be taken by management, quality of communication, and channels of communication that are effective as per the organizational structure and size (Faupel & Süß, 2019; Kotter, 1996; Ouedraogo & Ouakouak, 2018; Wentworth et al., 2020; Yahaya, 2020).

Leadership and Behaviour

An organization's top leaders drive change management. The leadership styles adopted in the change management strategies must be adaptive depending on the organizational peculiarity (Germain, 2017; Kiran & Tripathi, 2018). Bosse et al. (2017) highlighted that a leader's role is to inspire team members to achieve organizational change and enhance employee acceptance through continuous support and mentorship. Bosse et al. (2017) raised the point that during the change management implementation, different leadership styles have other impacts on employees and, subsequently, on the overall success of the change management. Many scholars have analyzed different leadership styles and concluded that leadership behavior, styles, approaches, and characteristics drive leadership classification. Harish and Prabha (2020) emphasized that transformational and transactional leadership styles are the two most influential, popular, and effectively used in most recent organizational research work.

Transformational Leadership Style

Susanto et al. (2023) found that the transformational leadership style promotes employee's mindsets and reception towards change management, transcending from self-oriented to team and organization-oriented goal-oriented. One of the attributes of transformational leaders is the ability to adapt to different situations per the organization's requirements during the change management process (Khan & Khan, 2019). The leadership style requires a high focus, goal-oriented, charisma, trust, and people's engagement in implementing change (Shulga, 2020). Akinbode and Al Shuhumi (2018) found that transformational leadership is a crucial driver for creativity, transparency, and openness during the change management process, which are precursors to its success.

The transformational leadership style functions with Kotter's (1996) 8-stage change model, using trust and motivation to get the employees to buy into the vision set by the leader. Tembo (2021) found that leadership is one of the most significant strategies adopted by Zambian business leaders who successfully sustain their business operations. One key recommendation from the research indicated that a transformational leadership style is recommended for the business leader who wants to succeed in change management implementation. The transformational style helps provide a sense of direction and align the stakeholders to a common goal and vision that facilitates organizational change success.

Tobias (2015) explored both Kotter's 8-step and Lewin's change management models. His study showed a significant research gap in Lewin's change model concerning resistance to change. Tobias assumed that the success of the change is the ability of the leader to change the behavior of the employee only, not considering the leader's behavioral change during the change management process as covered in detail with the Kotter model (8-step).

Transactional Leadership Style

Rewards and penalties assigned to employees per their performance are the basis of the transactional leadership style (Harish & Prabha, 2020). The transactional relationship is between the leader and the follower based on performance requirements placed on the follower from an organizational standpoint. Transactional leaders exchange rewards for meeting goals. If employees do not meet the goals, there is the possibility of penalty enforcement; hence, it is in the best interest of the follower to meet the organizational goals. Transactional leaders rely on authority instead of persuasion to maintain order in an organization (Bosse et al., 2017; Harish & Prabha, 2020).

Transactional leadership styles work effectively when a methodological approach is required to deliver a project quickly. Also, if the organization focuses on performance, transactional methods are not recommended when looking for a new direction and culture change (Harish & Prabha, 2020). However, when both transformational and transactional leadership styles are blended, the mix favors high organizational performance and task completion. This blended leadership style is known to be the best type of leadership; mid-level executives could use the transactional style for performance monitoring, while high-level executives could use a transformational style, which provides the proper guidance to the organization and inspiration to the employee (Harish & Prabha, 2020).

Bala (2022) further emphasized that one of the critical implementation strategies adopted for change management in Nigeria's public sector is using a smaller pilot group to test-run the strategy. Management can align the test run across the whole organization.

Research mentioned that this practice aligns with Kotter's sixth step (generating short wins) (Abraham et al., 2023; Hee & Shanmugam, 2019; Kotter, 1996; Ong & Walker, 2022). However, the research focuses on Lewin's model to ground the study, which is too simple and primary. A few critical success factors in change management, including the touch of leadership, people, and environment, are either evidently missing or not explicitly treated in detail in Lewin's model (Onia, 2022).

Kotter's model includes creating a sense of urgency for the change as the need for the change, shared vision, and communication of the vision to help galvanize change management (Williamsson et al., 2016). Lewin's model adopted for the research emphasized the need for change and leadership with both external and internal organizational impact. However, it is limited as compared to Kotter's model, which has a deep focus on the need for change (step-1), shared vision (step-3), communication (step - 4), and leadership (step 5-8) in a well-orchestrated and structured manner (Oxenswärdh & Fredriksson, 2016).

Nicholas (2018) indicated an alignment between Kotter's 8-Steps change management model and four significant steps used during his research to explore strategies hospital leaders use to successfully implement electronic medical records (EMR):

1. creating a vision
2. communicating the vision
3. establishing strong leadership

4. consolidating gains.

Researchers working on change management in health care have adopted Kotter's change management model as the preferred change model (Baloh et al., 2018).

McKinsey's 7S model is useful by helping business leaders analyze and identify parameters within the organization that require change. However, incorporating all change levels is too complex and time-consuming; it focuses on skill development instead of the people side of change. Leadership will first require a complete understanding of the principles of change and then develop the necessary skill sets to adjust dynamically to the change implementation per the organization's needs (Galli, 2018).

Decision Justification and Conclusion

Kotter's model combined simplification and structure while positioning itself as an organization-wide and person-focused approach. Kotter's 8-step plan provided more clarification on how to implement changes, including the means to make the culture of the organization part of the change for the sustainability of the change process. The model emphasizes the need for top management's deep commitment to the change process from the beginning to get their buy-in and suggests a suitable approach to adopt when it comes to resistance from the team (Onia, 2022). Kotter's model efficiency and application across all business and corporate sectors from healthcare, education, services, and manufacturing is well documented (Baloh et al., 2018; Carman et al., 2019; Casey et al., 2016; Onia, 2022; Thi Thanh, 2022). Kotter's 8-stage model for leading change provides a useful framework for analyzing, evaluating, and executing change management strategies that business leaders can employ to successfully implement organizational changes. However, some researchers insinuated that in Kotter's model, not all steps need an equivalent level of attention; if management skipped one step, the process was delayed and impacted project completion (Baloh et al., 2018; Wentworth et al., 2020).

Critical National Infrastructure

Critical infrastructures are those resources, services, and infrastructural assets that severely impact the country's society, security, and economy if damaged or destroyed (De Felice et al., 2022). The study focus was on electricity as a critical infrastructure. Adigun (2018) highlighted that electricity is one of the essential parts of critical infrastructure and is crucial to the survival of society. Electricity impacts all facets of the social fabric; it is a solution to the economy's security, including businesses, properties, and life.

Approximately 789 million people were estimated to be without access to electricity, a total of 1.14 billion people in sub-Saharan Africa (Alabi et al., 2022). In Africa, inaccessibility to electricity is the greatest challenge to the development and prosperity of the continent (Marwah, 2017). Despite the awareness of electricity's contribution to improving the quality of life in Uganda and the government's policy to develop power generation, there are still constant power outages and unreliable and inaccessible power supply (Wabukala et al., 2022).

In Nigeria, the infrastructure challenges, ranging from the disparate spread of electricity and intermittent power supply across the country, remain the critical factors mitigating the human and socio-economic development of the country (Adams & Odonkor, 2021). According to Ojo (2020), over 20 million houses are deprived of electricity, while approximately 84 million people's households do not have access to the national grid as of last decade. In 2010, there were 14 generating plants and about 13,000km of transmission infrastructure and distribution, providing approximately 5,000 MW, far below the expected demand of 21,000 MW of electric power (Ojo, 2020).

Electricity was constantly subject to vandalization and malicious saboteur attacks, resulting in irregular and non-availability of power supply, causing hardship to businesses and society (Adigun, 2018). Many countries, including Nigeria, have adopted several strategies and reforms to fix the power supply problems. However, all these reforms have yet to deliver the needed results due to government bureaucracy and inefficiencies ranging from misappropriation to corruption of public funds (Eberhard et al., 2018). The resulting plan to mitigate government dependencies is to privatize the electricity sectors. However, this strategy has often been unsuccessful because many individuals and companies opt to generate their electricity to meet their needs due to the unreliable and inadequate supply from the national grids in sub-Saharan African countries (Jamasb et al., 2017).

Impact of the Critical Infrastructure Deficiencies

Over 80% of Nigerians use alternate and backup power sources such as generators and solar PV with inverters, while the diesel individual generators' contribution to the country's total power output is between 8 and 14GW (Heinemann et al., 2022). Nigeria is the highest generator importer in Africa and one of the biggest in the world, spending over $14 billion annually on the installation, operation, and maintenance of generators (Babatunde et al., 2023; Heinemann et al., 2022). Power is critical to the growth of every economy (Adigun, 2018). Nigeria's deteriorating and dysfunctional power infrastructure has been a major factor preventing it from achieving its goal of becoming a top 20 global economy by 2020. The poor state of Nigeria's electricity systems and networks has hindered its economic growth and development (Banko & Onyekachi, 2020; Ebuh et al., 2019). Adesanya and Pearce (2019) showed that inadequate supply and lack of reliable electricity threaten the Nigerian economy.

The World Bank enterprise survey for Nigeria indicated that electricity is the biggest hurdle to doing business in Nigeria (Orjiakor, 2022). The erratic supply of electricity is one of the reasons why companies are shutting down; many businesses are resorting to self-help by generating their electricity through generators, which is very expensive to the economy and industry. (Kola-Dare, 2022). Businesses suffered an annual loss of $29 billion in Nigeria due to inadequate power supply (Olayinka, 2021).

The impact of this critical infrastructure deficiency is that over 90 percent of the telecommunication companies in Nigeria risk extinction within the next five years unless strategies to manage this deficiency effectively are deployed by business owners (Ajanaku, 2022). The contribution of ICT to Nigeria's GDP in Q3 2022 stood at 15.35%; hence, if 90% of telecommunication companies in the ICT sector are at risk, then the country's economy is at significant risk (Akintaro, 2022).

