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Strategies for Increased Productivity Through Control of Process Constraints

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This is to certify that the doctoral study by

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Walden University
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Abstract

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MS, University of Ibadan, Ibadan, 1988

BS, University of Nigeria, Nsukka, 1985

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

In Nigeria, manufacturing businesses play a vital role in the industrial growth of the nation and have many dynamic benefits crucial for the growth of a sustainable economy. The manufacturing sector has added substantially to the gross domestic products of many countries. Nonetheless, 50% of manufacturing firms in Nigeria experience a decline in production capacity utilization and profitability because of inefficient production processes. The purpose of this qualitative multiple case study was to explore strategies leaders of manufacturing firms in Nigeria use to support efficient manufacturing operations. The theory of constraints served as the conceptual framework for this study. Eight participants from two manufacturing firms in Nigeria who had strategies to support efficient manufacturing operations participated in this study. Data sources included semistructured interviews and the review of organizational documents consisting of corporate quality policy, quality objectives, and mission statements. Analysis involved data compilation, data coding by breaking it down into categories, and reassembling the data into emergent themes. Member checking and methodological triangulation strengthened the credibility of the findings. Four major themes emerged: strategic planning, continuous process improvement, strategic equipment maintenance, and strategic capacity expansion. The findings from this research might provide the basis for developing an advanced manufacturing practice for some Nigerian manufacturing firms that could contribute to social change by improving production efficiency, local consumption, and sustainable economic growth.

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Dedication

I dedicate this study to Almighty God for providing me with the guidance, strength, and resources to complete this doctoral study, in spite of the numerous challenges. My late parents Okpue Isaac Nnebedum and Lolo Rosemary Aniemene for instilling in me the importance of discipline, hard work, and education. My beautiful and amiable wife Ifeoma for her continuous encouragement, technical support, and devoting time to the kids. My lovely children Munachimso, Chidinma, Kosisochukwu, Ifeoma (Jr) for their good behavior and prayers. My brothers, sisters, friends, and relations for their constant encouragements and prayers.

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Completing this DBA program was my life ambition. Nonetheless, this would not have been successful without the different roles played by so many at Walden University. I thank my chair, Dr. Peter Anthony for the patience, good leadership, professionalism, and fast turnarounds: both of these qualities were invaluable in moving my study forward. I am immensely grateful. Thank you.

I would like to thank my committee members Dr. Yvette Ghormley and Dr. Denise Land for the excellent guidance and diligence in reviewing my documents. I appreciate your roles in helping me to achieve my educational goal. Also, I thank my classmates for the discussions, interactions, e-mails, and sharing of doctoral study resources. Finally, I thank the participating organizations and the participants for sharing your experiences with me.

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Section 1: Foundation of the Study

Organizational leaders experience many challenges in a global economy that require the implementation of efficient processes to manage manufacturing operations (Yakubu, Salisu, & Umar, 2015). Nwosu et al. (2016) observed that leaders of manufacturing firms are adopting efficient processes to achieve continuous manufacturing improvement and higher production performance. However, despite the critical role of manufacturing in promoting the economic growth of a nation, leaders of Nigerian manufacturing firms have not included the best interests of their stakeholders regarding support for local economic growth and profitability (Ebong, Udoh, & Obafemi, 2014). Umoh and Wokocha (2013) noted that the manufacturing sector in Nigeria contributes only 3% to the Nigerian GDP due to operational inefficiency. Consequently, leaders of manufacturing firms should remain efficient to increase employment opportunities, achieve economic growth, and sustain profitability (Obioma, Anyanwu, & Kalu, 2015).

Background of the Problem

Manufacturing is critical to most countries' industrial and economic advancement (Onuoha, 2013). Zohreh and Napsiah (2013) noted that most manufacturing firms provide essential goods to support the quality of human life and contribute to a nations' economy. Furthermore, Obioma et al. (2015) analyzed the productivity of manufacturing firms and found that the manufacturing sector has added substantially to the GDP of many countries. Nonetheless, the contribution of the Nigerian manufacturing sector to the Nigerian GDP has continued to decline due to operational inefficiency (Olorunfemi,

Obamuyi, Adekunjo, & Ogunleye, 2013). Obioma et al. further observed that many manufacturing companies in Nigeria experience challenges caused by low capacity utilization that has resulted in inefficient processes. Onuoha (2013) maintained that the inefficient manufacturing process had aggravated the inability of the Nigerian manufacturing sector to provide employment opportunities, reduce the nation's level of poverty, and increase profitability. To remain competitive, leaders of manufacturing firms should adopt efficient production practice that allows for rapid responses to most manufacturing problems (Shadraconis, 2013). A transformation of Nigeria's manufacturing industry is imperative to create employment opportunities, increased productivity, revenue generation, and economic transformation (Aiyedogbon & Anyanwu, 2015).

Problem Statement

Approximately 30% of the manufacturing plants in Nigeria have closed, and almost 60% are not meeting operational goals, leaving only 10% operating at a sustainable level leading to decreased productivity and profitability (Agu, Anichebe, & Maduagwu, 2016; Onuoha, 2013). Over 50% of manufacturing firms in Nigeria experienced a decline in production capacity utilization and profitability because of the inefficient manufacturing process (Okafor, 2013; Onuoha, 2013). The general business problem is that most manufacturing industries in Nigeria experienced operational inefficiency due to inadequate business strategy limiting organizations profitability. The specific business problem is that some leaders of manufacturing firms in Nigeria lacked effective strategies to support efficient manufacturing operations.

Purpose Statement

The purpose of this qualitative multiple case study was to explore strategies leaders of manufacturing firms in Nigeria use to support efficient manufacturing operations. The specific population consisted of eight leaders who have successfully implemented strategies to support efficient production process from two manufacturing companies in Nigeria. Results from this study might contribute to social change by identifying strategies leaders in manufacturing firms use to achieve efficient operational processes leading to job creation, poverty reduction, and increased profitability.

Nature of the Study

I selected a qualitative method for this study. Researchers use qualitative research to facilitate a description and analysis of a perspective, and a nuanced understanding of how participants view events in the context of their lives (Koch, Niesz, & McCarthy, 2014). The qualitative method was appropriate for this study because I sought a holistic understanding of an event from the perspectives of the affected participants. A quantitative research method involves researcher hypotheses testing and statistical generalization (Baskarada, 2014). A quantitative research method was not appropriate for this study because I did not utilize experiments or seek statistical data. Agerfalk (2013) observed that researchers use mixed methods to validate data from both quantitative and qualitative studies. However, I did not combine participants' perspectives of events and numerical testing of data to explore relationships or differences among variables; thus, a mixed method was not appropriate for this study.

A case study was a suitable design for this research. Boblin, Ireland, Kirkpatrick, and Robertson (2013) noted that using a case study could lead to in-depth knowledge of an event within real-life contexts from the perspective of those involved. A case study was appropriate because the intent of this study was to conduct an in-depth analysis of an event within the real world context to understand the issue from the perspective of the participants. Other designs I considered for this study included ethnography, phenomenology, and narrative inquiry. Méndez (2013) observed that ethnographic design is appropriate when researchers seek to understand the culture of a group. Since the focus of this study was to gain insights into human perspectives and not to observe group cultures, ethnography was not appropriate for this study. Researchers use a phenomenological study to seek lived experiences of the individuals within the contexts of their environments (Frost, McClelland, Clark, & Boylan, 2014). However, because I did not explore the lived experiences of participants, a phenomenological study was not suitable for this research. Furthermore, Jadidi and Nakhaee (2014) explained that narrative researchers use stories to obtain in-depth information about the social process. Like phenomenology, a narrative inquiry was not suitable for this research since I did not focus on people's life experiences of an event.

Research Question

The intent of this qualitative multiple case study was to explore strategies leaders of some manufacturing companies use to minimize operational inefficiency. The research question for this study was: What strategies do leaders of manufacturing firms in Nigeria use to support efficient manufacturing operations?

Interview Questions

The interview questions for the study were as follows:

1. What factors contribute to high operational efficiency in your organization?
2. What strategies do you use to support manufacturing improvement implementation in your organization?
3. What strategic initiatives do you use as proactive measures to minimize operational inefficiencies?
4. How do you determine the effectiveness of strategies adopted by leaders for a continuous process improvement?
5. How do you identify constraints to support efficient manufacturing operation?
6. How do you overcome constraints to support efficient manufacturing operation?
7. What resources do you use to overcome constraints?
8. What strategies do you use to expand capacity to reduce the effects of constraints?
9. What more can you add that I have not asked that is relevant to my research?

Conceptual Framework

I utilized the theory of constraints (TOC) as the conceptual framework for this study. Goldratt developed TOC in 1984 as a productivity improvement tool (Goldratt & Cox, 1992). Şimşit, Günay, and Vayvay (2014) observed that TOC is a continuous improvement process aimed at eliminating constraints in a system. Furthermore, Mathu (2014) noted that organizational leaders use TOC to improve every aspect of

manufacturing process through a step-by-step approach. TOC improvement process consists of (a) identifying the constraints, (b) planning to overcome the constraints, (c) focusing resources only on the identified constraints, (d) reducing the effects of constraints by expanding capacity, and (e) evaluating and eliminating new constraints in a continuous improvement process (Panizzolo & Garengo, 2013).

Constraints are the main obstacles to achieving organizational goals, and if companies can identify operational constraints in their systems, they would experience continuous improvement and achieve higher productivity (Şimşit et al., 2014). The constraints might occur due to continuous change in internal and external factors (Anyanga & Nyamita, 2016). Therefore, leaders of manufacturing firms should focus on understanding their structure regarding processes to improve effectiveness and efficiency (Şimşit et al., 2014). I utilized TOC as a lens to analyze my research findings.

Operational Definitions

Capacity expansion: Capacity expansion is a strategic decision designed to replace the deteriorating facilities, improve the efficiency of production, or meet the anticipated demand growth for production (White & Censlive, 2016).

Constraint: A constraint is any obstacle that limits a system from achieving higher performance relative to the goal (Panizzolo & Garengo, 2013).

Hedging: Hedging is a means of protecting against the failure rate of the manufacturing machine (Kouedeu, Kenne, Dejax, Songmene, & Polotski, 2014).

Holonic manufacturing system: The holonic manufacturing system is an autonomous, self-reliant, and dynamic unit communicating with each other and thus functioning independently as part of a larger system (Szármes, 2015).

Intangible resources: Intangible resources are assets that typically have accumulated over time and are more difficult for competitors to imitate such as skills, knowledge, and reputation (Kabue & Kilika, 2016).

Lean production: Lean production is a set of viable methods of minimization of waste of productivity and achieving a profit (Pearce & Pons, 2013).

Mass customization: Mass customization is a practical production system that involves using flexible processes to deliver products that meet individual needs at a reasonable cost (Hu, 2013).

Process improvement tool: Process improvement tool is an operational management technique aimed at improving efficiency and productivity (Mora, 2014).

Pull production: Pull production is the production system in which the manufacturer produces goods only according to the quantity required by the buyer (Sanders, Elangeswaran, & Wulfsberg, 2016).

Value stream mapping: Value stream mapping is a conceptual hybrid lean tool used to identify value adding activities and those considered wasteful of materials and the flow of information and people (Dal-Forno, Augusto-Pereira, Antonio-Forcellini, & Kipper, 2014).

Assumptions, Limitations, and Delimitations

Assumptions

Leedy and Ormrod (2013) noted that statements of assumptions are what a researcher takes for granted with respect to the problem. Several assumptions underpin this study. First, I assumed that participants were available and would respond to the interview questions. Secondly, I assumed the participants would demonstrate integrity, sincerity, and truthfulness in responding to the interview questions. In addition, I assumed that the data for this study were reliable, valid, and free from bias. Lastly, I assumed that the themes emerging from the data analysis were sufficient in addressing the research question.

Limitations

Limitations are statements relating to factors or issues beyond the control of the researcher (Leedy & Ormrod, 2013). The first limitation of this study was its restriction to the timeframe available for data collection and the truthfulness the participants exhibited in their interviews. The second limitation was the number of participants and their availability for the interviews, as well as the accuracy of data. The third limitation was that the participants may have restrictions based on organizational policies. The final limitation was that the focus of the research was Nigerian companies and the result may not be transferable to other locations.

Delimitations

Hyett, Kenny, and Dickson-Swift (2014) stated that delimitation is a scope that guides a research study. The focus of the study was a multiple case design with the

leaders of two manufacturing firms in Nigeria. Also, the study was limited to the use of interview questions and archival documents for data collection excluding information I could have gained from other qualitative designs and quantitative methods. Moreover, the study was limited to the exploration of best practices leaders of some manufacturing firms use to achieve efficient manufacturing operations. Furthermore, only the individuals engaged full-time with a minimum of 5 years of working as leaders in manufacturing firms in Nigeria participated in this study.