Causes of Critical Infrastructure Deficiencies

Critical infrastructure is vital to the economy because it comprises resources, services, and network infrastructure assets. Infrastructure damage would severely impact all citizens (De Felice et al., 2022). Railroad transportation is one of Argentina's critical infrastructures because of its contribution to its economy. The primary transportation system commutes citizens across the country to work and places of their choice. However, in 2001, during the financial crisis, the country went into sovereign default. Poor services and delays were everyday occurrences that occasionally led to unavoidable accidents with the loss of innocent lives, resulting in widespread violence and public disturbances (McCallum, 2019).

Vandalism and sabotage are other causes of critical infrastructure deficiencies resulting in a lack of electricity and loss of revenue to the power organization. Vandalism and sabotage are common threats to the power supply in Africa. A South African power line was blown up by saboteurs, causing several blackouts. On the 20th of November, 2015, nine states in Nigeria went out of power due to the vandalism of the Okpai/Onitsha 350 KVA power line, which resulted in a loss of 450MW of energy (Babatunde et al., 2023; Emetere et al., 2021). The continuous failures of critical infrastructure are reminders that there is a need for its resilience (Cantelmi et al., 2021).

Babatunde et al. (2023) highlighted that saboteurs and vandalism are the primary reasons why regular power supply is unavailable in Nigeria. Saboteurs sell vandalized equipment back to the market, which creates a cabal of black marketers for stolen power equipment. This situation contributed to the current power crisis; below 4800MW is available to generate and distribute. 18.7GW (25%) is required for decent economic growth (Emetere et al., 2021). Njoku (2016) articulated that one of the most prevalent reasons for the epileptic power supply in Nigeria is pipeline vandals because pipelines transport gas to thermal power. Over 86% of the national power generation is from thermal power plants, which are dependent on gas supply.

Telecommunication Industry in Nigeria

Former President Olusegun Obasanjo deregulated Nigeria's telecommunication industry in 2001, catalyzing the GSM revolution. This pivotal action marks the beginning of mobile telecommunications in Nigeria.

The first GSM telecommunication network operation began in August 2001 by two service providers called Econet Wireless (now Airtel) and MTN Nigeria (Oladimeji & Akinwole, 2018). In 2003, Nigeria gave Globacom a second national carrier license to commence operation, while the government granted additional licenses to Etisalat and Aliheri Engineering to start GSM in 2007 (Oladimeji & Akinwole, 2018). The telecommunication industry has witnessed a monumental surge in investments (more than

$75.6 billion as of December 2022, according to Executive Vice Chairman of the Nigeria Communication Commission (NCC), Umar Danbatta (Aro, 2023). This investment has a corresponding impact on the sector's contribution to the country's economy. The National Bureau of Statistics (NBS) stated that ICT contributed 16.51% to the national GDP in 2022 (Akintaro, 2022).

The market segment share in the industry indicated that MTN remains in the pole position with 79 million subscribers, representing 38.36% of the market share. At the same time, Airtel came in second place with 58.1 million subscribers, representing a 28.21% share. Globacom has 56 million customers and is in the third position, representing 27.25% share. However, 9mobile occupied the fourth place with 12.6 million customers, representing a 6.14% market share. According to NCC, one of the main contributors to this revenue increase was telecom towers, which have increased from 30,000 to 53,460 within three years.

Despite the vast telecommunication sector's contribution to the GDP, the lack of infrastructure, such as power, remains a significant challenge preventing the industry from reaching its full potential. The dependency of the telecommunications sites' power source on diesel generators as an alternative to grid power has caused significant operational and financial hardship to the delivery of services (Ibhaze et al., 2022). According to the NCC, the operating expenditures of Nigerian telecommunication companies increased from ₦1.4 trillion in 2020 to ₦1.66 trillion in 2021 (Eberechukwu, 2022). However, in 2022, when the diesel cost per liter rose from ₦225 in January to

₦750 in March, the annual price of telecom services power operation increased by 22% to ₦2.02 trillion (Eberechukwu, 2022).

Telecom towers are physical infrastructures critical to delivering wireless network coverage that enables wireless communication between users. Telecom towers require power, and the energy needed depends on the type of active equipment installed, the number of antennae, and other telecommunication equipment. Grid power guarantees the power requirement; if there is no grid power, alternative power sources such as diesel generators become a realistic option, as in the case of Nigeria (Islam, 2018; Modi & Singh, 2020). Mobile Telecommunication equipment comprises both active and passive equipment. The operational equipment includes a radio access network (RAN), core network (this consists of the mobile station center, home location register, network switching subsystem), and transport system (microwaves, active fiber equipment). It is responsible for 60% of the required power.

In contrast, the passive equipment includes physical structures (towers, shelters, aviation warning lights, lighting systems), power systems (diesel generators, grid supply, battery bank, automatic transfer switch), and cooling systems (air-conditioners). Passive equipment is responsible for 40% of the required power. The telecom towers' power requirement ranges from 1kw to 10kw, and it varies based on the number of radio access network equipment (RAN), diesel generators (DG), cooling equipment, and the number of the transport system (Deevela et al., 2023).

Change Management Strategy to Mitigate Business Liquidation

The telecommunication industry faces a critical risk of survival because of a lack of infrastructure, especially power that is not readily available from the grid; the only alternative is to generate power through diesel generators, and this has a financial impact on the cost of doing business (Eberechukwu, 2022). However, one of the reasons why many telecommunications companies have collapsed in Nigeria is because of the unsustainable high cost of diesel and the cost of maintaining sites to run the operation of the business. These companies lack strategies to reduce the impact of the unstainable cost of running the operation caused by the deficit of critical infrastructure such as power in Nigeria. As the power demand for telecom equipment in the sector condinuously increases, the need for the only optional alternatives to grid power (DG) also rise due to the grid's lack of reliable power supply (Avikal et al., 2021).

The impact of the high cost of diesel and maintenance of the site is a significant risk to telecommunication operations. A risk management process involving five stages manages the risk. The five processes, according to Strapuc and Tudose (2018), are:

1. risk identification by listing the potential risk sources
2. risk analysis by examining the cause and effects of the listed risks
3. risk ranking according to the potential severity
4. risk treatment by applying strategies and corrective measures
5. risk situation assessment through evaluating the effectiveness of every stage in the chain of the risk management process.

There is a need for precise strategies to mitigate this risk, which need to be driven by the business owners. Change management for the organizational infrastructure and operations is required to minimize the impact of inadequate national infrastructure. The success of the change management process could be critical for the survival of organizations in today's highly competitive and complex business environment (Appelbaum et al., 2018).

Change management must mitigate key critical risks such as high diesel costs, operation costs for site maintenance, exposure to diesel, and DG theft. The sense of urgency is the risk of business liquidation due to the uncontrolled high cost of diesel, theft, and site maintenance. One recommended option was to convert all the diesel generator-powered sites to environmentally friendly renewable energy-powered sites (Jansen et al., 2021; Margaret Amutha et al., 2018; Muthusamy et al., 2021; Odoi-Yorke & Woenagnon, 2021; Podder et al., 2021; Zeljković et al., 2022). This option could mitigate uncertainty and unpredictable diesel costs, diesel theft, and high generator maintenance costs, reducing diesel consumption and its impact on the environment (Gandhok & Manthri, 2022).

There was also the option of changing the operation model from in-house management of the telecoms tower to managed service by third parties (Babatunde et al., 2023). This option would enhance the efficiency and quality of service because of the service level agreement (SLA) involved in the delivery (Odoi-Yorke & Woenagnon, 2021). The change management model would allow telecom businesses to focus on the core business, including the sale of airtime and SIM cards. The model would allow businesses to predict income and expenses, have a near-perfect budget for the operation without colossal variation, and control the cash flow of the business finances.

Selling all telecom towers to tower companies constituted the third option. This action would transition the capital expenditure (capex) to operational costs, enhancing cash flow predictability. Employing Service Level Agreements (SLAs) would also govern service delivery and quality to prevent performance degradation. The revenue generated from tower sales could be reinvested in other business units, potentially amplifying profitability.

Transition

Section 1 incorporated the problem statement, the purpose statement, the nature of the study, the overarching research question, interview questions, the conceptual framework, operational definitions, assumptions, limitations, and delimitations. In addition, a discussion of the significance of the study and synthesis of professional and academic literature relating to change management and the telecommunication industry in Nigeria using Kotter's change management model as the conceptual framework occurred. Further, the study detailed an in-depth exploration and analysis of three other change management models that could apply to successful change. A critical evaluation of each of the models resulted in a determination that Kotter's change management framework most appropriately supported the proposed study, especially in light of how other researchers have analyzed and applied Kotter's model. Regardless, the interviews and data collection process could prove more enlightening regarding which models most align with the participants' techniques and strategies.

Section 2 of this study, as required by the program's template, explains and justifies my role as a researcher and the logic in choosing the participants. The research method and design, sampling method, data collection instruments, data organization techniques, data analysis, and ethical research approach are described, along with comprehensive strategies to guarantee the credibility and transferability of the proposed research. Section 3 includes the presentation of the research findings and their application to professional practice implications for positive social change and recommendations for future study and reflection.

Section 2: The Project

The lack of critical infrastructure is a considerable risk to the survival of businesses in Nigeria, and it hurts the overall prosperity of companies in Nigeria (Adigun, 2018; Ajanaku, 2022). Nigerian businesses must improve change management strategies. This section includes a description of my role as the researcher and the research method and design, sampling method, data collection instruments, data organization techniques, and methods adopted for the data analysis and organization.

Purpose Statement

In this pragmatic inquiry study, I identified and investigated the change management strategies used by successful telecom companies in Nigeria to mitigate the lack of critical national infrastructure. The findings of this study could lead to a positive social change effect on the economy as successful change management could lead to more stable employment of local citizens and mitigate the adverse impacts of business liquidation due to lack of critical infrastructure, thereby creating benefits for all the citizens.

Role of the Researcher

Researchers in qualitative studies are the primary data collection and analysis instruments because they initiated and conducted the research (Clark & Veale, 2018). My role as the capstone study researcher was to gather information, formulate the research questions, conduct interviews, compose the sample, select participants for the research, collect data, analyze data, create themes, and present findings, implications, and recommendations (see Karagiozis, 2018; Kross & Giust, 2019). Qualitative research can produce a high probability of bias because of the researcher's familiarity, which can influence the validity and reliability of the study due to their personal views, beliefs, interests, and principles (Wadams & Park, 2018).

I explored successful change strategies business leaders in Nigeria's telecommunication industry used to mitigate the need for critical national infrastructure. The problem that I identified was that many business executives in telecommunication companies in Nigeria needed more change management strategies to mitigate the lack of vital infrastructure to avoid business financial liquidation.

I was the instrument for this research; hence, I selected the methodology, design, participant selection and conceptual framework, data collection method, analysis, and reporting. Further, I collected all data personally. My expertise and proficiency in the research topic enabled the preparation for this research. I am an executive vice president of a telecommunication company that has successfully implemented extensive enterprise change management, an agile framework enterprise-scaled professional consultant (SAFe-SPC), and a master lean black belt professional. Further, I conducted a qualitative inquiry project for my master's degree program and have experience interviewing as part of the data collection methodology.

I followed suggestions by Wadams and Park (2018) on how to mitigate personal bias. Those suggestions included using a set interview protocol, member checking (validating the interview data with the participant), bracketing (isolating my personal beliefs, views, and previous experience from the research process), and viewing collected data through an objective lens instead of a subjective one. I used the epoché principle of focusing on fresh perspectives during the research. I used bracketing to identify and isolate my biases through journaling and meeting with my chair to discuss potentially biased reactions to data.

After securing the approval of Walden University's Institutional Review Board (IRB), I proceeded with the interviews. I only conducted interviews with all the participants who met the selection criteria to ensure creditability to my research study. During the interview process, I used Zoom to record the interview. I used NVivo to collect, organize, store, and preliminarily code the transcripts.

The responsibility of the research ethics after publication solely rests on the researcher. The researcher must ensure that the participants felt secure, that no risk or harm was respected, and that the researcher respected their opinions during the interview (Shaw et al., 2020). In conducting this study, I fully adhered to the ethical standards and principles outlined in *the Belmont Report*, including guidelines for mitigating risks and potential harm to participants, protecting participant confidentiality and privacy, ensuring voluntary participation, and safeguarding against data compromise.

Participants

According to Yin (2018), researchers must determine participants per specific criteria defined before the start of the research, and the participants selected are required to experience the phenomenon of the qualitative study. The participants for this research were senior business leaders in telecommunications who had successfully executed change management to mitigate the business's financial liquidation. The participants had solid knowledge about the telecommunication industry, critical infrastructure's impact on the industry, and business implications; they had been in a leadership role for at least five years and had successfully implemented change management strategies in the telecommunication industry.

To be included in my study, potential participants needed each of the following credentials or life experiences:

1. Worked at least ten years as a manager in Nigeria's telecommunication sector.
2. Participated in business decision-making.
3. Had a minimum of 5 years of senior operation experience with a telecommunication operator or infrastructure provider.

Exclusion criteria were that potential participants could not have returned their license within the past year or have been one of my employees, co-workers, or supervisors.

Accessing willing participants is a primary concern researchers face; some publicly listed companies will only allow their employees to participate if the company's board approval is secured. Informed consent is a voluntary choice to accept or reject participation based on informed information relating to the proposed research and its implications, and it is an essential condition to fulfill the principle of respect and justice according to the ethical research standard (Xu et al., 2020). Securing the participant's data after obtaining their consent is a significant step in building trust and aligning with the ethical protocol (Jordan, 2018).

Research Method and Design

Yin (2018) highlighted three research methods to use when one desires to answer a research question and evaluate the problem and purpose of a research project. In this pragmatic inquiry, I identified and explored the change management strategies used by successful telecom companies in Nigeria to mitigate the lack of critical national infrastructure. I chose the qualitative research methodology to seek more profound insight into the participant's experience of the phenomenon under study.

Research Method

The primary research methodologies applied in social science research are quantitative, qualitative, and mixed methods (Pathiranage et al., 2020; Strijker et al., 2020). Researchers use qualitative methods to understand and investigate human motives with non-numerical data. They also support the researchers in thoroughly investigating people or organizations to understand their existence in real-world situations (Mohajan, 2018; Yin, 2018). The qualitative method gives the researcher insight into a problem and interprets issues with non-numerical data (Twis et al., 2020). After considering all these attributes of the qualitative research method and my research mission, I chose qualitative research to study some business executives' experience in change management strategies to mitigate business liquidation successfully.

Researchers usually use the quantitative method involving numerical data, exploring the relationship between variables, and testing the hypothesis to respond to research questions (Bakar et al., 2018; Creswell & Hirose, 2019). The quantitative method measures the relationship between variables to assess significance or causal relationships, hypothesis testing, predictions, and generalizations on the outcomes (Bakar et al., 2018). I did not test a hypothesis or confirm a theory; hence, I did not use the quantitative method for my research.

The mixed method combines qualitative and quantitative research into a single study to investigate the research question (Bakar et al., 2018; Yin, 2018). Using a mixed-method methodology complements the limitations of qualitative and quantitative research methods but is very expensive and time-consuming. Since I did not use numerical data nor test hypotheses, I did not use a mixed methods approach.

Research Design

The quantitative research design includes multiple case studies, pragmatic inquiry, ethnography, and phenomenology design (Pathiranage et al., 2020; Yin, 2018). For this study, a pragmatic qualitative inquiry study design was used with at least two mobile network operators (MNO) in Nigeria to investigate the strategies used by business owners in the telecommunications industry in Nigeria to mitigate financial liquidation in their business due to the lack of critical national infrastructure. A pragmatic qualitative method was the best option to collect rich and in-depth data using interviews, allowing solid and reliable evidence without a partnership agreement from any organization (see Delfino, 2023).

Other qualitative research designs include case studies, ethnography, narrative, and phenomenology. Multiple case study design allows the exploration, investigation, and explanation of a phenomenon within a precise context and perception of an identical group (Yin, 2018). Multiple sources, such as interviews and secondary data, including documents from the company, are used to analyze the phenomenon deeply (Ellis, 2021; Yin, 2018). In multiple case studies, the data collection is all-encompassing because researchers draw data from numerous sources such as direct or participant observations, interviews, archival records or documents, physical artifacts, and audiovisual materials, and much time is spent engaging with the participants (interviewees). The process is expensive and demanding in terms of resources and time and a partnership agreement is required. Multiple case studies offered a flexible approach to comparing and reviewing various data sources to mitigate bias and subjectivity (Diop & Liu, 2020; Pathiranage et al., 2020).

The ethnographical research method entails the study of the culture, beliefs, and behaviors of small groups of people who share a common culture over a prolonged period (Fusch et al., 2018; Hammersley, 2018; Mohajan, 2018). Ethnographical research design was not acceptable because I must investigate a small, related community's social settings, cultural beliefs, and behavior. Phenomenology design is used to understand people's perspectives on everyday life experiences regarding phenomena under study and depict participants' personal experiences in any given situation (Qutoshi, 2018). A phenomenological research design did not apply to the research as lived experiences would not include the required and acceptable answers to the research question of what change management strategies successful telecom companies in Nigeria use to mitigate the impacts of the lack of national infrastructure on their businesses.

Population and Sampling

The study population is defined according to the study's research question and is a subset of the population considered for the research (Aksakal et al., 2019). Numerous factors, such as time, resources, and cost, were considered when determining the study population's size. The sampling methods in qualitative studies include convenience, opportunistic, snowball, and purposeful. The research question and conceptual framework impacted the type of sampling I might use because the sampling strategy depends on the success or failure of any qualitative study (see Ames et al., 2019; Farrugia, 2019).

I used purposeful sampling to recruit interview participants. I selected four senior leaders in the telecommunication industry to become the sample from the overall senior leaders in telecommunications in Nigeria who have met the predefined criteria. Varpio et al. (2017) stated that saturation determines the final sample.

Data saturation determines when an appropriate sample size has been reached in a qualitative study and is achieved when additional data collection yields no new themes or information relevant to the research questions. I used data saturation to determine the final number of the sample size. I transcribed each interview and performed member checking to establish data saturation accurately. As suggested by Braun and Clarke (2018), I confirmed that I had discovered no new information or themes before stopping the data collection.

Ethical Research

Ethics is a critical part of research, and researchers must strictly adhere to this throughout the research phase (Wu et al., 2019). Ethical adherence empowers the researcher to prevent ethical or conflict issues with a participant; it enhances reliability, ethical practices, behavior, and trust (Yin, 2018).

Obtaining a signed informed consent was the first significant step toward adhering to ethical standards. Informed consent protects the participants' interests (Widmer et al., 2020; Zulu et al., 2019). The informed consent document elicited the willingness of the participant to partake in the research after fully understanding the study, including the associated risks and all benefits of the research. The document also included the right of the participant to withdraw either verbally or in writing without any risk to the participant and also no financial compensation for participating in the interview, as recommended by Meetei (2019). I secured Walden University's IRB approval (approval number 09-08-23-0996105) before I sent the informed consent form. All participants signed the form.

The Belmont Report (National Commission on the Protection of Biomedical and Behavioral Research in 1979) highlighted respect for individuals, benevolence, and fairness as fundamental ethical principles (U.S. Department of Health and Human Services, 1979). The report articulated three guiding principles to support the researcher during the research process. The first princple was to ensure respect was accorded to all by sharing all required information with the participants before participating. The second guideline was to appraise the inherent risk posed to all participants. The final guiding principle was ensuring the whole population shared the research risk. I aligned with all the guidelines provided by *The Belmont Report* during my research.