Significance of the Study

Value to Businesses

Agwu and Emeti (2014) stated that the Nigerian manufacturing industry has experienced numerous growth challenges due to lack of operational and managerial skills resulting in many firms incurring losses and losing business opportunities. The results of the study may be of value to business owners in determining strategies to increase the efficiency process, which could contribute to the organization by minimizing unplanned stoppages and operational inefficiencies. Upgrading technological capacity, employing several process improvement tools, and improving infrastructures could help business leaders to achieve high productivity (Robson, Trimble, & MacIntyre, 2013). Furthermore, the findings of this study may be of value to the business in assisting some leaders of the Nigerian manufacturing sector to minimize undesirable production practices by implementing continuous improvement programs and steering operations in a desirable direction.

Contribution to Business Practice

The Nigerian manufacturing sector has an enormous potential to support the economic development necessary for diversity and establishing a robust economy (Obioma et al., 2015). Falade and Olagbaju (2015) similarly observed that manufacturing industry has a critical role in promoting the economic growth of a nation. Results from this research might help leaders in the manufacturing sector to achieve sustainable economic growth and expansion. According to Onuoha (2013), a robust manufacturing sector could facilitate industrial growth, encourage domestic innovation, and reduce relocation of industries to neighboring countries. Data from this study may also assist leaders of manufacturing companies in Nigeria to identify the best process improvement strategy to minimize operational inefficiencies. Furthermore, the findings from this research might provide the basis for developing an advanced manufacturing strategy for some Nigerian manufacturing firms to reduce the volume of imports and increase capacity utilization.

Implications for Social Change

Manufacturing is critical to the rapid economic growth of any nation and in generating employment, income, and poverty reduction (Ihugba, Odii, & Njoku, 2013). Understanding the strategies to minimize operational inefficiency could help leaders in the manufacturing sector to achieve social change by increasing local consumption and providing employment opportunities. Moreover, a manufacturing sector has a catalytic role in any nation’s economy by stimulating growth in other sectors, increasing foreign exchange earnings and creating employment opportunities (Ofili, 2014). Furthermore, a

vibrant manufacturing sector is a necessary impetus for rapid and sustainable economic growth (Yakubu et al., 2015). The findings from this study may assist in solving the fundamental problems of general economic disequilibrium. In addition, the results from this study might also spur industrial growth and social change capable of job creation and economic transformation.

A Review of the Professional and Academic Literature

Smith and Noble (2016) noted that critical analysis and synthesis of the related literature is crucial in any research. The purpose of this literature review was to establish a conceptual foundation for the study by providing a critical analysis of the body of peer reviewed research relating to the research question. Based on the research question, I addressed the strategies that leaders may need to support manufacturing operations in Nigeria. The Walden University databases, Business Source Complete, ABI/Inform database, Google Scholar, Science Direct, EBSCOhost, and ProQuest provided the sources of information for this study. The keywords used to search for articles were *comparative and contrasting theories, production planning, process management, production maintenance, leadership, innovation,* and *operation management.*

I utilized reference information from 140 resources for the literature review, of which 138 (99%) were peer reviewed articles and 138 (99%) were published between 2013 and 2017. In addition, the literature review included three seminal books (2.2%), one government paper (0.8%), and one non peer reviewed article (0.7%). Throughout the entire doctoral study, I reviewed 288 articles, with 286 (99%) published between 2013 and 2017. My literature review had seven major categories: theories, production

planning, process management, production maintenance, leadership, innovation, and operation management. The subcategories of the theories included TOC, the theory of motivation, and the resource-based theory. The production planning category contained three subheadings: optimal and flexible planning, diverse market needs, and holistic planning. The process management section included: process improvement tools, manufacturing trends, and business environment. Three subsections existed in the production maintenance category: prevention and maintenance culture, strategic maintenance, and total productive maintenance. I subdivided the leadership into five subsections: transformational leadership, shared leadership, servant leadership, transactional leadership, and toxic leadership. Innovation contained three subcategories: diverse innovation process, innovative leadership and culture, and innovative resource management. Operation management contained four subheadings: organizational resources, continuous improvement strategy, competitive capabilities, and capacity expansion.

Theory of Constraints

Okutmus, Kahveci, and Kartasova (2016) explained that with the competitiveness in the marketplace and the inadequacy of the traditional management approach to meet the needs of firms, organizational leaders are adopting TOC as a continuous process improvement to achieve their goals. Leaders of manufacturing firms are focusing on understanding their structure in terms of processes and finding the best practice to increase productivity (Şimşit et al., 2014). Mora (2014) noted that leaders of most firms often implement TOC as a broad-based operation management strategy to improve

effectiveness, efficiency, and profitability throughout the manufacturing process. Most business leaders recognize that consistent and disciplined application of process management strategies with an emphasis on production improvement could lead to operational efficiency (Pramadona & Adhiutama, 2013).

Şimşit et al. (2014) stated that the objective of every company is to make a profit, and constraints are the main obstacles to not achieving organizational goals. Constraints can occur anywhere within the manufacturing system, including planning, maintenance, supply chain, logistics or other internal processes (Panizzolo & Garengo, 2013). Okutmus et al. (2016) discussed five types of constraints as (a) market constraint, (b) capacity constraint, (c) logistics constraint, (d) behavioral constraint, and (e) administrative constraint. Market constraints occur when customer demands are less than production, capacity constraints occur as a result of insufficiency of a specific resource to meet the market demand, logistics constraints occur due to poor planning, and administrative constraints are the limiting factors that hinder workflow, such as organizational policies (Okutmus et al., 2016). Furthermore, Anyanga and Nyamita (2016) informed that constraints might occur due to continuous change in internal and external factors. Pramadona and Adhiutama (2013) explained that leaders implementing TOC focus on a continuous improvement process by dealing with constraints because no matter how well an organizational leader performs, there will always be at least one constraint that limits the firm from performing better. The existence of a process constraint causes operational inefficiency in a manufacturing plant (Linhart & Skorkovsky, 2014). Organizational leaders utilize TOC as management improvement strategies to identify problems in a

manufacturing process and optimize the overall output of the manufacturing plant (Panizzolo & Garengo, 2013).

TOC process comprises diagnosis prior to planning treatment and execution of the treatment plan (Mathu, 2014). Okutmus et al. (2016) discussed the five steps involved in TOC process as (a) identifying the constraints that are currently preventing the firm from achieving the company's goal, (b) exploiting the constraints effectively by determining the actions and conditions necessary to bring about the desirable effects or change, and (c) subordinating every related decision to the constraint by focusing only on the constraint since other departments link with the affected department. Other steps in the TOC process include elevating the constraint by expanding the capacity of the department to eliminate the constraint, and the last step involves evaluating and eliminating a new constraint in an endless cycle that leads to continuous improvement process (Okutmus et al., 2016). Şimşit et al. (2014) noted that leaders of manufacturing firms utilize TOC to focus on the weakest points that are constraints for the entire organization and to determine the relationship of these constraints. Organizational leaders use TOC to improve the performance of a manufacturing system to achieve continuous improvement (Pacheco, 2015). Leaders who adopt TOC as a strategic management improvement process may gain a better understanding of TOC elements and avoid implementation failures (Naor, Bernardes, & Comanc, 2013).

Additional Theories Considered

Theory of motivation. Maslow (1943) developed the theory of motivation. The central premise of the theory of motivation is that individuals should meet their most

basic needs before they become motivated to achieve higher level needs (Healy, 2016). Furthermore, Maslow explained that these basic needs are related to each other and arranged in the hierarchy of potency. The basic hierarchy of needs consists of (a) physiological, (b) safety, (c) love/belonging, (d) esteem, and (e) self-actualization (Maslow, 1943). According to Maslow's hierarchy, an individual should be in good health, safe, and secure with meaningful relationships before aspiring to achieve a goal (Healy, 2016). Kuranchie-Mensah and Amponsah-Tawiah (2015) affirmed that effective motivational programs are necessary for conducting organizational daily tasks and to enhance productivity.

Most organizational leaders are facing the challenge to motivate workers to carry out the request, make a change, and achieve a goal (Vansteenkiste & Mouratidis, 2016). Vareilles, Pommier, Kane, Pictet, and Marchal (2015) stated that motivation is the type of organizational commitment that encompasses accepting and feeling attached to the organizational goals to accomplish a task. Motivation is the driving force in human interaction (Szalma, 2014). Lomas (2013) noted that motivation either intrinsic or extrinsic could contribute to employee satisfaction and higher performance. However, despite the critical role of motivation in enhancing performance, leaders have relatively neglected motivation theory due failure to understand the significance of motivation to improve productivity (Szalma, 2014). Szalma (2014) further explained that technology could induce task- related boredom that may be stressful and also increase system vulnerability to performance failures. Therefore, since employees' knowledge, skills and abilities are the most important driving forces to the success of any organization,

continuing motivation might lead to employees' commitment to process improvement (Kuranchie-Mensah & Amponsah-Tawiah, 2015). Furthermore, Kuranchie-Mensah and Amponsah-Tawiah (2015) argued that organizations risk losing competitive advantage and productivity without continued motivation.

The conceptual approach to the theory of motivation focuses on the idea that individual needs or expectations result in the behavior that drives the person to achieve desired goals that provide satisfaction in the individual (Kuranchie-Mensah & Amponsah-Tawiah, 2015). Vansteenkiste and Mouratidis (2016) emphasized that fully developed motivation theories need to address the factors that energize individual motivational functioning. Individuals' motivation differs greatly as behaviors stem from a diversity of motives (Vansteenkiste & Mouratidis, 2016). The focus of the theory of motivation is the diversity of motives and goals that underlie behavior. However, the theory of motivation does not provide a sufficient conceptual framework to explore strategies for continuous process improvement.

The resource-based theory. In 1959 Penrose developed the resource-based theory to explain the relationships between internal resources and organizational performance (Seung, 2013). Kabue and Kilika (2016) noted that resource-based view (RBV) allows practitioners to focus on how a firm can gain a competitive advantage using the resources available to the firm. A firm needs resources to develop sources of competitive advantage (Burton & Rycroft-Malone, 2014). Kabue and Kilika further maintained that the only sources for a competitive advantage are the firm's resources. Consequently, practitioners of RBV should focus on how firms might build, access,

control, and leverage firm-specific resources for a sustainable competitive advantage (Kazlauskaitė, Autio, Gelbūda, & Šarapovas, 2015).

Almeida-Neves, Hamacher, and Scavarda (2013) defined resources as assets perceived as a strength or weakness of a particular firm including brands, technological expertise, trained employees, machinery, efficient procedures, and capital. The resources of a firm can include land, equipment, labor, and capital that may be necessary to develop a competitive advantage (Kabue & Kilika, 2016). Ferlie (2014) stated that a strategic resource should be valuable, rare, difficult to imitate, and nonsubstitutable. Furthermore, firms with better resources are more likely to achieve capabilities to compete successfully (Seung, 2013).

Kabue and Kilika (2016) explained that diverse firm resources that serve as attributes of strategic assets might support a competitive advantage. The benefit of RBV lies in the ability of the leader to identify those resources leading to a competitive advantage (Hinterhuber, 2013). Bromiley and Rau (2016) noted that firms should also manage those rare and nonsubstitutable resources effectively to achieve a competitive advantage. Furthermore, the central premise of the RBV is that firms compete on the basis of their resources; however, since resources are more common than rare, not being able to identify resources that offer a competitive advantage may pose a serious problem (Kabue & Kilika, 2016). However, the RBV theory does not provide a framework to explore strategies for efficient manufacturing operations.

The purpose of this qualitative multiple case study was to identify strategies leaders can use to increase productivity through control of the process constraints. My

detailed review of the literature may identify what strategies leaders of manufacturing firms in Nigeria use to support efficient manufacturing operations. The discussion covers strategic production planning, process management, production maintenance, leadership, innovation, and operation management.

Production Planning

Production planning is the primary managerial function of an organization involving the direction and coordination of a manufacturing plant's overall operation (Cheng & Bing, 2013). Szármes (2015) explained that planning includes coordinating the programs of the suppliers, production managers, and quality managers to support the manufacturing process. Production planning and control have a significant impact on operational efficiency (Kalinga, Lonseth, & Lonseth, 2013; Umoh & Wokocha, 2013). Onuoha (2013) noted that due to the turbulent business environment, an efficient plan for improved productivity for most manufacturing firms in Nigeria may be an imperative. Planning for a wide variety of programs to ensure materials, equipment, and human resources are available at the right time and right place may improve productivity (Rafiei, Rabbani, & Kokabi, 2014; Szármes, 2015).

Optimal and flexible planning. Umoh, Wokocha, and Amah (2013) noted that strategic planning to improve the manufacturing process involves managing workflows, inventories, backlogs, and changing levels of operation. Jan-Khan and Khalique (2014b) found a positive relationship between effective planning and firms' performance. However, organizational leaders could lose the benefits from a continuous process improvement to achieve a higher productivity due to poor planning (Szármes, 2015).

Umoh et al. (2013) informed that production planning has existed in the Nigerian manufacturing industry but has failed to accelerate the growth of the industrial sector. Manufacturing firms in Nigeria are still inefficient due to poor planning and availability of inadequate resources (Onuoha, 2013). Optimal resources planning such as material availability, human resources, machine reliability, and distribution can enhance productivity (Nehzati, Dreyer, & Strandhagen, 2015). Efficient planning may help a leader to detect constraints; however, a production uncertainty caused by various factors such as machine failure can create instability in the production system (Jan-Khan & Khalique, 2014a; Longfei, Huangli, Zhanwen, Haili, & Xiangli, 2015). Nigerian manufacturing firms should be involved in a continuous and effective planning effort and revise the plans periodically to realize a more efficient production process (Umoh et al., 2013).