Identity and privacy protection should be prioritized during the research, ensuring the researcher mitigates identity mismanagement risk. I used a coding system represented the participant's name and company (see Maxwell, 2019) and protected the confidentiality of the information shared by storing the data in a secured repository for five years and destroying it afterward, as stipulated by Walden University.

Data Collection Instruments

Scharp and Sanders (2019) highlighted that the researcher is the primary instrument for gathering and examining data. I was the primary research instrument for the data collection for this qualitative research. Yin (2018) highlighted six approaches for data collection, including interviewing, investigating the records, dispensing surveys, personal observation, researching archival documents, or using physical objects.

The interview is a widely used data collection method in qualitative research because it generates rich data and provides transparency in getting participants' real-time perspective of the research's focus (DeJonckheere & Vaughn, 2019; Iyamu, 2018; Kegler et al., 2019). Consequently, I used semi-structured interviews through an audio teleconference with each participant to explore strategies organizations use to mitigate the business's financial liquidation due to a lack of critical infrastructure. The interview process was between 45-60 minutes per participant, and there was an opportunity to extend the timeslot if needed. The need for reliable and stable internet was paramount because the interview mode was audio-conferencing, not face-to-face. I followed DeJonckheere and Vaughn’s (2019) recommendation to share this need with all the participants.

Using an interview protocol during qualitative research to ensure consistency, focus, visibility, and transparency during the data collection process assists with obtaining quality data from interviews (Creswell & Hirose, 2019; Yeong et al., 2018; Yin, 2018). Thus, I used interview protocol with all participants to ensure that I maintained the interview structure, that participants understood all the questions, and were focused on the study's purpose, as McGrath et al. (2019) recommended. I clarified any questions that required clarification from all participants.

One of the strategies to mitigate objectivity and enrich the quality of my research study is to use data triangulation and member checking as credibility tools (Moon, 2019). I could analyze the common and disparate themes and triangulate the interview data with the selected organization and academic research data as soon as I retrieved all the data. The organizations' documentation included the company's financial statements showing the capital and operational expenditures (Capex and Opex) plans.

Data Collection Technique

In qualitative research, a researcher uses different data sources to enrich the reliability, trustworthiness, and integrity of the study. The techniques used for the data collection are also crucial to the research's success (Rivaz et al., 2019). Among frequently used data collection techniques in qualitative research are questionnaires, interviewing, and participant observation, but interviewing is preferred (Alves et al., 2021; Yin, 2018). I used a semi-structured interview guided by the interview protocol provided in Section 1. I selected the organization's document and research peer-reviewed academic research as required research data for this research. Researchers can use member checking and triangulation methods to verify the interview response's reliability (DeJonckheere & Vaughn, 2019; Slettebø, 2021; Wadams & Park, 2018), a practice I followed. No pilot study was used.

Semi-structured interviews provide quality data acquisition by allowing the participants to talk while the researcher asks timely follow-up questions for further clarification of information (Iyamu, 2018). One possible disadvantage of the interview method is the accent barrier between the researcher and participants; however, member checking and transcription software can mitigate this disadvantage (Iyamu, 2018).

Before the interview process, each participant received the informed consent form by email. Once the signed consent was received, I emailed a scheduled Zoom audio interview link to all participants per their preferred date and time. The interviews continued until I reached data saturation. Zoom and NVivo software recorded and transcribed interviews simultaneously; this mitigated any quality issues from the data collected and improved the member checking accuracy and efficiency (McGrath et al., 2019). Finally, after the end of the interview, I provided the transcribed report to each participant for their validation and accuracy of interpretation of each participant's response as per the member-checking process. In addition, I searched the company website on the Internet for information regarding the change management undertaken by the company.

Data Organization Technique

The data organization technique provides readers with a clear understanding of how researchers conclude findings and the importance of constant data organization for a qualitative study (Todorov et al., 2019; Yin, 2018). The confidentiality of the participant must be protected using codes and a file stored in a secured location (Sutherland, 2020). The researcher assigned a unique code to each participant's file for confidentiality during the data organization process.

I used NVivo software to analyze the data. This software is a standard CAQDAS tool that enables researchers to store, organize, analyze, and visualize the research data into codes and transform them into themes (Cypress, 2017; Magny-Normilus et al., 2020).

All the documents and data generated during data collection, analysis, and conclusion were stored in a protected cloud from a reputable cloud services provider like Google or Amazon. I will keep all the data for five years after this study to protect the confidentiality and privacy of the participants. Immediately after the fifth year of the research publication, all the data collected will be deleted as per the Walden ethical standard protocol.

I kept a research log of my research progress and process. I tracked interview requests, response dates, dates of interviews and dates of documentation reviews. In addition, I tracked my progress through my data transcription, analysis, and write-up. The log enhanced the credibility of my study. Table 6 provides the relevant dates and times of my research for this study.

Table 6

Research Log for the Study

Date	Activity
1/31/2023	Prospectus Approval
08/16/2023	Proposal Approval
08/24/2023	Proposal Defense
09/08/2023	IRB Application Approval
09/09/2023	Update call to all Participants
09/09/2023	Invitation email sent to P4
09/10/2023	Invitation email sent to P3
09/10/2023	Invitation email sent to P1
09/10/2023	Invitation email sent to P2
09/10/2023	Invitation email sent to P5
09/11/2023	P1 responded with Consent
09/12/2023	P4 responded with Consent
09/14/2023	P3 responded with Consent
09/19/2023	P2 responded with Consent
09/17/2023	P1 Interview
09/24/2023	P2 Interview
09/17/2023	P4 Interview
10/1/2023	P3 Interview
10/10/2023	Data Analysis
Bi-Weekly	Meeting with Chair
11/24/2023	Final member checking response

Data Analysis

The data analysis strategies used for this study are qualitative coding, thematic analysis, and triangulation. The data for my research contained the company's documents, transcribed data from the interview, and peer-reviewed academic research. The data analysis process focused on themes that could provide critical responses to the research question of this research.

Braun and Clarke's model is widely used for thematic analysis in qualitative studies (Kiger & Varpio, 2020). The model has six phases:(a) gaining a deep understanding of the data, (b) generating codes, (c) identifying themes, (d) finalizing themes, (e) defining and naming themes, and (f) writing up the report. The most critical stage in data analysis of qualitative research is data content conversion into code for categorization and classifying those code categorizations into themes (Lowe et al., 2018).

The purpose of coding is to optimize the data without compromising the idea behind the original transcript. The primary objective of organizing codes into thematic categories is to establish precise sequential patterns that accurately reflect the research findings (Castleberry & Nolen, 2018; Clark & Veale, 2018; Lindgren et al., 2020; Scharp & Sanders, 2019). Themes are affluent, highly interpreted data that respond meaningfully to the research question (Vaismoradi & Snelgrove, 2019). I used Braun and Clarke's thematic model procedure to categorize, analyze, organize, and interpret data collected for my research, including interviews, company documents, and academic peer-review research into an informative data pattern.

Researchers working on qualitative research use software to support their coding, categorizing, and thematic analysis to generate themes and patterns (Williams & Moser, 2019). NVivo was used to find codes from the data, categorize the codes, and generate themes to understand and respond to the main research question. For my research, NVivo software helped me code and categorize while I generated themes from the research data.

Theme identification is not the end of the qualitative data analysis process; it is the foundation, and the data analysis should continue until the researcher reaches thematic data saturation (Castleberry & Nolen, 2018; Lowe et al., 2018). I concluded my data analysis by presenting the interpretation of the final theme and connecting all the findings to the research framework.

Researchers commonly use the triangulation method in qualitative research; it is a combination of two or more data sources that link the phenomenon under study. Triangulation provides the required validity, mitigates bias, trustworthiness, and consistency of the data and result, enhances attainment of the data saturation (Fusch et al., 2018; Natow, 2020; Santos et al., 2023). The triangulation method extracted the study data from various sources, including interviews, company documents, public documents (if any), and peer-reviewed academic research.

Reliability and Validity

Reliability is about the correctness of a research study, while validity comprises confirmability and data saturation. Both reliability and validity are essential components of all research (Ertugrul-Akyol, 2019). Researchers use reliability and validity to ensure research quality, precision, and dependability (Jordan, 2018). The qualitative research study uses four quality criteria, including transferability, confirmability, credibility, and dependability, to measure the quality and dependability of the research (Korstjens & Moser, 2018).

Reliability

Reliability in qualitative research is the degree to which a researcher produces a finding that is accurate, consistent, stable, and dependable (Veliu et al., 2018). Reliability is also the measure to which the research could reproduce the same results if the same conditions, environment, and methods are applied (Abdalla et al., 2018; McDonald et al., 2019). In qualitative research, consistency and dependability are mutually inclusive with reliability; hence, dependability refers to data collection and measurement consistency by adopting openness during the data analysis to ensure the result's traceability (Nassaji, 2020). Member checking is widely adopted to certify the correctness, authenticity, and truthfulness of a research study through participant validation. Member checking refers to the researcher's practice of returning to the participants with the interpreted data derived from interviews, seeking validation and confirmation of the accuracy and significance of the findings (Caretta & Pérez, 2019; Fusch et al., 2018; Madill & Sullivan, 2018). My study used member checking to guarantee the research's credibility, reliability, and dependability.

Validity

Validity in a qualitative research study refers to the extent to which the research instrument accurately showcases the issues or phenomenon that the researcher is studying, and the accuracy of the results from the study. Validity also showcases the appropriateness of the instruments, processes, and data retrieved during the research. In qualitative research, credibility, and authenticity of results significantly contribute to validity (Ertugrul-Akyol, 2019; FitzPatrick, 2019). I ensured that validity was established in my research by (a) onboarding participants with the proper knowledge of the research study, (b) collecting rich data relevant to the research using more than one method through triangulation, and (c) using member checking to ensure data credibility.

Credibility

Credibility is the process that includes participants inspecting the data result for assessment through triangulation, member checking, interview, and sampling strategies to determine whether the findings accurately reflect the participant's lived experience (Amin et al., 2020; Campbell et al., 2020; Pearce & Sowa, 2019). Triangulation and member checking ensure credibility in qualitative research (Pearce & Sowa, 2019; Yin, 2018). For my study, I used triangulation to collect the research data from the interview, peer-reviewed research, and the company's data to ensure the credibility of the research study. I used member checking to mitigate researcher bias, purposeful sampling to enhance credibility, and an interview protocol to stay focused during the interview process.

Confirmability

Confirmability in qualitative research pertains to ensuring the neutrality and precision of the gathered data through methodologies that allow external validation by sources beyond the researcher's potential biases (Haven & Van Grootel, 2019). Confirmability eschews the researcher's personal bias or opinion from the study and focuses only on the objectivity of the research result (Korstjens & Moser, 2018). It consists of eliminating all personal perspectives from the research and enlightening the interpretation of the information data collected during the study without focusing on individual views (Korstjens & Moser, 2018). I used the interview response, the company's document, and peer-reviewed research to provide high confidence in the study.

Transferability

Transferability gives precise information and meaning to readers not involved in the study. However, the study could be appropriate to other circumstances and populations, and it is the researcher's responsibility to transfer the study's findings to other relevant circumstances and populations (Essa et al., 2019; Ferrando et al., 2019). I provided a detailed explanation of data collection and organization techniques, the research assumptions, limitations, data saturation, and participants' interview criteria, which helped readers determine the extent of transferability of my study to a similar phenomenon. Based on the limitations and delimitations, the transferability of this study is limited to other Nigerian telecommunication business owners who seek to mitigate critical infrastructure deficiencies to avoid financial liquidation.

Transition and Summary

This qualitative pragmatic inquiry study aimed to identify and investigate change management strategies some business executives in Nigeria's telecommunication companies used to mitigate the lack of critical national infrastructure successfully. Section 2 provided my study's research method, qualitative pragmatic inquiry study design, sampling method, and research ethics. Descriptions of how the research data fully complied with the standard ethical procedure from data collection to data analysis were included, along with methods to ascertain the proposed study's reliability, validity, and confirmability.

Section 3 includes findings on the change management strategies some business executives in Nigeria's telecommunication companies used to successfully mitigate the need for critical national infrastructure, as well as the purpose of the research study, its findings, and the application and implication to professional business practices and social change. Lastly, recommendations for further action and my experience and reflections as a researcher for this study are included in the conclusion and summary of the research study.

Section 3: Application to Professional Practice and Implications for Change

Introduction

In this pragmatic qualitative inquiry study, I identified and explored change management strategies that some business executives in Nigeria's telecommunication companies have used to mitigate the lack of critical national infrastructure successfully. I reviewed related company documents and materials on the internet related to the strategies used by business leaders to mitigate the business financial loss successfully. I securely stored interview transcripts according to Walden University procedures, with NVivo software facilitating data analysis. Three main themes that emerged from the research data analysis were as follows:

- Business value: Created through a sense of urgency;
- Leaders use outsourced suppliers, vendors, and support mechanisms to overcome employee resistance to change and government failures; and
- Leaders saw the power grid instability as the most pressing need for multiple focused strategies to overcome the challenge.

Finally, I showed how the conceptual framework used in this study supported the emergent themes and how all the identified strategies aligned with the peer-reviewed literature for successful strategies on change management.

Presentation of the Findings

The research question that I used to guide this study was: What change management strategies do successful Nigerian telecom executives use to mitigate their business’s lack of critical infrastructure to avoid financial liquidation? I conducted interviews with four business owners who, at the time of the interviews, had worked for at least 10 years in Nigeria's telecommunication sector, were at least 30 years old, had a minimum of 5 years of senior operation experience with a telecommunication operator or infrastructure provider, and had not returned their operating license within the past year. After receiving Walden University's ethics approval number 09-08-23-0996105 on the 23rd of August 2023, I contacted all participants with a consent form and received their signed consent forms through email. At the beginning of each interview, I reminded each participant that I would record the confidential Zoom interview. Each participant consented to proceed with the interview recording before the start of each interview. Following Walden University's protocol for participant confidentiality, I assigned each participant an alphanumeric code (P1, P2, P3, and P4) to protect the participant's. Each participant freely answered all the interview questions, shared their views, and expressed their experience and expertise on each question. NVivo software facilitated data coding and analysis, enabling the researcher to interpret the results comprehensibly (Yin, 2018). The interviews occurred between September 17th and October 1st, 2023.

Braun and Clarke (2018) described a thematic analysis process I followed. The following steps show their reflexive process. I started the data analysis process by reviewing the transcripts and listening to the recordings to ensure they were accurate and member checking was done by sending the transcripts to the participants to ensure accuracy. After ensuring the transcripts were accurate, I uploaded them into NVivo. I used NVivo's word frequency tables to ascertain common terms, selecting the most common 50 terms that were not predetermined from my data (i.e., removing terms like participant, interviewer, etc.); I then reviewed those words to find codes (patterns of words and phrase commonalities). I coded the data, and then organized those codes into categories and noticed higher leveled and cross-patterned themes. I organized the codes, categories, and themes into tables and created word clouds using the NVivo functions. I reviewed these items and saw patterns of relational phrases and ideas that led me to describe subthemes. I leveraged the NVivo data searching function to assist with finding interview data that aligned with the codes and themes and provided those data.

Table 7 shows the core themes derived from the participants' responses and their frequency of occurrence. The initial codes, depicted in Table 8, led to categories of business value, outsourcing, and power unavailability, then themes. Meaningful themes regarding leaders' strategies to overcome the instability of the national infrastructure included the following:

- leaders created business value by instilling a sense of urgency in their organizational cultures
- leaders used outsourced suppliers, vendors, and support mechanisms to overcome employee resistance to change and government failures
- leaders saw the power grid instability as the most pressing need for multiple focused strategies to overcome the challenge.

Table 7

Core Themes and Their Frequencies

Theme	Discussion Frequency	Occurrence Percentage
Business Value	31	17%
Outsourcing	37	21%
Power Grid Unavailability	111	63%

Table 8

Codes and Their Frequencies

Name	Discussion Frequency	Occurrence Percentage
Sense of Urgency	11	6%
Value Creation	20	11%
Coalition of Leaders	6	3%
Communication	10	6%
Employee Resistance	9	5%
Governance	12	7%
Alternative source of power	27	15%
Foreign exchange devaluation	13	7%
Missing Critical Infrastructure	21	12%
Operational expenses	19	11%
Power Instability	15	8%
Rise in Cost of Diesel	9	5%
Rise in Inflation	7	4%

The following section includes a detailed discussion of each theme and its comparison with the conceptual framework that I used to ground the study. I used Kotter's 8-step change model as the conceptual framework for this study. My findings from this research study aligned with the conceptual framework and most peer-reviewed articles from my literature review. All the participants used at least three of Kotter's 8-step stages to implement their successful change management strategies in mitigating the business's financial liquidation due to the lack of critical infrastructure to support their businesses.

Theme 1. Business Value: Created Through Sense of Urgency

The first theme that emerged from the analysis was that leaders created business value by instilling a sense of urgency in their organizational cultures. This theme came from the category of business value, which stemmed from the codes/subthemes of sense of urgency and value creation. All participants explained that they created business value by instilling a sense of urgency in the organization regarding the need to change and react to changes. Thus, urgency remains an essential trigger for successful change management strategies. There are two subthemes under Theme 1, including a sense of urgency and value creation.

Sense of Urgency

Bellantuono et al. (2021) argued that during the establishment of a sense of urgency, the first step for an organization is to realize that there is need for a change, and a need for leadership to communicate the urgency to other members. During this first step, leadership needs to share awareness of the dynamic nature of the market and its competitive landscape, including the potential threats and opportunities.

P1 highlighted that:

> Because of the cost of diesel and the currency forex situation, it is becoming challenging for us to operate and survive in this environment. We have to implement a change, which involves bringing in a hybrid solution. Also, we

> introduced another Power as a service to our sites. This is to mitigate and reduce the CapEx and operational costs to the business.

P2 stated:

> Telecom business today, or as always, relies heavily on power to power the 7,000 sites through which we deliver various services to our customers. This sort of infrastructure in many countries is something other than what telcos will worry about because, ideally, grid power is available very quickly for you to connect and pay for it. So, in Nigeria, the grid power needs to be increased. Sometimes, it is completely unavailable, and wherever it is present, it is unreliable. So, we have had to deal with the solution we provided to power our site for many years until we got to the point where we had to change how we power or provide power to the sites in our portfolio.

P2 also mentioned, "That is one you could see increasing urgency. Moreover, that is all creating a sense of urgency." P3 noted that:

> When you start a business, when you come, you do not know how bad it is. Once you start to realize how bad it is. So one of the changes, the strategy was it usually when we. Deploy, or when we start the business, we expect specific infrastructure to be in place and somebody else to provide that service, and you use the service. So the first thing we notice is the changes we must start making. We had to create that value ourselves if we wanted to, then we had to create it.

P3 also stated:

> So what that means is that power availability, especially for us that need it 24/7 in our sites and also in all our switching and data centers, we have to provide ourselves the means of generating power, which usually comes through diesel generators.

P4 stated the following during his interview regarding a sense of urgency: "So we saw that urgency that if we do not curb these operational expenses, we are going to run into liquidations in the future and will not be able to keep up to maintain our operations anymore."

P4 mentioned:

> The very first management strategy that we use in mitigating financial liquidation is the urgency of a change we needed. We saw that, hey, the way because I work in the network unit, the network department, which is the factory floor.