Cheng and Bing (2013) explained that the possibility of delayed delivery in production due to an inability in most case to meet production capacity could cause violated due dates. Furthermore, Akindipe (2014) observed that the inefficient use of time, labor, and other resources during operation might lead to failures to meet customers' orders, low capacity utilization, and the closure of many firms in Nigeria. According to Umoh and Wokocha (2013), the consequence of not implementing a strategic production planning in manufacturing firms in Nigeria is the inefficient operation, loss of revenue, and lack of business growth. However, an efficient utilization of resources and a sequential production plan can improve most manufacturing process (Longfei et al., 2015; Schutz, Rezg, & Leger, 2013).

Formento, Chiodi, Cusolito, Altube, and Gatti (2013) explained that due to the critical role of manufacturing in enhancing the local economic growth, production planning should not depend on circumstantial pressures. Strategic planning for continuous improvement and efficient functioning of material management, inventory, and transportation can assist leaders of manufacturing firms to achieve their logistics targets (Akindipe, 2014; Madhavi, Mathew, & Sasidharan, 2013). Furthermore, inventory and resource management are critical for efficient operation and profitability especially in a competitive environment (Akindipe, 2014). Ensuring that the production planners provide the capacity to meet demand and ensure timely availability of resources may enhance productivity (Akindipe, 2014). Making production decisions without an effective planning may lead to inefficiency; however, organizational leaders might use strategic planning to steer operations in a desirable direction and achieve their goals (Li, Liu, Li, Landers, & Tang, 2013; Sosiawani, Bin-Ramli, Bin-Mustafa, & Bin-Yusoff, 2015).

Organizational leaders should be flexible and responsive to meet the demand for frequent deliveries and short time responses in a manufacturing environment (Romsdal, Strandhagen, & Dreyer, 2014). According to Szármes (2015), a production planner needs to continuously develop flexible and efficient production processes to achieve higher productivity. Rescheduling activities after machine breakdown occurs may become inefficient and consume more time (Yulianty & Ma'ruf, 2013). Furthermore, unexpected failure in manufacturing may be dangerous and might reduce throughput and create process inefficiency (Kouedeu et al., 2014). Paying particular attention to an organization's long-term goals, calculating its capabilities to achieve the goals, and

examining constraints that may pose as barriers can enhance the production process (Abdalkrim, 2013). In addition, companies that utilize new methods and techniques as part of a production plan may develop the capacity to keep pace with external demands (Jan-Khan & Khalique, 2014a; Sosiawani et al., 2015).

Diverse markets need. A process planning optimization that involves optimizing the process parameters can enhance operational efficiency (Umoh et al., 2013). However, in production environments, firm leaders ought to consider diverse market needs in their production planning systems (Rafiei et al., 2014). According to Cheng and Bing (2013), planning to maintain balance among multiple objectives may enhance productivity. Planning may involve linear programming, planning for competitive customer value, planning compliance, planning to determine job assignments, and processing time of jobs (Conti, 2013; Yulianty & Ma'ruf, 2013). Furthermore, Jan-Khan and Khalique (2014a) observed that planning to optimize the process and to solve environmental problems may be essential since environmental compliance in manufacturing firms might provide long-term gains and economic sustainability. In addition, Jan-Khan and Khalique noted that organizational leaders have recognized the need for a continuous study of the environment and incorporate the environmental information into their strategic planning.

New planning model. Mugwindiri, Nyemba, Madanhire, and Mushonga (2013) noted that a production planner could attain optimum operation if the leaders efficiently utilize the manufacturing facilities. Szármes (2015) explained that a new method of manufacturing called the holonic manufacturing execution system could be beneficial in keeping pace with external developments and could satisfy customer needs. Onuoha

(2013) stated that Nigeria has an unstable business environment resulting from deteriorated infrastructures and research institutions, inadequate electricity supply made worse by the high incidence of corruption in the sector, insecurity, and corrupt leadership.

To overcome these gaps, planners in the manufacturing sector should consider implementing a detailed production scheduling system that would render the production groups visible (Arun & Telsang, 2013). Nigeria has a large, growing, and active population, and success comes from careful, systematic, and strategic planning (Ihugba et al., 2013). Production planners in manufacturing firms should develop a robust model that incorporates vision for the future and understanding of the present realities instead of a reactive problem-solving approach (Abdalkrim, 2013). Adopting a strategic production planning process is important and should involve long-term, short-term, or even daily routine activities (Abdalkrim, 2013; Mok, Cheung, Wong, Leung, & Fan, 2013).

Process Management

Ighosewe and Akpokerere (2015) observed that the manufacturing sector plays a catalytic role crucial to any nation's industrial and economic advancement. Obioma et al. (2015) noted that the manufacturing industry appears to be a critical driver for industrialization because linkages and dynamic benefits are stronger in manufacturing than in any other sector. Abdulwahed (2014) explained that manufacturing sector serves as the engine of local economic growth of any nation and provides an effective means of mitigating rural-urban migration through the quick adoption and adaptation of technologies. Fine et al. (2013) maintained that manufacturing sector has the most effective and expeditious potential for the creation of job opportunities, diversification of

output, and reduction of imports. Therefore, a robust and efficient manufacturing sector is critical for the rapid and sustainable economic growth of any nation (Abdulwahed, 2014; Iorun, 2014).

Process improvement tools. Rawson, Kannan, and Furman (2016) noted that process improvement techniques (Total Quality Management, Just-in-time delivery, Business Process Reengineering, Lean Manufacturing, TOC, and Six Sigma) are commonly utilized in manufacturing firms to enhance efficiency and competitiveness. Singh, Singh, Chokshi, Chavan, and Dabhi (2015) explained that organizational leaders are increasingly implementing various process management techniques to achieve a firm's strategic objectives. Furthermore, organizational leaders implement process improvement strategies to assist managers to identify constraints in a manufacturing process and enhance the overall output of the manufacturing plant (Panizzolo & Garengo, 2013). The competitiveness in the marketplace makes the situation crucial for a consistent application of strategic tools to achieve business excellence (Pramadona & Adhiutama, 2013). In addition, most business leaders recognize that consistent and disciplined application of strategic process tools with an emphasis on waste elimination could lead to efficient process (Pramadona & Adhiutama, 2013).

However, Hassan, Marimuthu, and Mahinderjit-Singh (2016) warned that to maximize the benefits of the implementation of process improvement tools; the practitioners should carefully plan, select, and review the techniques. Furthermore, Lopes, Freitas, and Sousa (2015) cautioned that implementing process improvement technique remains the greatest challenge, and if not properly planned it might raise many

obstacles such as resistance to change and reluctance to show commitment. Likewise, Robson et al. (2013) enumerated the factors that may contribute to failure in adopting process improvement techniques as (a) lack of resources, (b) poor selection and implementation, (c) lack of management commitment, (d) poor communication, and (e) poor training. Therefore, Robson et al. maintained that leaders of manufacturing firms should develop a framework that would help in identifying the process improvement technique that best suits the needs of the organization. Organizational leaders should carefully evaluate the benefits of each technique's deployment to achieve a continuous improvement culture (Lodgaard, Ingvaldsen, Aschehoug, & Gamme, 2016; Verma, Trivedi, & Agnihotri, 2015).

Manufacturing trends. Akinmulegun and Oluwole (2014) noted that the Nigerian manufacturing sector has become famous with an increasing cost of production and negative trends in the production performance. Sola, Obamuyi, Adekunjo, and Ogunleye (2013) revealed that the pattern of growth in the Nigerian economy had not gained significant input from the manufacturing sector despite the efforts of the government. Furthermore, Ighosewe and Akpokerere (2015) noted that despite several reforms in the manufacturing sector aimed at improving productivity, there are still growing concern about the decline of the output of the sector. Elhiraika, Aboubakar, and Muhammad (2014) contended that the growth in the Nigerian manufacturing sector has been declining, which has created economic disequilibrium. Consequently, the Nigerian manufacturing sector has continued to decline, as has its contribution to the national GDP (Onwuka, 2013). Similarly, Sola et al. examined factors of manufacturing performance

for sustainable economic development in Nigeria from 1980 to 2008 and found a negative correlation between manufacturing and determinants of manufacturing performance. Obioma et al. (2015) analyzed the position of the manufacturing sector in the Nigerian economy and found downward trends in all parameters of performance. Obioma et al. further stated that the manufacturing contribution to GDP was about 7.2% in 1970, 5.4 % in 1980, 7.9% in 1990, 6.7% in 1995, 6.3% in 1997, 3.4% in 2000, and 4.16% in 2011. Eze and Ogiji (2013) contended that the same negative trends continued in the Nigerian manufacturing sector, as the sector's share of GDP in 1990 was about 5.5%, which decreased to 2.22% in 2010. The downward trends in the parameters of growth in Nigerian manufacturing sector has often led to inefficient operation, lack of business growth, and closure of many manufacturing firms in Nigeria (Akindipe, 2014; Umoh & Wokocha, 2013)

Conversely, Olorunfemi et al. (2013) observed that productivity analyses of firms showed that manufacturing had added substantially to the GDP of various advanced economies. Modern manufacturing processes have high technological trends, strategic leadership, and maintenance that typically promote productivity and better living standards (Nwosu et al., 2016; Umoh et al., 2013). Therefore, the keys to revising the poor performance of manufacturing in Nigeria are (a) increasing investments in the sector, (b) adoption of appropriate production technique, and (c) implementing effective reforms in the subsector (Aiyedogbon & Anyanwu, 2015; Anyaehie & Areji, 2015).

Business environment. Agwu and Emeti (2014) observed that most manufacturing firms in Nigeria operate in an unfavorable business environment resulting

in high cost of production for domestic goods. Such harsh business environments include a high production cost, severe capacity underutilization, high exchange rate, inadequate infrastructure and an environment of insecurity (Akinmulegun & Oluwole, 2014; Eze & Ogiji, 2013). However, Ighosewe and Akpokerere (2015) explained that the volatile manufacturing environment in Nigeria may have deterred private investments, reduced employment opportunities, and increased reliance on importation. Akindipe (2014) postulated that the unfriendly manufacturing environments might have resulted in losing business opportunities and incurring huge losses in the Nigerian manufacturing sector. Okafor (2013) concluded that the Nigerian manufacturing environment has not been conducive to the proliferation of small manufacturing companies capable of enhancing local economic growth and transformation.

Furthermore, Yakubu et al. (2015) informed that over 800 firms in Nigeria including multinationals firms could have relocated to neighboring countries due to an unfavorable business environment and a high cost of production. Yakubu et al. maintained that the harsh operating environment has made the situation difficult for Nigerian firms to compete with their foreign counterparts. Yakubu et al. further revealed that due to the unfavorable business environment, goods produced in Nigeria cost higher than goods manufactured in China, Europe, South Africa, and Ghana. Obioma et al. (2015) noted that the capacity utilization rate in the manufacturing sector is between 30% and 40%, indicating gross underutilization of resources. Therefore, concluding that the Nigerian manufacturing industry has experienced many growth challenges because of

operational constraints resulting in many firms closing down may not be a surprise (Nwosu et al., 2016; Onuoha, 2013).

Addressing these gaps will require leaders in the manufacturing sector to develop a coherent advanced manufacturing practice capable of creating a robust economy that can reduce poverty, kidnapping, terrorism, and armed robbery (Onwuka, 2013). Furthermore, Robson et al. (2013) observed that employing several process improvement tools and creating an enabling environment may help leaders of manufacturing organizations to realize process efficiency. However, upgrading technological capacity to boost local manufacturing export, reducing the cost of production, increasing investments, capacity utilization, and improved infrastructures will enhance high productivity (Olorunfemi et al., 2013). Reducing high production cost and low value added activities, providing an enabling environment, and improving capacity utilization may enhance productivity, linkages among different sectors, and economic growth (Brown, 2013; Elhiraika et al., 2014; Onuoha, 2013).

Production Maintenance

Maintenance, testing, and inspection schedules are required to ensure that equipment in the facility is operating safely and efficiently to reduce the risk of failure (Šlaichová & Maršíková, 2013). Organizational leaders need to give better understanding and importance to the critical role of equipment and the cause of failure to ensure availability for production (Chopra, Sachdeva, & Bhardwaj, 2014). Attaining success in manufacturing depends on when machines can perform with higher effectiveness and efficiency (Shivdasini, Atre, Vardia, Vaibhav, & Boby, 2013). Increased availability of

manufacturing equipment is crucial to achieving higher productivity (Chopra et al., 2014). Robson et al. (2013) noted that maintenance is a required function that positively contributes to business success. Organizational leaders should perform equipment maintenance in a planned manner to guarantee continuous performance (Azizi, 2015; Nani, Ruey-Huei, & Jong-Jang, 2015).

Prevention and maintenance culture. Maintenance of a production system may be a complicated and challenging task. Ratapol (2013) noted that equipment failure could cause inefficiency through breakdown losses, set-up and adjustment losses, idling and minor stoppage losses, rework losses, and start-up losses. However, implementing preventive strategies for several random failing production units may be an effective way to enhance productivity (Mifdal, Hajej, & Dellagi, 2015). Failure to establish a strategic maintenance plan might reduce machine reliability and efficiency (Robson et al., 2013). Most experts on scheduling assume that machines are available at all times; however, due to maintenance activities, machines cannot operate continuously without some periods of unavailability (Xiaohui, Lei, & Xinghui, 2015). Implementation of regular maintenance checks to ensure efficient operation of the equipment in the facility is imperative (Šlaichová & Maršíková, 2013). Preventive maintenance actions to ensure any machine continues to be available and effective are essential in minimizing total production cost (Al-Turki, Ayar, Yilbas, & Sahin, 2015; Arab, Ismail, & Lee, 2013).

Developing and implementing an effective maintenance plan guarantees a satisfactory level of system reliability and reduces operating costs (De-Felice, Petrillo, & Autorino, 2014; Mostafa, Lee, Dumrak, Chileshe, & Soltan, 2015). Robson et al. (2013)

explained that having a structured maintenance plan linked to organizational goals may increase productivity. Robson et al. noted that developing a comprehensive maintenance strategy would help the maintenance team to reduce operational inefficiency and enhance productivity. Furthermore, Kouedeu et al. (2014) posited that the failure rate of the manufacturing machine depends on its production rate and decreasing productivity to realize gains in reliability may be beneficial. Developing a deeper insight into the cause of failures and the selection of an effective maintenance strategy may enhance productivity (Mohammadreza, Muhammad, & Abdul-Karim, 2014).

Ratapol (2013) explained that creating a total productive maintenance (TPM) culture is important for reducing manufacturing costs and waste and especially preventing machine breakdown. Developing a culture of preventive maintenance, predictive maintenance, and corrective maintenance can enhance overall equipment effectiveness (OEE) and reduce failure frequencies of machines (Šlaichová & Maršíková, 2013). Preventive maintenance strategies such as regular lubrication, cleaning, inspection, adjustment, alignment, and or replacement can enhance equipment availability and OEE (Xiaohui et al., 2015). OEE, which characteristically advances from being a base measure of efficiency to being a tool that improves effectiveness, is crucial (Yuniawan, Ito, & Bin, 2013). Organizational leaders may achieve OEE with a focus on 0 loss, 0 break down, 0 defects, and 0 accidents (Naik, Raikar, & Naik, 2015). Tsarouhas (2013) noted that OEE involves a systematic method for establishing production targets and incorporates practical management tools and techniques to achieve process availability and performance efficiency. Machines are the key factors in production and

having an in-depth knowledge of system performance, and a good understanding of maintenance management may increase OEE (Karim, & Huifang, 2015; Mohamad & Chandrasa, 2015).

Strategic maintenance. Developing an effective production planning and efficient maintenance strategy has always been the greatest challenge of manufacturing firms (Mifdal et al., 2015). Marketing, production, engineering, and maintenance are common functional departments that usually share the benefits of manufacturing facilities in different objectives (Robson et al., 2013). If a production department does not give production machines for maintenance because of the production pressure, and production support wants to perform maintenance to ensure the reliability of devices, the system may experience downtime (Liu, Wang, Zhang, Zhai, & Peng, 2015). Conflicts are inevitable because the various departments are usually set separately but share the same system (Liu et al., 2015). Consequently, the interdependence between manufacturing operations and equipment maintenance makes a proper synchronization of the production planning and the maintenance strategy imperative (Al-Turki et al., 2015). Creating a coherent strategic maintenance plan linked to manufacturing and business goals will enhance the completion of customer orders in full and on time (Jin et al., 2016; Wang & Liu, 2013)

Total productive maintenance. Binti Aminuddin, Garza-Reyes, Kumar, Antony, and Rocha-Lona (2016) observed that most manufacturing firms are gradually changing to total productive maintenance (TPM) to remain competitive and achieve high equipment reliability. Mohamad and Chandrasa (2015) noted that TPM provides practitioners a pathway to achieve perfection through (a) strategic maintenance, (b)

focused improvement, (c) planned maintenance, (d) quality maintenance, and (e) education and training. Naik et al. (2015) explained that focusing on improvement of OEE through the implementation of TPM will ensure high equipment availability and seamless operation. Furthermore, Šlaichová and Maršíková (2013) maintained that the goal of TPM is to achieve (a) zero breakdowns, (b) zero defects related to equipment, (c) reduction in cost, (d) reduction in inventory, and (e) increase in productivity. Naik et al. informed that performing equipment maintenance in a planned and strategic manner with a regular inspection that becomes a trigger for the demand of maintenance will guarantee increased productivity.

De-Felice et al. (2014) proposed that leaders of manufacturing firms should invest in maintenance improvement since there is strong perception that bad maintenance is the major cause of organizational problems. Mohammadreza et al. (2014) noted that an effective maintenance program enhances a satisfactory level of systems reliability. Improving the reliability and availability of machines aligns properly with the theory of constraints as a conceptual framework for this study. Reliable equipment may result in repeatable and predictable processes which in turn might reduce unplanned stoppages and operational inefficiency to achieve higher productivity. Therefore, high availability and reliability of machines are the key points for a successful manufacturing operation (Khaled, Mohsen, & Abdulla, 2015; Puvanasvaran, Teoh, & Tay, 2013; Xiaohui et al., 2015).

Leadership

Leadership is a critical factor and the bedrock for organizational effectiveness and efficiency (Kehinde, Idris, & Oluitan, 2014). Efficient manufacturing process and organizational success may not emerge by accident but by a good leadership (Rastgoo, 2014). Even though the leaders of many firms look for competitive advantage in their structures, technology, and culture, a strategic leadership is imperative in inspiring individuals to achieve organizational goals (Amanchukwu, Stanley, & Ololube, 2015). Furthermore, quality leadership comes from leaders who drive and transform deliberate changes in the system into an efficient process (Rao & Weintraub, 2013). Khuong and Nhu (2015) noted that leadership styles substantially change the emotion and commitment of employees, and in a competitive business environment, employees are the principal assets of a company.

Galvin, Gibbs, Sullivan, and Williams (2014) classified managers by leadership style and according to their propensity for transactions versus transformation of subordinates. Al-Sawai (2013) further subcategorized transformational leadership into a servant and shared leaderships. Amanchukwu et al. (2015) identified the different leadership styles as autocratic, bureaucratic, charismatic or transformational, democratic, laissez-faire, and transactional types. The most universal leadership styles are the transactional, transformational and laissez-faire (Alkahtani, 2016). Galvin et al. further observed that identifying the leadership styles will help in explaining the competencies associated with each leadership approach and the type of influence on the organization.

Due to the competitiveness in the Nigerian manufacturing sector, leadership character and style may be valuable in achieving organizational goals (Kehinde et al., 2014).

Transformational leadership. Transformational leaders move followers beyond their immediate self-interest through inspirational motivation (Cheerawit, Kulkanya, & Vinai, 2014). Idealized influence reflects in the charismatic actions of leaders based on high order ideas, which inspires confidence in followers to contribute positively to the success of the firms (ElKordy, 2013). Wongyanon, Wijaya, Mardiyono, and Soeaidy (2015) contended that a transformational leader creates the vision, accepts new ideas, makes quick decisions, and encourages cooperation to enhance organizational effectiveness. Al-Sawai (2013) noted that transformational leaders can motivate performance beyond expectations through their ability to influence attitudes Shadraconis (2013) observed that transformational leaders could stimulate and inspire their followers to admire, respect, trust, and be loyal to the organization to achieve higher performance. However, Amanchukwu et al. (2015) advocated that chief executives should adopt a leadership style that will enable workers to use the available resources to attain organizational goals. Developing cordial relations, mutual trust, confidence, and risk-taking among employees through quality leadership can enhance employees' commitment to work (Kehinde et al., 2014; Yanney, 2014).

Shared leadership. Stagnaro and Piotrowski (2013) assessed attitudes toward the shared leadership style and found that performance relates to leadership style and the integration of leadership behaviors to achieve desired outcomes. Pearce and Wassenaar (2015) noted that shared leadership is an important predictor of work group outcomes.

Shared leadership can enhance the potential of an organization as employees may have an involuntary inclination toward work in an environment of trust and fearlessness (Shadraconis, 2013). Stagnaro and Piotrowski further observed that achieving exceptional performance means that people have high motivation to participate in the whole process, and the environment is supportive of the process. Sohmen (2013) informed that camaraderie develops and relationships become stronger as the group realizes they have shared vision. Nonetheless, Wongyanon et al. (2015) observed that leaders should diagnose and understand situational factors and adopt the appropriate leadership style to cope with each circumstance. Creating a shared vision can produce a work environment where everyone can participate fully and achieve commitment and organizational growth (Al-Sawai, 2013; Çetin & Keser, 2015; Naile & Selesho, 2014).

Servant leadership. As organizations move away from the traditional command and control approach, the emergence of a new type of leadership called servant leadership may be necessary for achieving organizational goal. McCann, Graves, and Cox (2014) explained that leaders should practice effective servant leadership to succeed in a challenging business climate. Furthermore, Mahembe and Engelbrecht (2014) noted the existence of positive relationships between servant leadership and team effectiveness. Olesia, Namusonge, and Iravo (2013) explained that a servant leader provides vision and empowerment, thereby contributing to organizational commitment. Having visionary and inspirational leader with a supportive business environment may improve organizational performance. However, the limitation with this type of leadership is that nonoperational factor such as stakeholders could exert undue pressure on management decision-making

process (Shadraconis, 2013). Therefore, Al-Sawai (2013) maintained that leadership should be an ongoing and fluid process that requires continuous evaluation to be responsive to the ever-changing challenges. Furthermore, Al-Sawai explained that servant leaders should develop and foster defined goals that can influence the practices of groups and individuals outside the core team. Leadership behaviors which involve building trust, inspiring subordinates, encouraging developments are positively related to employee commitment and job satisfaction (ElKordy, 2013; Naile & Selesho, 2014).

Transactional leadership. Transactional leaders focus on the exchanges that develop between leaders and followers (Iscan, Ersari, & Naktiyok, 2014). Three types of transactional leadership are contingent rewards, active management by exception, and passive management by exception (Alkahtani, 2016). Contingent reward occurs when transactional leaders influence followers through contingent rewards and negative feedback or corrective coaching (McCleskey, 2014). Active management by exception occurs when leaders actively monitor the work of their subordinates and take corrective actions to prevent mistakes (Alkahtani, 2016). Passive management by exception occurs when leaders intervene when standard or the performance falls short of expectations (Alkahtani, 2016). Laissez-faire leaders provide the resources and allow the subordinates the power to make decisions about their work (Amanchukwu et al., 2015). Wongyanon et al. (2015) noted that transactional leaders engage in a bargaining relationship with employees using rewards and punishments to achieve a result. The disadvantage is that transactional leaders have a negative association with affective, normative and continual commitment (Alkahtani, 2016). Nonetheless, the choice of a leadership style should be

contingent on diverse factors such as personality traits of the leaders, task complexities and the norm and values of the organizational members (Alkahtani, 2016; McCleskey, 2014).

Toxic leadership. A consideration of the dark side of leadership is crucial to gain in-depth knowledge and ability to develop the effective leadership style required for organizational success (Inyang, 2013). Inyang (2013) further noted that quality leadership is good however leadership derailment can be pervasive, and the observed consequences include low staff morale, low productivity, and loss of organizational reputation. Toxic leadership relates to lowered levels of job satisfaction and increased intention to quit (Mathieu, Neumann, Hare, & Babiak, 2013). Tran, Tian, Li, and Sankoh (2014) explained that behaviors such as bullying, oppression, lying, cheating, stealing, and selfish interest could negatively impact on the progress of the organization. Furthermore, leadership ineptitude, faulty policy decisions, organizational incompetence, and official corruption can undermine the objectives of the firm (Arrey, 2013).

Okafor (2013) explained that Nigeria's problems are not the result of a harsh business environment but of corruption that prevented the leaders from investing in infrastructures that would drive the manufacturing sector. However, organizational leaders should understand the negative impact of dark leadership on subordinates and strive to create a pleasant and productive environment. Thus, Inyang (2013) contended that leaders of manufacturing firms in Nigeria should develop an effective strategic plan to identify early signals of a derailment and address same during the recruitment and promotion processes. Developing effective manufacturing processes and a good feedback

mechanism could enhance quality leadership and in turn relate to positive employee attitude and organizational commitment (Cheerawit et al., 2014; Sohmen, 2013).

A leader is a key factor, the generator, and the sustainer of a healthy working environment (Cheerawit et al., 2014). Good leaders can organize resources to do work effectively and efficiently (Galvin et al., 2014). Similarly, leaders model the right innovation behavior for workers to enable the employees to think and act entrepreneurially (Rao & Weintraub, 2013). Furthermore, Yildirim and Birinci (2013) observed that leaders make changes that increase organizational efficiency and performance. Consequently, manufacturing firms with weak leadership tend to be less efficient and might derail the firm from accomplishing the organizational goals (Amanchukwu et al., 2015). Quality leadership that is highly motivational and principled could enhance employee commitment and higher production performance (ElKordy, 2013; Wongyanon et al., 2015).