P4 also highlighted that:

> As we can put it that way, because we have subscribers, over 60 million of them. So, to ensure that we mitigate liquidation because our operational expenses were going higher, rising even sometimes above inflation, we had to take some measures to drive down our operating costs urgently. So, urgency for a change is part of the strategy. The very first strategy is for the entire business to see. You know, we have to create that urgency for that, for that change.

P4 also stated, "As I said, the first thing that we did was for everybody from the CEO down to gate-man to see the urgency of why that change needs to take place." P4 also corroborated that "ever since we have been doing changes, we have been seeing that the business has been growing."

The first theme and the two subthemes showed the importance of the business value to the change management strategies and aligned to the conceptual framework used to ground this study. Eller et al. (2023) and Maaz et al. (2018) confirmed that creating a sense of urgency was a critical first step toward a successful change management strategy. Kotter (1996) highlighted that most companies could not execute successful change management because their leaders could not create a sense of urgency, and he articulated that this sense of urgency needs to be across the organization's value chain from top to bottom.

Value Creation

Value creation across an organization is possible when leaders use unique business models, such as structured change management, to develop strategies for attaining competitive advantage over competitors in the market. (Koc & Bozdag, 2017). Most organizations use change management to enhance their ability for value creation. The participants in this study reacted to questions about change management with value-creation-styled responses. Some examples include the following excerpts from their interview data. P1 explained that,

> We are implementing this solution. Give me a savings of 1.2 billion annually after implementing this project. The thing we realize is that this is because the cost of the project was 358 million. Since I am speaking to you, it is more than 400 million per month. Moreover, with the current situation of the diesel cost, I would have been paying like 1.2 billion per month.

P2 mentioned that,

> From our experience, we have done a significant, we have done away completely on CapEx. So you would call it an avoidance in that regard, we have OpEx a saving of about 15 to 17% on OpEx in using this model.

The capex expenditure (CapEx) is the organization's long-term expenditure. In contrast, operation expenditure (OpEx) is the organization's short-term day-to-day expenses, and the significance of P2's comment on value creation is that the organization has an outright saving on the capex. At the same time, their Opex is optimized due to the new model.

P2 also stated:

> Most specifically, if we had not implemented this change two years ago, about two years ago, we would be in more difficulty today to be able to source this diesel 100% requirement by site.

P3 mentioned,

> We outperform ourselves year on year to date. So, as far as our P/L is concerned, we are moving up, and we still believe we will achieve all our targets by the end

> of this year despite all these issues happening in the budget because of the change processes we have implemented and how we keep changing and evolving as the situation keeps changing and evolving also.

P4 raised the issue of value creation through change by stating

> So, we had more subscribers onto the network, and invariably, we had more revenue. So our revenue has been growing year on year since we implemented this change.

P4 highlighted that "This has been growing to the extent that as of last year, we hit the two trillion Naira mark in revenue. These cannot be separated from the success of implementing the changes we did on our network platforms."

P4 also stated that:

> Moreover, ever since we have been making changes, we have been seeing that the business has been growing. We live in a very dynamic environment. We are accustomed to changes as long as it is implemented via well-communicated strategies.

P4's comments showed that they implemented the concepts in Kotter's change management model about communication and urgency within their change strategies in a *dynamic* environment. P4's statements also showed notable relationships to celebrating wins in noting the company achieved its goals on the network changes and revenues (Kotter, 1996).

Using the word cloud feature of NVivo generated a clear visualization of the common words collected in the interviews. Figure 1 depicts the common words for Theme 1.

Figure 1

Word Cloud for Theme 1

Theme 2. Leaders Use Outsourced Suppliers, Vendors, and Support Mechanisms to Overcome Employee Resistance to Change and Government Failures

The second theme that emerged from the data was that leaders execute an outsourcing model as part of the overarching strategy to mitigate the business's financial loss due to a lack of critical infrastructure. Outsourcing is a business strategy adopted by an organization through contracting out specific deliverables, including some organizational functions, to external parties to save cost and get a specialized skill set to focus on its core activities. The codes of the four coded sub-themes: communication, coalition of leaders, employee resistance, and governance created the outsourcing theme. All the participants stated that they created the outsourcing categories through communication and governance, while only three participants highlighted governance, and two mentioned coalition of leaders.

Communication

All participants highlighted the sub-theme of communication, and this result was significant, showing the critical role of effective communication during change management planning and execution.

P1 mentioned that:

> So, the communication provided to the vendor was before we did have a diesel supplier. Sometimes, these diesel suppliers. Regarding pricing, we go back and

forth, back and forth, after it is set in their margin. Imagine it the day after. Again, the price will change the previously agreed number.

Yue et al. (2019) argued that transparent communication could enhance the readiness of stakeholders to embrace the change process, and this was corroborated by P2 during the interview, stating that "I think among the elements of this model, what stands out really for me, it is the element of communication. It is important to communicate very, very clearly and even repeatedly." P2 further corroborated the importance of communication during change management by highlighting below:

> So, I had also to communicate and make presentations to the board before I got the approval to implement this. I will not see that as a challenge. Instead, I will see it as a gain coming under this model that it is something that comes on that communication. So, it was an unambiguous communication with the board and accepted.

Ahmad and Cheng (2018) argued that unambiguous communication reduces uncertainty during the change management process, and P3 added that mitigation for employee or stakeholder resistance is effective communication. P3 corroborated that by stating, "Making them understand the reason for the change and making sure in the process of the change was carried along that second of all, that interests are protected.". P3 suggested that the engagement of the stakeholders is the right and fair thing to do for a successful change management implementation. "There is nothing else but engagement during that engagement, and make sure that you are really fair to the employees when you do this movement."

P4 mentioned, "Even after this communication is going to them, there is strong communication about why we need to do all these changes." P4 added that :

> So I had to map out my change strategy and how we communicate, you know, to fellow business leaders about what we need to do like the finance unit had to be aware of what is going to happen, the H.R. unit needed to be aware that we will be moving staff when we are implementing this change.

The communication subtheme/code aligned with Kotter's model used as a conceptual framework in the literature review to ground this study highlighted that communication is a critical factor for change management success, and effective communication through clear, unambiguous language reduces barriers to resistance during change management process (Fadzil et al., 2019; Karaxha, 2019)

Employee Resistance

Employee resistance to change is mainly due to uncertainty, lack of clarity, fear of the unknown, personal loss, and lack of tolerance to change Robbins et al. (2019). Managers need to be prepared to mitigate the resistance to change by understanding and building the right relationship with the employees, engaging them on the importance and benefits of the change (Cai et al., 2018). P1 mentioned:

> There are people with negative minds, of course. So you have to try as much as possible to win their consent. Moreover, it makes them understand that change is

> inevitable. We have to acknowledge this change and the importance of the change and the change. We did that, and I got the buying of virtually everybody in the business.

P2 argued that :

> The challenge I had initially was from the vendor. The vendor refused to agree on the set objectives, the SLA I defined for them, and the availability because we had another solution for the gas solution: power as a service.

The change in people's status quo after much investment in the current system develops a natural resistance to organizational change (Ford et al., 2008). P2 highlighted, "Sometimes change, not even sometimes constantly changes. It is easily resisted. Change is uncomfortable.' However, when you are implementing such change, these sorts of vendors will resist it because they will lose out now."

The resistance behavior of the employee is the individual internal aspiration to have a psychological balance of security and control (Enders et al., 2020).

P4 corroborated this: "Employees' first response is this uncertainty about keeping their jobs. However, staff coming with their own culture into the new environment is a challenge".

This sub-theme aligned with Kotter's model used in the conceptual framework of this study. Kotter articulated employee resistance as one reason for unsuccessful changes and recommended effective communication as the right solution to mitigate this threat. Bala (2022) stated that communication is a potent strategy used in change management to mitigate employee resistance and boost their morale toward adopting change management in an organization. Furthermore, getting employees involved through communication at the very early stage of the change management process is crucial to the success of the change management because it increases their buy-in and participation (Ahmad & Cheng, 2018; Kanitz & Gonzalez, 2021).

Coalition of Leaders

The success of the change management process in an organization depends on the right people, pulling together from the organization irrespective of the functional group they belong to, and forming a team that is well respected and supported by the organization's leadership (Wentworth et al., 2020).

P2 highlighted that:

> If you are going to build a team that will implement the change management that you would like to see, you have to continue to get support to remove all the roadblocks that could impede their progress during the change management process.

The coalition of leaders' success in change management relies on removing obstacles through effective communication and meeting the needs of the coalition team (Onyeneke & Abe, 2021). P4 corroborated this concept when saying," I have to get by in sort of like a coalition of all business leaders of all different units to see the positivity in the change that we want to make in the network department of the organization."

Both participants' comments supported the concept of Kotter's change management model about building a coalition of leaders as a necessary step for the successful execution of the change management model (Kotter, 1996).

Governance

Outsourcing has become an increasingly preferred model for cost saving, profitability enhancement, and efficiency for organizations due to the increasing business competitive landscape that remains dynamic and complex (Berry et al., 2021; Katato et al., 2020). While outsourcing presents numerous advantages, the persisting concern revolves around the potential risks, particularly in maintaining quality and preserving focus on the organization's core activities as crucial deliverables. To mitigate this risk, the aspect of governance becomes crucial to the success of the change management model called outsourcing (Katato et al., 2020)

One of the critical pillars for a successful outsourcing model is establishing a governance structure that includes the definition of roles and responsibilities and the decision-making processes, including setting up the governance board to manage outsourcing. P1 corroborated this pillar. "Nobody can implement any change without the change coming into the technical change management team. They reviewed with everybody in place if they are satisfied with the change to be implemented." Likewise, P2 also corroborated his statement, "I mean, it was obvious to me that the board is available as a support mechanism and also on good governance to hold you accountable.". P3 stated, "We had the governance at all levels. So what we tried to do is have the governance at all levels". P3 posited:

> Besides, in the governance structure, we have a well-written contract and service level agreements (SLA) that show all the items in the scope of work, required or agreed-on quality standards, deliverables performance metrics, and associated penalties for non-compliance and, in some cases, the reward is also included to motivate the partner.