Innovation

Galindo and Mendez-Picazo (2013) observed that innovation plays a critical role in a nation's economic growth process. Ihugba et al. (2013) noted that manufacturing is an engine of innovation and diversity in most developed countries. Rojas, Cerda, García, and Barcenas (2013) noted that innovation is the introduction of a new product, a new process, or a new organizational procedure within internal business practices. Ul Hassan, Shaukat, Nawaz, and Naz (2013) explained that utilizing innovation practice will enhance increased productivity in manufacturing operations. Ul Hassan et al. further contended that innovation is a primary vehicle for organizational change to improve performance

under conditions of high competition. To compete in the fast changing business environment, leaders of manufacturing firms should create new processes; and to dominate, organizational leaders should adopt innovation as a way of corporate life (Jeongeun & Minhye, 2014). Innovation has become a necessity for businesses improvement and higher production performance (Adewole, Adepoju, & Adewole, 2013; Bakovic, Lazibat, & Sutic, 2013; Özlen & Sisic, 2013).

Diverse innovation process. Karabulut (2015) categorized innovation as (a) product innovation, (b) process innovation, (c) marketing innovation, and (d) organizational innovation. Ogbo, Japheth, and Ukpere (2014) noted that leaders build incremental innovation on the established knowledge base by introducing minor changes to improve performance. Conversely, Ajayi and Morton (2015) advocated utilizing radical innovation that represents significant changes in methods of production and delivery to achieve effective innovation. Jeongeun and Minhye, (2014) observed that the distinction between the different types of innovation is important because adoption of each type requires different organizational skills. Seo, Kim, Kim, Yu, and Lee (2016) informed that the diverse innovation process has different performance outcomes capable of satisfying the diversified customer needs and increasing the relevance of innovation. Understanding the types of innovation that may improve organizational performance and guarantee customer satisfaction is imperative (Olughor, 2015). Consequently, Denning (2013) proposed continuous innovation involving incremental and radical change processes as the most reliable strategies to create a positive impact on firms' productivity.

Dumay, Rooney, and Marini (2013) argued that the greatest challenge to sustainable innovation are resistance to change among some senior staff members. Holzmann and Golan (2016) noted that lack of confidence, distrust, and resistance to cooperate by middle managers might impair access to innovation. Anyanga and Nyamita (2016) identified limited resources for research, the risk of investing in new knowledge, and lack of access to new technologies as some of the major barriers to successful innovation. Furthermore, Ajayi and Morton (2015) observed that the difficulty in converting research and development (R&D) in most manufacturing firms in Nigeria could have hindered effective innovation. However, to address the gap, Stowe and Grider (2014) proposed two strategies as (a) developing organizational strategies that promote innovation, and (b) improving each employee's understanding of innovation. In addition, Feldman (2014) argued that establishing a friendly business environment with higher levels trust, openness, and greater interaction may create an innovative organization. Thus, organizational leaders should dedicate effort to continuously improve their processes and maintain a flexible structure to enhance effective innovation (Brown & Guzmán, 2014; Felipe-Ferreira & Márcia-Regina, 2014).

Dumay et al. (2013) observed that although innovation is the driving force behind increases in productivity, the process has undesirable impacts and failures, and for every successful innovation, there are likely to be several failed innovations. Gómez, Salazar, and Vargas (2016) noted that excessive use of external sources and spending too much time and effort on research could be detrimental to innovation performance. Nonetheless, Samson and Gloet (2014) advocated that successful innovation capability should not be a

spontaneous effort, but rather should be within all the policies and structures that support innovation in a firm. Furthermore, Samson and Gloet maintained that sustainable innovation could involve drawing upon multiple perspectives and using a variety of processes to achieve success. Meissner and Kotsemir (2016) postulated that firms that do not have large resources to develop innovation in-house could benefit by establishing a network with other organizations. Stowe and Grider (2014) proposed that organizations should pilot innovative concepts before committing too many assets to reduce the risk of failure associated with innovation. Developing a robust link with mainstream economic institutions and setting innovation policies beyond an organization's borders may enhance the implementation of new change process (Heinemann, Massaro, Coray, Agapito-Tenfen, & Wen, 2014; Nathan & Lee, 2013).

Innovative leadership and culture. The innovative process involves ambiguity and risk that necessitates the need for leadership to frame effective strategies to advance innovation in an organization (Stowe & Grider, 2014). Leadership is crucial in facilitating teams' ability to adapt to change and thus enhance teams' innovative behavior and culture (Hoch, 2013). Rao and Weintraub (2013) observed that creating a changing culture is crucial and should rest on six building blocks: resources, processes, values, behavior, climate, and success. Furthermore, Rao and Weintraub noted that building a fearless workplace that frees people to take the risks innovation leadership requires is paramount. Holzmann and Golan (2016) maintained that creating a culture of creativity and innovation in a manufacturing firm is not an easy task. However, Rao and Weintraub explained that innovative thinkers could overcome an organization's innovations stifling

culture and processes. Leaders of manufacturing firms must focus on creating a friendly business environment that reduces the fear of change and becomes more open to opportunities for innovation (Nathan & Lee, 2013; Radziwill, 2013).

Innovative resource management. Nigeria needs innovation to transform from exploiting resources to technological innovation (Oyewale, Adeyemo, & Ogunleye, 2013). Oluwale, Ilori, and Oyebisi (2013) argued that organizational leaders need to develop the ability to adapt and innovate within the range of the available technological resources. Oluwale et al. observed that innovation confers the competitive advantage to firms. Furthermore, Gupta, Guha, and Krishnaswami (2013) maintained that innovation has contributed to a higher growth of employment, promotion of export, and fostering entrepreneurship. However, Ajayi and Morton (2015) stated that despite the positive impact of innovation as a building block for economic growth; most of the manufacturing firms are unable to achieve effective innovation due to limited resources and low technology. The modern manufacturing process is characterized by high technological innovation, availability of resources and improvement of technical skills that may promote productivity (Obioma et al., 2015). Furthermore, Oyewale et al. (2013) noted that most of the manufacturing firms might achieve successful innovation by developing their indigenous technology, imitating others because of the unaffordable cost of executing research, and hiring highly skilled personnel or procuring technological information. Holzmann and Golan (2016) noted that organizational leaders can achieve innovation by purchasing resources, collaborating with other firms that transfer resources, skills, procedures, or by the acquisition of an entire firm that owns the resources.

Conversely, Oyewale et al. (2013) explained that one of the critical insights of modern innovation is that firms rarely become creative based on internal resources only, but elicit supports from outside links. Furthermore, Oyewale et al. noted that most innovating firms have complex webs of relationships with external links, some of which help to solve various problems that occur during innovation. Headrick (2014) stated that the new manufacturing environment demands people who can solve problems from a broad perspective. Organizational leaders must have the ability to combine resources to provide the desired result, satisfy wants, and fulfill needs in new value adding ways (Oyebisi, Momodu, & Olabode, 2013). Organizational leaders can adopt strategic innovation type that involves alliances with other firms, suppliers, outsourcing and redefining of the firm's core competences to achieve a process change (Ajayi & Morton, 2015; Khayrullina, Kislitsyna, & Chuvaev, 2015).

Operations Management

Manufacturing is a building block for a nation's economic development (Gupta et al., 2013). MacBryde, Paton, and Clegg (2013) noted that manufacturing no longer simply involves producing goods but consist of a complicated network of different competitive strategies to achieve continuous process improvement. De-Felice et al. (2014) maintained that organizational leaders should continue to improve their competitive strategies to achieve sustainable economic growth. To achieve a competitive advantage, organizational leaders need to focus on improving the firms' resources, core competencies, and capabilities (Wahl & Prause, 2013). Leaders of manufacturing firms need to take a long-term perspective in building resources and capabilities that provide

the highest entry barriers for competitors (Kabue, & Kilika, 2016; Mukesh, Franklin, & Martinette, 2013).

Organizational resources. Ihugba et al. (2013) noted that achieving economic sustainability will depend on the ability of the organizational leaders to increase the value of their production with the available resources. Furthernore, Kumlu (2014) observed that firm's resources are the available tangible and intangible inputs such as capital, assets, skills, patents, capabilities, firm attributes, knowledge, and talented managers that may enable an organization to apply value enhancing strategies. López-Cabarcos, Oliveira-Monteiro, and Vázquez-Rodríguez (2015) informed that organizations differ because they possess a distinct set of tangible and intangible resources that contribute to higher performance. Kabue and Kilika (2016) similarly explained that intangible resources such as brand name, goodwill, client trust, reputation, networks, and intellectual properties are the best in building core competencies for a competitive advantage. Ihugba et al. maintained that effectively deploying the resources of the company could be a significant source of competitive advantage. However, López-Cabarcos et al. explained that the resources alone are not sufficient to secure a sustainable competitive advantage. Furthermore, López-Cabarcos et al. avowed that a sustainable competitive advantage only emerges and endures if several resources are complimentary. In addition, Osama and Khalid-Abdul (2016) postulated that organizational leaders may sustain competitive advantage if the resources creating the advantage (a) add positive value to the firm, (b) be unique, (c) be imperfectly imitable, and (d) be nonsubstituted by other resources. Focusing on developing valuable and rare resources in a manufacturing firm with a

potential to generate sustainable competitive advantage is crucial (Szász, Demeter, & Boer, 2015; Wahl & Prause, 2013).

Competitive capabilities. Operational capability is the ability of a firm's leader to perform a coordinated task, utilizing organizational resources to achieve a particular result (Inan & Bititci, 2015). Manufacturing capabilities such as (a) cost, (b) delivery, (c) flexibility, (d) quality, (e) customer focus, and (f) know-how are important in improving and sustaining a business performance (Nurcahyo & Wibowo, 2014). Therefore, operational capabilities represent the firm's ability to compete on dimensions of quality, delivery, flexibility, and cost relative to the competitors in the market (Jalba & Joao, 2014). Strategic production capabilities are positively related to business performance (Abdulkareem, Adel, & Anchor, 2013). Developing excellent pricing and revenue management, after sales services, and interfaces of service operations with other functional departments such as human resources might enhance efficiency and higher performance (Tang, 2015). However, Kabue and Kilika (2016) explained that when a manufacturing firm does not possess the required capabilities to achieve a competitive advantage, one of the available options to the organization is to outsource. Furthermore, Kabue and Kilika maintained that outsourcing capability skills could create a source of sustainable competitive advantage. Consequently, organizational leaders should lay emphasis on building operational capabilities such as quality, cost, flexibility, and delivery to achieve and maintain a competitive advantage (Stefanovska, 2014; Yazdanfar, 2013).

Continuous improvement strategy. Khayrullina et al. (2015) noted that developing a system of continuous improvement that includes consistent measures to raise performance standards in all production processes is crucial. Mora (2014) observed that organizational leaders may rely on continuous improvement focused on the elimination of waste such as poor quality, downtime, low efficiency, failure delivery, and overtime to achieve higher performance. Furthermore, Jingshan, Chrissoleon, and Liang (2016) explained that organizational leaders utilize continuous improvement as the most effective strategy to improve performance, efficiency, quality, and competitiveness. However, Formento et al. (2013) argued that it is not possible to implement effective continuous improvement processes without a strong engagement of the senior management team. Formento et al. further maintained that the directors of manufacturing firms should agree to commit the required resources, policies, and most importantly create a culture of continuous improvement. MacBryde et al. (2013) informed that firm leaders should seek manufacturing efficiency through the integration of design, production resources, and processes from strategic levels down to operational levels. Due to the strong competitions in the manufacturing sector, building a continuous improvement may be more critical to achieving a sustainable competitive advantage (Heinzmann, Lavarda, Machado, & Hein, 2013; Luliya, Sununta, Badir, & Charoenngam, 2013).

Strategic capacity expansion. Ighosewe and Akpokerere (2015) explained that expanding the capacity of a manufacturing plant has helped to set many firms on the path of economic growth. Increasing the manufacturing capacity in a timely manner to meet

immediate or anticipated customer demand is a key strategy to continuous process improvement (White & Censlive, 2016)). Immediate capacity increases involve reducing equipment downtime, using overtime for workers, and outsourcing to achieve production improvement, while anticipated capacity increase consists of purchasing new equipment to enhance productivity (Abdulkareem et al., 2013).

Akpan, Patrick, John, and Udoka (2013) informed that the main objective of expanding capacity is to improve the process, increase productivity, and promote efficiency in resource utilization. However, White and Censlive (2016) cautioned that rather than investing in new personnel or equipment to meet the full actual demand, organizational leaders should respond to the new demand by increasing the local capacity utilization. Wu and Onari (2016) noted that before thinking about adding shifts or overtime, outsourcing or purchasing new equipment, leaders of firms should make sure they truly understand and consider the untapped potential that exists in the current factory. Excess capacity that results in low plant utilization leads to operational inefficiency (White & Censlive, 2016). Furthermore, Wu and Onari explained that the two highly effective strategies for uncovering and accessing potentials in your factory are measuring overall equipment effectiveness (OEE) and total effective equipment performance (TEEP). Organizational leaders should make strategic decisions about the capacity of their plant in relatively rapidly changing business environment to enhance productivity (Pacheco, Pergher, Jung, & Caten, 2014; White & Censlive, 2016).