P3 said :

> Transparency, clarity, and ensuring all the T's are crossed, and all the I is dotted when we are into contractual terms with vendors. You have to look at watertight agreements, how strict and definite cut out SLA and responsibility matrixes so that everybody is evident from the beginning who is responsible for what and who is doing what.

One way to measure the vendors' performance in outsourcing is through a well-structured regular meeting for performance monitoring where leaders compare the achieved SLA against defined SLAs, which gives clear visibility in identifying and correcting gaps in the form of issues. P4 corroborated this when he mentioned, "We are having weekly meetings to review how far we have gone with the change and the steps we took because we did not execute all the changes all at once."

The P4 statement also aligned with Kotter's model about generating significant short wins in the change management process (Kotter, 1996). Using the word cloud feature of NVivo generated a clear visualization of the common words collected in the interviews. Figure 2 depicts the common words for Theme 2.

Figure 2

Word Cloud for Theme 2

Theme 3: Leaders Saw the Power Grid Instability as the Most Pressing Need for Multiple Focused Strategies to Overcome the Challenge

The third theme from the analysis showed that leaders executed alternative sources of power as a part of the over-arching change management strategy to mitigate the business's financial loss due to a lack of critical infrastructure such as power. The codes from six coded sub-themes: foreign exchange devaluation, missing critical infrastructure, operational expenses, power instability, rise in the cost of diesel, and rise in inflation created the *alternative source of power* theme. All the participants agreed that all six codes are critical elements for the change management strategy to mitigate the lack of critical infrastructure. Using the word cloud feature of NVivo generated a clear visualization of the common words collected in the interviews. Figure 3 depicts the common words for Theme 3.

Figure 3

Word Cloud for Theme 3

Foreign Exchange Devaluation

Dokubo et al. (2023) argued that foreign exchange rate fluctuation could severely impact imported products, such as critical raw materials for local manufacturing, equipment, and diesel when the local currency (Naira) falls in value. All participants affirm the impact of foreign exchange devaluation on the change management strategies used by business owners to mitigate the lack of critical infrastructure. P3 corroborated this by stating, "You should know that this year has been fierce because of the inflation and the foreign exchange, the local currency (Naira) devaluation." The devaluation of the currency resulted in a rise in inflation, leading to a rise in the price of fuel and other essential commodities. The resulting impact is high operational expenses for the telecommunication companies.

All telecom companies are seriously concerned about the worsening forex situation and its impact on the cost of diesel (Dokubo et al., 2023). P1 stated, "So we use generators as the main source of power for our telecommunications sites. So and currently because of the cost of diesel and all so the currency forex situation." P2 corroborated the impact of the forex by highlighting:

> However, because they are also imported, and it is imported mainly through the use of Forex, our service delivery and revenue generation is in localized currency so you earn in Naira and Kobo (Local currency). However, you provide some of the elements to keep the business running with the sourcing of forex. We have seriously devalued the naira in the last few months, a severe business concern.

These businesses had to spend more money to buy the same equipment and deliver services because foreign currencies are used by most for pricing. One of the strategies for telecommunications businesses to mitigate the impact of forex fluctuation is to domicile all contracts and services in local currency. P4 highlighted, "The foreign exchange risk is what we are dealing with by renegotiating contracts and domiciled them in Naira as much as possible." P4 also stated:

> We discovered that if we continue to run our contracts based on the dollar, which is now very, very unstable. Right. Furthermore, most of the time, it keeps rising. We discovered that doing business with that needed to be more sustainable. So currently, we are renegotiating all our contracts that are still dollar domiciled now to Naira (Local currency).

In the literature review, the impact of the lack of infrastructure, especially power, was highlighted as one of the leading causes of business losses in Nigeria. Power is not readily available from the grid but through diesel generators, and the financial impact of the cost of diesel on the business due to the foreign exchange devaluation is enormous (Eberechukwu, 2022). Companies had to restructure their services to local currencies to mitigate the forex exposure and move into the hybrid power delivery mode to reduce diesel consumption. The impact of foreign exchange devaluation is critical for business survival in Nigeria. Kotter (1996) highlighted that a sense of urgency is essential for successful change management within a business or organization.

Rise in Inflation

Amadi (2020) argued that inflation is one of the macroeconomic policy drivers of growth. Inflation has a critical impact on the telecommunications sector in Nigeria, affecting the sector's consumer experience and operational cost. The main cost drivers for operating expenses are the cost of the equipment purchase, maintenance, and energy; an increase in inflation impact directly affects these two cost drivers. The increased cost is passed to the end-users through a service tariff hike, impacting the service affordability to a specific part of the population's segment. P4 highlighted that:

> So to ensure that we mitigate liquidation because our operational expenses increase was going higher, rising even sometimes above inflation, we maintained it at a controllable level every time, as long as it is lower than the rate of inflation, which is the CPI or the CPI growth of the country, then we are okay.

The rise in inflation severely impacts the energy cost because of almost 100% reliance on diesel for power generation to sites. P2 corroborated this with this statement :

> Most specifically, in our case, if we had not implemented this change two years ago, about two years ago, we would be in more difficulty today to source this diesel 100% requirement by site, the reason being that there has been inflation. Inflation is relatively high on the product because countries import the refined products back into the country despite being an oil-producing nation.

P3 stressed the criticality of the inflation issue on the budget in his statement :

> We looked at some things that have changed; for example, diesel prices had jumped from when we signed the contract; they allowed 300-350 Naira per Liter up and now have jumped to 1000 Naira per Liters.

The subtheme findings highlighted the sense of urgency seen from the rise of inflation on the operational cost, which aligned with Kotter's model used as a conceptual framework in the literature review to ground this study and highlighted it as a critical factor for change management success.

Power Instability

Avikal et al. (2021) argued that the power demand for telecom equipment and the sector is continuously increasing; the demand for the only optional alternatives to grid power is also rising due to the grid's lack of reliable power supply. Adesanya and Pearce (2019) stated that because consistent and constant power outages frequently characterize the Nigerian grid, many telecommunications businesses have resulted in self-help as captive power generation with diesel generators, which substantially impacts their business financials. P3 highlighted the dire status of the grid and what measures were taken by their company to mitigate this:

> These are the kind of business we are into. We are in telecoms. The first thing we noticed was that there was no power. Power availability, especially for us that need it 24/7 in our sites and all our switching and data centers, we have to provide ourselves with the means of generating power.

P1 corroborated the dire situation of the power instability and unavailability in the country when P1 stated: "The situation that we have in the country on availability of national grid, multiple outages. So a public power supply is not is not in any way you can be able to rely on it". P2 further emphasized the criticality of this issue when P2 stated, "In some cases, it is completely unavailable, and wherever it is present, it is not reliable." P4 highlighted a similar issue and the impact of the strategy implemented to mitigate the power instability by stating, "We do not run generators 24/7 like we used to do before because in Nigeria there is no power. So we run. We used to run generators, you know, all through 24 hours, seven days a week."

The impact of the power instability on the finances of Nigeria businesses is well documented in the literature review (Gandhok & Manthri, 2022), and it is seen as a critical piece of sense of urgency to implement change management as a business to prevent business collapse in line with Kotter (1996).

Rise in Cost of Diesel

The increase in insecurity and high inflation, which remains high at 16.9% in 2022 and over 23% in 2023, has impacted Nigeria's economic growth. The rise in diesel prices drives inflation and insecurity, linked to the high cost of all essential commodities like food and transportation (Gbolahan, 2023). Olalekan (2020) argued that every manufacturing business in Nigeria uses between 100 and 300 Liters of diesel per day to provide electricity because of the inability of the grid to provide power and Nigerians spend over $14 billion on generators and diesel annually.

P1 highlighted that "due to increase in diesel price, the cost has moved from 300 million to 1.2 billion per month. So we discovered that there was a potential threat of rising costs of diesel as an example, for instance, and we had to quickly see what can we do to reduce our dependence on diesel". P3 corroborated on this, stating that "diesel prices that have jumped up from when we when we signed the contract, they allowed 300 - 350 Naira per Liter up and now has jumped to 1000 Naira per Liters."

Maluleka, 2023 highlighted that telecommunications companies had mitigated the rise in diesel cost by exploring cheaper and more efficient sources of fuel to provide power; MTN deployed three 1.1MW gas generators to power head office and data centers, the cost per kilowatt-hour (kWh) of CNG is 60% lower than that of diesel, this deployment gave a saving of approximately $1million and over 110,000 liters of diesel year-on-year, and more importantly, it gave a significant reduction in the carbon gas emission to the atmosphere.

This theme (rise in diesel cost) is one of the leading causes of high operational expenses for telecommunication business (Olalekan, 2020), and this triggers a sense of urgency for business owners to mitigate this risk through change management model to the business operations and remain in business (Kotter, 1996).

Missing Critical Infrastructure

Nigeria has an estimated population of over 200 million and is a major oil-producing country. However, it has a significant electricity problem due to acute inadequate critical infrastructure, contributing to national economic woes and business losses (Owebor et al., 2021). The availability of electricity is a significant catalyst for economic growth and development. However, in the case of Nigeria, power infrastructure is severely low, and this has led all businesses to resort to an expensive self-help option of self-generating energy using diesel and generators (Akinyele et al., 2017; Adigun, 2018). P3 highlighted that "We use the infrastructure for power. The country has a particular issue regarding power and is broken into. Generation transmission and distribution are right across the food chain. None of it is enough". P1 stated that :

> So, while talking about critical infrastructure here. I would restrict my response to the situation in the country regarding the availability of the national grid multiple outages. So we use generators as the primary power source for our telecommunications sites.