In summary, as Nigerian manufacturing leaders continue to find new ways of increasing productivity in a globally competitive market, there may be need to identify

best practices to manage a business and achieve local economic growth. The manufacturing sector has a vital role in a modern economy and has many dynamic benefits that are crucial for the growth of other areas (Zohreh & Napsiah., 2013). Khayrullina et al. (2015) noted that the objective of most manufacturing firms is to increase productivity and if leaders could raise performance standards throughout the production system by minimizing constraints, they might achieve continuous improvement. Nonetheless, the Nigerian manufacturing sector has been operating under very unfavorable environments and contributes little to the nation's GDP (Onuoha, 2013; Umoh & Wokocha, 2013). Furthermore, Falade and Olagbaju (2015) affirmed the Nigerian manufacturing sector has consistently faced the problems of excessive dependence on imports, dysfunctional economic infrastructures, unprecedented fall in capacity utilization, and an unfavorable business environment.

Nwosu et al. (2016) stated that the Nigerian manufacturing sector has over the years, employed several strategies to revitalize this critical sector as a means of achieving sustainable economic growth. However, existing practices in the Nigerian manufacturing industry do not maximize the strategic objectives of their stakeholders that support local economic growth (Arrey, 2013; Okafor, 2013). Therefore, establishing effectiveness through strategic planning by adopting TOC as a management improvement tool may result in reliable and predictable processes capable of enhancing continuous manufacturing improvement. Consequently, achieving continuous process improvement becomes more likely as constraints caused by delayed process, poor equipment maintenance, and lack of strategic planning diminish.

Transition

Section 1 included the foundation of the study and the background of the problem. I noted the problem statement and defined the depth of the problem. I outlined the purpose of the study as strategies to increase productivity through minimizing operational inefficiency and formulated an overarching research question and interview questions to elicit stories from participants. I provided the conceptual framework and the related theories supporting this study, contributions to business practice, and implications for social change. The literature review provided readers with a better understanding of the strategies that leaders of manufacturing firms can use to minimize operational inefficiency.

Section 2 is an overview of the research project, which includes the details of the investigating process, my role as a researcher, the participants for the study, research method, and design, and population and sampling procedures. This section also includes a discussion on ethical considerations in qualitative case study research, the data collection process, data analysis, and strategies to achieve trustworthiness. In Section 3, I included an overview of the study, presentation of findings, application to professional business practice, implications for social change, and reflections and recommendations for action and further research.

Section 2: The Project

In Section 2, I included a discussion of the research design and methodology for the study. This section also includes the purpose statement, my role as the researcher, the participants for the study, the research method and design, the population, and sampling procedures. In addition, I discuss ethical considerations in qualitative multiple case study research, the data collection process, data analysis, and strategies designed to achieve trustworthiness.

Purpose Statement

The purpose of this qualitative multiple case study was to explore strategies leaders of manufacturing firms in Nigeria use to support efficient manufacturing operations. The specific population consisted of eight leaders of manufacturing firms who have successfully implemented strategies to support efficient production processes from two manufacturing companies in Nigeria. Results from this study might contribute to social change by identifying strategies leaders in manufacturing firms use to achieve efficient operational processes leading to job creation, poverty reduction, and increased profitability.

Role of the Researcher

Ganapathy (2015) stated that qualitative researchers rely on themselves as the main instruments of data collection. I served as the primary instrument to create questions, conduct fieldwork, collect and analyze the data, and present the results of this study. In a qualitative study, a researcher has an intricate role in collecting and analyzing

data (Webb, 2015). Furthermore, Lo-Iacono, Symonds, and Brown (2016) stated that a researcher's role is critical in collecting qualitative data.

As an employee in an oil and gas engineering company, I had no prior knowledge of the manufacturing work environment or the participants, and as such, I did not experience any conflict of interest. Forsyth, Odierna, Krauth, and Bero (2014) stressed the importance of complete disclosure of any direct personal or professional relationship with the research population to reduce the risk of conflict of interest. Reducing conflict of interest through complete disclosure of direct personal or professional relationships with the research population may enhance the research reliability (Graham, Alderson, & Stokes, 2015). I had no direct personal or professional relationship with the participants as a business development officer in the oil and gas engineering firm. Lo-Iacono et al. (2016) emphasized that using personal connections to informants as a means to recruit participants may reduce the reliability of the research findings.

As a researcher, I upheld the principles elucidated in Belmont Report. An understanding of the Belmont Report guidelines ensures a researcher protects the rights and welfare of participants to meet the standards for conducting ethical research (Miles & Adams, 2013). I took special precautions to protect the human subjects in this study by providing background, purpose, and implications of the study so participants could make an informed decision about the benefits of the study. I completed the training offered by the office of extramural research of the National Institute of Health on protecting human research participants for ethical guidance compliance. Researchers face ethical challenges at each stage of the study, from designing to reporting **(**Sanjari, Bahramnezhad, Fomani,

Shoghi, & Cheraghi, 2014). Consequently, I made every effort to uphold the highest ethical standards while conducting this study. Yin (2014) noted that a good case study researcher should strive for the highest ethical standards while conducting research.

A researcher's bias may undesirably sway the result of a case study (Yin, 2014). To avoid possible biases, I remained objective by not asking questions in a way that may lead the participants to answer in a particular manner. Bias may occur in qualitative research when interviewers gather and evaluate nonjob-related information about the participants (Levashina, Hartwell, Morgeson, & Campion, 2014). Moreover, Hyett et al. (2014) noted that a researcher should be open-minded and ready to reflect upon any difference in the perspectives between the researcher and the participants.

To follow the same procedure with each participant and obtain the reliable and relevant information, I utilized the interview protocol (see Appendix B). Stuckey (2016) explained that the interview protocol is a procedural guide for researchers to keep in mind during data collection. Furthermore, interview protocol may guide a researcher in collecting reliable data (Yin, 2014). In addition, Jamshed (2014) affirmed that a good interview guide provides consistency and allows for flexibility of responses by the participants.

Participants

Eligibility Criteria

Toledo, McLellan-Lemal, Henderson, and Kebaabetswe (2015) noted that researchers should provide a clear distinction and identification of those participating in the research study. Elo et al. (2014) observed that researchers should state the principles

and criteria for selecting participants and detail the participants' main characteristics to ensure the transferability of the research findings. Selecting participants based on their knowledge of the research topics is essential (Palinkas et al., 2013). The participants qualifying criteria were leaders (a) currently working and engaged full-time in successfully implementing strategies for operational efficiency, (b) working with manufacturing firms listed in the Nigeria Stock Exchange online public directory, and (c) whose place of employment were in Nigeria. Cheerawit et al. (2014) stated that leaders motivate and inspire workers to achieve higher performance. Furthermore, leaders influence employees towards the realization of organizational goals (Amanchukwu et al., 2015). Moreover, Alkahtani (2016) affirmed that quality leadership significantly influences employees' organizational commitment.

Strategies for Accessing Participants

Kondowe and Booyens (2014) noted that gaining access to the participants is critical for a successful qualitative research. I utilized the Nigeria Stock Exchange (NSE) online public directory to locate the potential organizations for this study. Companies listed on the NSE are viable indigenous firms that contribute to the country's capital formation process and subsequently reduce unemployment (Okonkwo, Ogwuru, & Ajudua, 2014). I used NSE profile information to select participants who met the research criteria. Lo-Iacono et al. (2016) stated that Internet-based methods of communication are becoming increasingly important for providing in-depth information in qualitative research. Online directories are the efficient and reliable method of selecting participants for qualitative research (Politis, Halligan, Keen, & Kerner, 2014). Luo, Jiang, and

Kulemeka (2015) noted that an online directory is a useful tool and credible source of information in a research study. After Institutional Review Board (IRB) approval, I visited the participating manufacturing firms and contacted the human resources authorized representative for the list of participants who met the research criteria. I contacted the participants via e-mail to explain the purpose of the study and invited them to participate in the study. The potential leaders who agreed to participate signed the informed consent form.

Strategies for Establishing a Working Relationship with Participants.

I established a continued communication with the participants and provided confidentiality assurance to build trust. Researchers should develop at least a comfortable degree of rapport and confidence with the interviewees to improve the ability to collect accurate and truthful information (Jorgensen, 2014). Cronin (2014) maintained that engaging the participants to establish a welcoming environment and interactive communication could enable the researcher to collect a more accurate description of an event. In addition, building rapport between the potential participants and the researcher is essential in establishing credibility (Baskarada, 2014). Furthermore, the participants signed an informed consent form containing a brief overview of the study and a request to contact me directly via phone if there was a need for further clarifications. Establishing a continued interaction with the individuals via phone enhanced researcher-participant relationship and trust.

Research Method and Design

Research Method

The three methods of research include qualitative, quantitative, and mixed methods research (Caruth, 2013). I chose a qualitative method for this study. Koch et al. (2014) affirmed that researchers use qualitative research to facilitate a description and analysis of a particular perspective, and a nuanced understanding of how participants view events in the context of their lives. The qualitative method was appropriate for this study because I sought a holistic understanding of an event from the perspectives of the affected participants. Qualitative researchers provide innovative insights and explore the participants' understanding of an event (Chetty, Partanen, Rasmussen, & Servais, 2014). Garcia and Gluesing (2013) similarly noted that qualitative researchers uncover new organizational phenomena, build theories of change, and create new methods of management.

A quantitative research method involves testing hypotheses and statistical generalization (Baskarada, 2014). Isaacs (2014) further explained that a quantitative researcher does not explore social and behavioral issues related to human events. Quantitative researchers rely on an experimental approach or laboratory setting while qualitative researchers rely on the field or natural research environment (Morse & McEvoy, 2014). Nonetheless, a quantitative research method was not appropriate for this study because I did not involve experiments or seek statistical data.

Ozawa and Pongpirul (2013) stated that a mixed method researcher combines qualitative and quantitative research techniques into a single study. A mixed method is

the collection and analysis of both quantitative and qualitative data in a single study (Bacigalupe, Tujague, Späth, & Lahitte, 2013). Furthermore, Agerfalk (2013) noted that researchers use mixed methods to validate data from both quantitative and qualitative studies. However, I did not combine participants' perspectives of events and numerical testing of data to explore relationships or differences among variables, and thus a mixed method was not appropriate for this study.

Research Design

The five most common types of qualitative research designs are the case study, ethnography, grounded theory, narrative, and phenomenology (Guetterman, 2015). I chose a case study for this research. Case study researchers facilitate a holistic understanding of an event within real-life contexts from the perspective of those involved (Boblin et al., 2013). A case study was appropriate because the intent of this study was to conduct an in-depth analysis of an event within the real world context to understand the issue from the perspective of the participants. Morse and McEvoy (2014) further stated that a case study is a preferred design for answering *what, how,* and *why* questions. Researchers use a case study to obtain robust findings through triangulating multiple sources and various data-gathering techniques (Yu, Abdullah, & Mohd Saat, 2014). Trigo-Coimbra and Oliveira-Martins (2013) similarly argued that researchers use a case study to describe and interpret situations or events.

Other designs I considered for this study included ethnography, narrative inquiry, and phenomenology. Méndez (2013) noted that an ethnographic design is appropriate when researchers seek to understand the culture of a group. Furthermore, an ethnographic

design could also include many ethical issues as the researcher tries to understand the cultural meaning, the social actions, and the normative bonds of a group (Beyens, Kennes, Snacken, & Tournel, 2015). According to Yin (2014), ethnographic researchers may require to spend extended periods in the field and produce detailed interview evidence. Nonetheless, since the focus of this study was to gain insights into human perspectives and not to observe group cultures ethnography was not appropriate for this study.

Jadidi and Nakhaee (2014) explained that narrative researchers utilize stories to obtain in-depth information about the social process. The narrative researchers depend on coherent stories of how participants account for an event (McAlpine, 2016). Guetterman (2015) similarly stated that a narrative researcher uses storytelling to collect qualitative data. Like ethnography, a narrative inquiry was not suitable for this research because I did not focus on people's life experiences of an event.

Englander (2016) observed that the phenomenological researchers seek clarification of structures of experiences for a proper understanding of a phenomenon. A phenomenological researcher studies what an experience means to a particular group of people (Grossoehme, 2014). Frost et al. (2014) noted that researchers use a phenomenological study to seek lived experiences of the individuals within the contexts of their environments. However, because I did not explore the lived experiences of participants, a phenomenological study was not suitable for this research.

Fusch and Ness (2015) stated that researchers reach data saturation when interviews with additional participants do not result in new data or themes. Fusch and

Ness further argued that researchers should not assume data saturation occurs just because they have exhausted their resources. Data saturation is the point at which no new information is forthcoming even after interviewing more people (Galvin, 2015). Grossoehme (2014) similarly explained that researchers who use appropriate sample sizes are likely to achieve saturation. For this study, I continued interviewing participants until additional interviews did not result in the identification of new themes

. Furthermore, the trustworthiness of results is the bedrock of high-quality research (Birt, Scott, Cavers, Campbel, & Walter, 2016). Therefore, I used member checking also to explore the credibility of the results and assure data saturation. Member checking involves taking the analyzed and interpreted data back to participants to confirm the validity of the information (Anney, 2014). Houghton, Casey, Shaw, and Murphy (2013) stated that researchers use member checking to establish rigor of qualitative research. Researchers use member checking to judge the trustworthiness of qualitative research (Erlingsson & Brysiewicz, 2013).

Population and Sampling

I utilized a purposeful sampling to select at least eight leaders who demonstrated in-depth knowledge of the research problem and met the study criteria from various departments of the two organizations. Isaacs (2014) noted that researchers use purposeful sampling to identify groups of people who possess characteristics that relate to the event under study. Guetterman (2015) similarly explained that purposeful sampling involves obtaining in-depth knowledge of an event from a variety of participants. Furthermore,

purposeful sampling is common in qualitative research to elicit valuable information related to the event (Palinkas et al., 2013).

Baskarada (2014) observed that a sample size of 8 to 12 participants may be appropriate to confirm information in a qualitative study. Furthermore, a sample size of 6 to 10 participants might be adequate to achieve data saturation (Fugard & Potts, 2015). Grossoehme (2014) similarly stated that utilizing an appropriate sample size could help a researcher to achieve the research aim. Consequently, I continued to investigate the research problem and achieved data saturation after interviewing eight participants who had strategies to support efficient manufacturing operations in Nigeria.

Gentles, Charles, Ploeg, and McKibbon (2015) noted that qualitative researchers should continue recruiting participants until achieving data saturation. Data saturation is not about numbers but the depth of the data (Fusch & Ness, 2015). Moreover, Fugard and Potts (2015) stated that some qualitative researchers have reported data saturation after 6 to 10 interviews. Failing to reach data saturation may create a negative impact on the quality of the research findings (Galvin, 2015). I continued to interview until data saturation which occurred after eight interviews.

For a full understanding of the research problem, I used leaders of manufacturing firms in Nigeria as participants. Leaders have direct responsibility to initiate and implement strategies for efficient manufacturing operations (Cheerawit et al., 2014). Shadraconis (2013) noted that organizational leaders could only remain relevant, and achieve long-term success and sustainability by adopting efficient systems and processes.

Furthermore, a leader can organize resources to perform work efficiently (Galvin et al., 2014).

I recruited participants and interviewed individuals in a private location at the potential organizations to assure comfort, convenience, and confidentiality. Researchers can support a holistic picture by conducting the research study in a natural setting (Isaacs, 2014). Khan (2014) further noted that researchers obtain insights into an event from the face-to-face interview with participants in their natural settings. In addition, qualitative researchers gain detailed information of events from interviewing participants in their natural settings (Alshenqeeti, 2014).

Ethical Research

Participant Informed Consent Process

Gaining informed consent from all persons who may be part of a study, and protecting the privacy and confidentiality of all participants will enhance the credibility of a study (Yin, 2014). Once the target organization granted permission to conduct the study (see Appendix E), I contacted potential participants to sign an informed consent form after IRB approval. The informed consent form included the purpose of the study, confidentiality, and contact information so participants could ask questions and obtain clarity on any issue.

Participant Procedures for Withdrawal

I informed the participants that individuals were free to withdraw by not completing the form, and participants who completed the form were free to withdraw at any time prior to data analysis without any problem by contacting me on my mobile

phone, or in any manner that they desire. Researchers should be explicit with all the benefits involved in the research process to enable participants to make the right decisions (Donnelly, Gabriel, & Ozkazanc-Pan, 2013; Mealer & Jones, 2014). The informed consent form also included instructions on voluntary participation and withdrawal from the study.

Incentives for Participating

Hsieh and Kocielnik (2016) observed that participation bias due to incentive could influence task outcome. Therefore, participants did not receive any incentives, payments, or rewards for participating in this study. Incentives could attract respondents who are not intrinsically interested in the research topic (Mduluza, Midzi, Duruza, & Ndebele, 2013).

Measures to Protect Participants

Saunders, Kitzinger, and Kitzinger (2015) stated that researchers should protect the identity of interviewees through replacing participants' names with pseudonyms such as P1 for Participant 1, and P2 for Participant 2. For the ethical protection of participants, I ensured that all information concerning the individuals and the companies remained classified by using the letter *P* and a number to represent participants and a letter *X* to represent the organizations. Furthermore, individuals received the draft report for review to determine if the data were traceable to their names. In addition, I received certification for protecting the rights of human participants from the National Institute of Health as a credential for ethical compliance.

Permissions

The Walden University IRB provided all the necessary approvals and permissions for this research. Data collection commenced after the IRB approval and issuance of an approval number 09-07-17-0396287 for the study. Data obtained for this study remained safe on a password protected external drive and locked in a fire-proof box for 5 years. I maintained a sole access to all the data. Researchers should place increasing importance on data management planning to ensure the longevity, sharing, security, and reuse of research data (Kennan & Markauskaite, 2015). Pinfield, Cox, and Smith (2014) emphasized the need for researchers to ensure proper data management and security to prevent exposure to an undesirable situation.

Data Collection Instruments

A researcher plays a defining role in the research design, data collection, analysis, and interpretations of results (Khan, 2014). I served as the primary instrument for data collection. Ganapathy (2015) further observed that as the primary data collection instrument, researchers play a critical role in generating quality data. Moreover, a researcher as the primary data collection instrument utilizes interviews and archival documents to collect data to learn about an event (Gentles, et al., 2015). Semistructured interviews and archival documents served as my primary sources of data collection.

I utilized semistructured interviews for data collection. Ganapathy (2015) explained that semistructured interviews are crucial instruments in collecting quality information using open-ended questions. Researchers use semistructured interviews frequently to gather quality data (Grossoehme, 2014). In addition, I used semistructured

interviews to encourage participants to provide rich meanings and depth for further exploration of the overarching research question (see Appendix A). Alshenqeeti (2014) noted that semistructured interviews are suitable to investigate participants perspectives of events to enhance the reliability and validity of the research question.

I used open-ended questions to facilitate greater interaction with participants during data collection. I posed the same interview questions to different participants to obtain individual's experiences and understanding. A researcher can collect valuable qualitative data through open-ended questions (Olli, Vehkakoski, & Salantera, 2014). Furthermore, Stuckey (2016) stated that researchers use open-ended questions to elicit meaningful and rich information from participants. Interviews and open-ended questions are well suited for exploring participants' perspectives and experiences (MacKinnon et al., 2015). Moreover, I used open-ended questions to encourage members to provide valuable qualitative data by elaborating on their responses.

In addition, I utilized interview protocol (see Appendix B) to provide guidelines and ensure strict adherence to the data collection process. Castillo-Montoya (2016) noted that researchers use interview protocol to ensure congruency with the interviewing process. Utilizing an interview protocol may help a researcher to elicit rich, focused, and meaningful data (Alshenqeeti, 2014). Levashina et al. (2014) informed that researchers use interview protocol to enhance compliance during data collection.

Furthermore, I utilized private company policies as archival documents to collect quality data. Talanquer (2014) argued that archival documents are one of the various sources of valuable data in qualitative research. Researchers who use more than one data

collection instrument to obtain quality data (Alshenqeeti, 2014). Furthermore, Baskarada (2014) maintained that archival documents are a reliable source of valid information in qualitative research.

To achieve reliability and validity, I used member checking. Participants reviewed the summary of my interpretations of their interview responses to ensure I captured their responses accurately. Boblin et al. (2013) observed that member checking involves taking interpretations back to the participants so they can confirm the validity of the information. Researchers use member checking to judge the trustworthiness and rigor of qualitative research (Erlingsson & Brysiewicz, 2013). Moreover, Simpson and Quigley (2016) avowed that member checking is a quality control process that allows a researcher to improve the accuracy, credibility, and validity of the interview report.

Data Collection Technique

Data collection for this study involved face-to-face semistructured interviews with the participants and the review of archival documents related to the business enterprise that supported the interview data. I engaged only the leaders of the potential organizations who agreed to be part of the study by returning the completed informed consent form. Campbell, Quincy, Osserman, and Pedersen (2013) informed that researchers utilize interviews to explore perceptions of the respondents in greater depth. Qualitative researchers use semistructured interviews as tools to explore views of the participant for data collection (Barriball & While, 2013). In addition, Alshenqeeti (2014) stated that researchers use interviews to collect qualitative data. Once I received the

consent of the participants, I requested a convenient date and time for the face-to-face interview.

Furthermore, I utilized an interview protocol (see Appendix B) and followed the same procedure with each participant. Stuckey (2016) noted that a good interview protocol could enhance the quality of the research findings. Moreover, interview protocols serve the useful purpose of keeping the interview focused on the desired line of action (Jamshed, 2014). In addition, Stuckey (2013) stated that interview guides might provide a clear set of instructions for interviewers to obtain reliable and qualitative data. The face-to-face semistructured interview lasted approximately 60 minutes. Each interview had a separate file named according to the precise date of the meeting and stored within a designated folder on a personal computer.

The participants received a copy of the interview questions (see Appendix A) prior to the interview. The interview process took place in a private location within the manufacturing firms to assure comfort and confidentiality. Researchers can protect the secrecy of the participants by conducting the research study in an appropriate setting (Isaacs, 2014). Moreover, Khan (2014) acknowledged that researchers could promote honesty and confidentiality through a face-to-face interview with the participants in their natural settings. In addition, qualitative researchers gain detailed information of events from interviewing participants in their natural settings (Alshenqeeti, 2014).

To help in obtaining accurate information and identifying the major themes from emergent codes used in the analysis of interview transcripts, I recorded all interviews with the Audacity Software version 2.1.3 and my Sony Xperia Z3 D6633 dual sim phone

device served as a backup. Recording interviews help the researcher in data transcription and analysis (Anyan, 2013). Redlich-Amirav and Higginbottom (2014) further stated that researchers use interview recording to enhance data collection and validating responses. Furthermore, recording interviews help a researcher to capture interview data more accurately (Jamshed, 2014). I transcribed the digital record of each participant's interview into a word processing document. The software selected for the analysis of the transcribed interview was NVivo11.

I integrated archival documents such as private policy statements to validate interview responses by the participants. The combination of participants' responses and archival documents helped to reveal in-depth information about this study. Hastings and Salkind (2013) explained that researchers triangulate data to align multiple perspectives for a more comprehensive understanding of an event. Utilizing more than one data collection instrument may help to obtain reliable qualitative data (Alshenqeeti, 2014). Talanquer (2014) similarly stated that archival materials are appropriate for tracking a line of reasoning, comparing and contrasting approaches to solving a given problem or associating consistent ideas.

Yin (2014) noted that researchers using interviews have the advantage of focusing directly on case study topics. In addition, interviews have a high rate of return from respondents (Alshenqeeti, 2014). Researchers utilize interviews to gather in-depth information about a research topic (Zohrabi, 2013). However, Yin further explained that the possible shortcomings of interviews relate mainly to bias due to poorly articulated questions. Campbell et al. (2013) similarly observed that interviews are more likely to

elicit wide-ranging and even rambling answers from participants. Respondents may answer what they believe is the preferred social response whether true or not (Barriball & While, 2013). I compared the interview questions against the objectives of the study to increase the consistency and credibility of this research.

Archival documents have the advantage of facilitating the identification of conceptual themes or patterns (Talanquer, 2014). Furthermore, Cheng and Phillips (2014) stated that archival data could provide easy access to valuable information for qualitative researchers rather than spending time testing a hypothesis and thinking of different research approaches. Utilizing archival materials could yield relevant information that a researcher might use to gain insight into organizational practices over time (Osterlund, Sawyer, Ribes, Shankar, & Geiger, 2014). However, a difficulty in making archival material useful is capturing sufficient contextual depth for a newcomer to gain a meaningful understanding to work with the data (Cliggett, 2013). According to Cheng and Phillips (2014), a researcher needs to assess the validity and value of the documents, as some of the materials may be an existing data not collected to address the particular research question. The ability to easily import, manage, and interact with multiple documents may lead some researchers to overanalyze their data pool (Talanquer, 2014).

I used member checking to allow the participants to verify the accurateness of the interpretations of their responses. Anney (2014) explained that a qualitative researcher establishes the rigor of an inquiry by adopting member checking. Furthermore, researchers use member checking to solicit participants' reactions to preliminary findings and also to verify the accuracy and completeness of the interpretations ((Kemparaj &

Chavan, 2013; Simpson & Quigley, 2016). In addition, Erlingsson and Brysiewicz (2013) opined that researchers sometimes return to the participants through member checking and ask the interviewees to confirm the authenticity of the conclusions. All participants received an individual summary of my interpretations of their interview responses to confirm the validity of the conclusions.