P4 narrated what their company had done to mitigate this issue by stating, "We used to run generators, you know, all through 24 hours, seven days a week". The impact of this critical infrastructure deficiency is that over 90 percent of the telecommunication companies in Nigeria risk extinction within by 2027 unless strategies to manage this deficiency effectively are deployed by business owners (Ajanaku, 2022). This theme, missing critical infrastructure, is aligned with the literature review in this study. Using Kotter's model for change management to mitigate this risk by business owners is quite significant by identifying the urgency of this critical issue (Kotter, 1996).

Applications to Professional Practice

This study aimed to explore change management strategies that some business executives in Nigeria's telecommunication companies have used to successfully mitigate the lack of critical national infrastructure. Business leaders work in a dynamic, highly volatile, and complex, competitive environment that requires adaptive and dynamic change management strategies for survival (Jeong & Shin, 2019).

The findings of this study could contribute to business practices because they give business leaders professional practices on how to develop successful change management strategies to mitigate the lack of critical infrastructure to remain in business.

This study identified power instability as the most pressing need for business leaders to address through multi-focussed change strategies by outsourcing the operation to the vendors. Using Kotter's 8-steps of change management (sense of urgency) in all the value chain of the organization from top to bottom, leaders instilled business value. The study also highlighted strategies business leaders adopted to successfully implement outsourcing and alternative sources of power change, including effective communication, governance, and coalition of leaders. The study's results could also be a standardized change management template to enhance cost optimization and competitive advantage for business leaders in Nigeria who are facing challenges with critical infrastructure like power.

The study used Kotter's 8-step change management model as a conceptual framework; all participants highlighted the importance of a sense of urgency, a coalition of leaders, and communication in determining the success of implementing change management strategies. All these themes aligned with Kotter's 8-step change management models.

Business leaders may use the findings of this result to improve the effectiveness of their change management strategies to mitigate financial losses in their business.

Implications for Social Change

Exploring successful strategies business leaders use to mitigate financial losses due to a lack of critical infrastructure is critical to Nigeria's socio-cultural development, especially in the telecommunication industry.

The contribution of information and communications technology (ICT) to Nigeria's Gross Domestic Product in Quarter 3 of 2022 stood at 15.35%; hence, if 90% of telecommunication companies in the ICT sector are at risk, then the country's economy is at significant risk (Akintaro, 2022). Businesses and communities could benefit from successful change management strategies and enhancement of organizational growth, performance, and sustainability, which could lead to more job creation, an improved standard of living, and prosperity for the people, which may reduce the crime rate, youth robbery, stealing (Akomea-Frimpong et al., 2018).

The government could benefit from a successful business performance through an increase in tax payment perceptive, and the government could use this tax revenue to build more critical infrastructure for the communities like roads, schools, and centers. Implementing organizational change strategies that are planned and well communicated gives less resistance to employees and can enhance business profitability and competitiveness in the market (Rosenbaum et al., 2018; van Den Heuvel et al., 2017).

Recommendations for Action

The successful change management strategies have been a critical mitigation strategy to prevent the financial liquidation of many businesses in Nigeria because of the lack of critical infrastructure. These strategies maximize the success rate of change management and reduce the risk of failures, as experienced by many failed businesses. All the participants in this study have successfully implemented strategies to mitigate the financial liquidation of their businesses. My recommendations for action could benefit business owners operating in Nigeria in planning, formulating, and executing change management strategies to mitigate the financial liquidation of their business. I base my proposed main recommendation for action on the result of this study, and it includes the following: (a) business value creation, (b) outsourcing, and (c) alternative sources of power.

The first recommendation is that business leaders in Nigeria should create business values by instilling a sense of urgency within the organization culture, where the business constantly scans for opportunities for change, creating awareness of the dynamism of the competitive market landscape, threats, risks, and associated business value. Thus, a sense of urgency remains an essential trigger and the first step toward a successful change management strategy (Eller et al., 2023; Maaz et al., 2018).

The second recommendation from this study is that business leaders should adopt an effective business strategy called outsourcing. The effectiveness of this business model depends on the practical usage of critical strategies, such as communication, governance, and coalition of leaders. The intent, vision, purpose, and benefits of the change in the business model need to be communicated clearly to all the employees, thus reducing employee resistance to change (Venus et al., 2019; Kotter, 1996). The business leaders must pull together the right people from the organization, irrespective of their functional group, and form a team (a coalition of leaders) that is well respected and supported by the organization's business leaders (Wentworth et al., 2020). The business leaders must establish a governance structure that includes well-defined roles and responsibilities and the decision-making processes to manage the outsourcing business model so that leaders can provide visibility to all stakeholders on the deliverables for the model.

The third recommendation from this study is that business leaders should adopt alternative power sources like solar energy and hybrid power. Grid power is not reliable and available; hence, the preferred alternative is power from diesel-powered generators, which has a high impact on the business's operating expenses due to macroeconomic factors like inflation, global oil market fluctuation, and currency devaluation impacting the cost of diesel. These factors are entirely out of the business owners' control. Leaders can move entirely away from the diesel-powered generator as a power source. Adopting solar and hybrid power as alternative power sources is the right strategy to be implemented by business leaders to mitigate the financial liquidation of their business.

Mohammed et al. (2017) argued that many developed countries achieved stable electricity only after investing in solar power as an alternative source of power generation. Solar energy technologies are now affordable for more businesses and households in Nigeria, considering the country's position is above the equator with more abundant solar energy. Businesses have spent over 3.5 trillion Naira on running costs of maintaining diesel-fueled generators in Nigeria. Approximately 60 million households use generators, thus making Nigeria the highest importer of generators worldwide (Ayodele & Ogunjuyigbe, 2015).

Recommendations for Further Research

In this study, I conducted a pragmatic inquiry study to aimed to explore the change management strategies used by successful telecom companies in Nigeria to mitigate the lack of critical national infrastructure. The results of this study could help business owners with valuable recommendations to mitigate the financial liquidation of their business.

The research has numerous limitations that further research could address. The first limitation is the sample size; there was difficulty in getting the right participants for the interview. Only four participants were possible. Researchers could conduct further research with a larger sample size and extent to the population in West Africa. Feehan and Cobb (2019) highlighted that researchers can widely spread the population data analysis by appointing a diverse group of participants.

The second limitation is the biases of the participants' responses, and the recommendation for further research is to use other research methodologies like quantitative methodology and online surveys for the research data collection. Different qualitative designs like multiple case studies may be useful as well. Future researchers might consider qualitative designs such as grounded theory, narrative, ethnography, or phenomenological design.

A final recommendation for further research is that doctoral researchers explore pragmatic solutions to fix the challenging critical infrastructure and its impact on businesses either through government or private investment in critical infrastructure.

Reflections

My doctoral study process and experience were challenging, demanding, rewarding, and fulfilling. Studying in Africa was a big challenge, especially when I experienced the devaluation of my local currency. The exchange rate became a big issue. These conditions made it nearly impossible for me to continue, but I mitigated them and forged ahead to complete my studies. Some other challenges I faced were using APA in writing, finding peer-reviewed citations under five years as a condition in the literature review, and studying during the pandemic when my family and I were affected by COVID-19. I started with a multiple case study design but changed to a pragmatic inquiry. These were some of the experiences in my doctoral journey at Walden University.

It is essential to mention the incredible support I got from my chair, who was a great support pillar for the completion of this study; if she was not my chair, I do not know how I would have completed this study. My desire to see a turn-around in Nigeria's telecommunication sectors regarding the high rate of business liquidation guided my choice for the study. Overall, it was a great experience and reflection of my DBA journey at Walden University.

Conclusion

This pragmatic inquiry study explored change management strategies for successfully managing the Nigerian telecommunication industry's lack of critical national infrastructure. The study used Kotter's eight change management steps as a conceptual framework. The general business problem is that many businesses in Nigeria are insolvent, resulting in financial liquidation due to a lack of critical infrastructure. The specific business problem is that many business executives in telecommunication companies in Nigeria lack the change management strategies needed to mitigate the business financial liquidation due to a lack of critical infrastructure to support their businesses.

I interviewed four participants from the telecommunications industry who had successfully implemented change management, using data from the internet websites to corroborate data from the participants. I utilized NVivo software to organize and analyze the data, and three themes were identified. The first theme was *business value: created through sense of urgency*. The second theme that appeared was *leaders use outsourced suppliers, vendors, and support mechanisms to overcome employee resistance to change and government failures.* The final theme that emerged through data analysis was *leaders saw the power grid instability as the most pressing need for multiple focused strategies to overcome the challenge.*

The study indicated that business leaders used different strategies to successfully plan, develop, and implement change management. The implication of positive social change and business practice include more job creation, the standard of living improvement, and prosperity for the people, which may reduce the crime rate, youth robbery, and stealing (Akomea-Frimpong et al., 2018), enhance business profitability and competitiveness in the market (Rosenbaum et al., 2018; van Den Heuvel et al., 2017).

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Appendix A: Email Invitation

Study seeks business executives in Nigeria's telecommunication companies who have implemented successful strategies to mitigate the lack of critical national infrastructure.

There is a new study called "*Change Management Strategies for Successfully Managing the Lack of Critical National Infrastructure in the Nigeria Telecommunication Industry*" designed to explore how business executives in Nigeria's telecommunication companies develop and implement effective strategies to mitigate the business's financial liquidation. For this study, you are invited to describe your experiences in developing and implementing strategies to mitigate business's financial liquidation due to lack of critical national infrastructure.

This interview is part of the doctoral study for Adedoyin Adeola, a DBA student at Walden University.

About the Study:

- One 45-60 minutes face to face interview that will be audio recorded
- To protect your privacy, all participants' identities will be kept confidential.

Volunteers must meet the following requirements:

- 18 years old or older.
- English speaking.
- Experience in developing and implementing successful strategies to prevent or mitigate business's financial liquidation.

I have enclosed a consent form that includes additional information on the study and participant requirements. I look forward to receiving your confirmation to participate in the study. Thank you for your support.

To confidentially volunteer, please contact the researcher:

Adedoyin Adeola