Data Organization Technique

I organized each transcript into a Microsoft Word document and arranged each folder by a participant and the interview date. In addition, I organized all collected data into categories as nodes for thematic analysis. Pinfield et al. (2014) noted that data organization technique involves (a) data creation, (b) storage, (c) security, (d) preservation, (e) retrieval, (f) sharing, and (g) data reuse. Furthermore, organizing data effectively, particularly during and after project completion, can contribute to credibility and reliability (Kennan & Markauskaite, 2015). Hossein, Mohammad, and Zahra (2014) observed that organizing the collected data entails a series of coordinated and continuous effort to create, collect, analyze, preserve, and subsequently reuse data as leverage to solve a problem.

All field notes, member checked transcripts, and archival documents remained in a folder labeled for each case study. Zohrabi (2013) informed that taking notes during data collection is one of the various ways of boosting validity in a research study. Field notes compiled during an interview may be a useful complementary source of information (Sutton & Austin, 2015). Alshenqeeti (2014) explained that researchers utilize field notes to maintain the validity and reliability of interviewing. All participants

had a code to protect their identities. I used the letter *P* and sequential numbers to represent participants and a letter *X* to represent the organizations.

Themes, patterns, and relationships emerged as I upload retrieved information into QSR NVivo for analysis. Pinfield et al. (2014) noted that researchers use QSR NVivo software program to enhance their ability to develop codes, build narrative summaries, and establish the major themes to address the research question. Computer-assisted qualitative data analysis (CAQDAS) package will facilitate data organization, segmentation, and categorization into themes (Talanquer, 2014). Kaefer, Roper, and Sinha (2015) explained that researchers use software tools to enhance reliability and trustworthiness in qualitative research.

All collected and retrieved data for this study remained in a secure, encrypted location protected with a password, only accessible by me. I transferred all the electronic data to a hard drive at the end of the study. A hard copy of data remained in a locked fireproof box for 5 years. After 5 years, I shredded all paper documents, deleted all electronic information, and performed an electronic erasure of data from the hard drive. Managing data effectively is crucial for the easy retrieval of files later (Kaefer et al., 2015; Lewis, 2015). Pinfield et al. (2014) explained that proper data storage and preservation can create benefits, including allowing the verification of research outcomes and facilitating the reuse of data. Data storage, back-up, security, and documentary descriptions of data are crucial in creating high-quality data (Corti & Eynden, 2015).

Data Analysis

Utilizing methodological triangulation involving cross-case and within the case comparison could strengthen the validity of the research study (Baskarada, 2014). Hastings and Salkind (2013) noted that case study analysis consists of exploring and aligning multiple perspectives to draw conclusions supported by prior theory and conceptual underpinnings of the study. I used methodological triangulation approach to map semistructured interviews with archival documents and corroborated the evidence with prior theories to collect multiple types of data that enhanced the validity of the research findings. Grossoehme (2014) stated that data analysis begins with transferring information from multiple sources of data into categories and themes for analysis.

After the interview, I transcribed the participants' responses into a Microsoft Word document and created the responses into emergent codes and the frequency of the words used by the participants. In addition, I added color to the coding process, encrypt the data, and assigned one code to many pieces of text or conversely assigned one piece of text to more than one code. The next step involved clumping the color-coded data into categories and amassing these textual documents into files for compilation. To obtain an overview of the data analysis, I sorted the data observed per participant into tables with the themes and described these items based on each cluster. Stuckey (2016) noted that coding in qualitative research involves (a) reading through the data and creating a storyline, (b) categorizing the data into codes, and (c) using researcher's memos for clarification and interpretation. Furthermore, color-coding involves breaking down data into incidents and examining their similarities and differences (Vaismoradi, Jones,

Turunen, & Snelgrove, 2016). Moreover, Campbell et al. (2013) affirmed that researchers utilize coding to facilitate the identification and interpretation of conceptual themes.

During the computer-assisted data analysis, I exported the processed data into QSR NVivo for analysis. Researchers utilize QSR NVivo software to ensure efficient coding which makes interpretations easier (Zamawe, 2015). Kaefer et al. (2015) explained that software tools aid researchers to gain a better understanding and overview of key themes. Computer-based tools may aid in coding and categorizing large amounts of narrative text collected through interviews and archival records (Baskarada, 2014). I used QSR NVivo to interpret the findings and to ensure I generate meaningful data units. In addition, I manually reviewed the results after using the QSR NVivo 11 software to ascertain the effectiveness and reliability of the software tool and validity of the research findings.

I identified the key themes; then, correlated the key themes with the literature review and the conceptual framework to generate meanings from the data collected. I used emergent coding to generate themes as categories representing organizational success that leaders of some manufacturing firms in Nigeria might achieve by adopting TOC used as the conceptual framework for this study. Dang (2015) argued that using a conceptual framework as an inductive approach to augment the understanding of a complex data will enhance the emergence of key themes in qualitative research. Researchers drive category names from the existing theories and body of literature (Vaismoradi et al., 2016). Ashley, Halcomb, and Brown (2017) noted that qualitative

researchers use a conceptual framework to guide the design of a research study and to explain the outcomes.

Reliability and Validity

Yin (2013) stated that qualitative researchers use trustworthiness, credibility, confirmability, and dependability as criteria for reliability and validity in a research study. The criteria for trustworthiness in qualitative research are dependability (reliability) and confirmability (internal validity), credibility, and transferability (Chowdhury, 2015). Furthermore, Houghton et al. (2013) informed that the four criteria to assess rigor in qualitative research are dependability, confirmability, credibility, and transferability.

Reliability

Reliability is the trustworthiness of the research procedures and findings (Chowdhury, 2015). Noble and Smith (2015) maintained that reliability pertains to the consistency of the analytical procedures in ensuring quality in research. I used methodological triangulation by integrating private policy statements as archived materials to collaborate and validate interview responses by the individuals. The combination of archived documents and semistructured interviews provided sufficient information to answer the research question and ensure reliability. Yilmaz (2013) noted that a researcher might achieve reliability by ensuring the process of collecting data is sufficiently descriptive so the reader can understand what occurred.

Dependability is the stability of data over time under different conditions (Elo et al., 2014). Researchers achieve dependability through outlining the decisions made

throughout the research process to provide a rationale for the decisions of the researcher (Houghton et al., 2013). Dependability occurs through a thick description of the method of data collection (Anney, 2014). To ensure dependability, I provided the detailed explanation of the data collection process and analysis to enable other researchers to replicate the study in another setting. Dependability encompasses using a rich and clear description of the data collection process to highlight the relevant themes in the data (Noble & Smith, 2015). Cai and Zhu (2015) noted that researchers facilitate dependability through a detailed explanation of the research process. Thick and vivid data description obtained through relevant data collection methods will enhance dependability (Fusch & Ness, 2015). Furthermore, I ensured dependability through member checking. Reilly (2013) informed that researchers rely on member checking to ensure adequacy of data and preliminary interpretations by giving participants opportunity to validate responses. Member checking involves returning to participants and requesting them to confirm the authenticity of the conclusions (Erlingsson & Brysiewicz, 2013). Kemparaj and Chavan (2013) explained that member checking involves allowing the participants an opportunity to review responses made by them during data collection.

Validity

Noble and Smith (2015) observed that validity pertains to the exactness in which the findings accurately reflect the data. Validity is the appropriateness of the tool or process in answering the research question (Leung, 2015). Moreover, Yin (2013) informed that validity involves documenting and interpreting a set of outcomes and trying to explain how those results came about. I ensured validity through prolonged

engagement of participants during the interview with open-ended questions. In addition, I recorded the interview process, reviewed my transcript, and took notes during the data collection. The recording is essential in capturing the interviews more effectively and validating responses (Jamshed, 2014). Moreover, Redlich-Amirav and Higginbottom (2014) noted that researchers use the recording to generate a verbatim transcript of the interview. Researchers use the recording to enable transcription and strictly adhere to the research process (Anyan, 2013).

Cronin (2014) avowed that credibility is the ability of a researcher to demonstrate consistency and clear description of the research process. A researcher can achieve credibility through triangulation and member checks (Chowdhury, 2015). Anney (2014) stated that a qualitative researcher establishes rigor of the inquiry through adopting credibility strategies such as (a) reflexivity, (b) triangulation, (c) member checking, (d) and (e) robust interview techniques. I used member checking to enhance the credibility of this study. Participants reviewed the summary responses of my interpretations of the interview to ensure I accurately captured their responses. Member checking involves returning summary of preliminary finding to participants to determine if the findings reflect their responses (Moon, Brewer, Januchowski-Hartley, Adams, & Blackman, 2016). Reilly (2013) noted that researchers utilize member checks to verify the accuracy of participant's responses. Member checking involves soliciting participant's reactions to preliminary results (Kemparaji & Chavan, 2013). Furthermore, I used methodological triangulation by combining multiple sources of information to enhance the credibility of this study. Gentles et al. (2015) noted that using multiple approaches to collect data may

enhance the credibility of a study. Anney (2014) maintained that researchers use methodological triangulation to enhance the credibility of a study. Researchers use methodological triangulation to confirm the credibility of a research study (Chowdhury, 2015).

Transferability occurs when a researcher can generalize the results of a study to a larger population (Noble & Smith, 2015). Elo et al. (2014) indicated that transferability is the ability to extrapolate the research findings to other groups. Transferability reflects the extent a study's findings are analytically generalizable to other populations (Yin, 2013). I ensured transferability by providing a clear and detailed description of the selection of participants, data collection process, and analysis. In addition, I adhered to the research methods and maintained a chain of evidence that aligns data collection and analysis to the results. Thick description allows other researchers to replicate the study with similar conditions in other settings (Anney, 2014). Kemparaj and Chavan (2013) stated that a researcher should provide sufficient information about the research process to permit judgments about contextual similarity. Chowdhury (2015) explained that transferability denotes that the process is replicable, in the same context, with the same methods, the same participants, and to achieve the same result. Moreover, I used the interview protocol to ensure strict adherence to the interview process. Utilizing the interview protocol enhanced the understanding of my research process and results, and the likelihood of the reader to make an appropriate judgment about transferability.

Confirmability involves establishing that the information generated from interpretations of findings is from the field data (Anney, 2014). Houghton et al. (2013)

affirmed that confirmability refers to the neutrality and accuracy of the data provided by the participants. To enhance the neutrality and accuracy of data, I provided the interviewees with open-ended interview questions to give participants the opportunity to provide clear, concise, and open answers to the questions. A researcher can achieve confirmability by ensuring that the data accurately represents the information provided by the participants (Noble & Smith, 2015). Furthermore, I utilized member checking to establish confirmability in this study. Participants received the summary of my interpretations of their interview responses to confirm the accuracy of the individual interview responses. Member checking involves returning data to participants to check for accuracy and resonance with their responses (Birt et al., 2016). Simpson and Quigley (2016) stated that member checking is the process of asking each participant to confirm or disconfirm individual voices gleaned from the interviews. Ganapathy (2015) described member checking as a process of validation of participants' interview responses.

Data saturation occurs after information extends to the point of diminishing return (Galvin, 2015). Data saturation occurred after interviewing eight participants since continued interview did not yield any additional information. Furthermore, I utilized a variety of data sources such as semistructured interviews and archival documents to achieve data saturation. Moreover, appropriateness and adequacy of the data as the criterion of validity depends on sound sampling in qualitative research (Guetterman, 2015). Chowdhury (2015) noted that a researcher could achieve data saturation when data collection does not yield new information.

Transition and Summary

In Section 2, I discussed the role of the researcher in the data collection process, Belmont report, and how to mitigate bias. Furthermore, I outlined the eligibility criteria, strategies for gaining access, and establishing a working relationship with participants. Further descriptions involved the choice for the research method, research design, what population to sample, and the number of participants to ensure saturation. Moreover, I explained the data collection, organization, and analysis. Finally, I discussed the criteria for achieving trustworthiness of the study including dependability, credibility, confirmability, and transferability.

In Section 3, I discussed the presentation of the research findings from the data analyzed. Further descriptions involved the application to professional practice and the contributions to social change. In addition, I discussed the recommendations for future research and my reflections on the study.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative multiple case study was to explore strategies leaders of manufacturing firms in Nigeria use to support efficient manufacturing operations. Utilizing the interview protocol (see Appendix D), I achieved data saturation after interviewing eight participants who had strategies to support efficient manufacturing operations in Nigeria. I used methodological triangulation of data sources that included data from the review of organizational documents (archival data) and transcribed interview data to address the research question. The four major themes that emerged from the data analysis pertained to: (a) strategic planning, (b) continuous process improvement, (c) strategic equipment maintenance, and (d) strategic capacity expansion.

Presentation of Findings

The central research question for this study was: What strategies do leaders of manufacturing firms in Nigeria use to support efficient manufacturing operations? Data sources for this study included semistructured interviews with open-ended questions (see Appendix A) and private policy statements of firms as archival documents. I analyzed the data for this study using QSR NVivo 11 software. Four major themes emerged from the analysis of interview data: (a) strategic planning, (b) continuous process improvement, (c) strategic equipment maintenance, and (d) strategic capacity expansion.

Theme 1: Strategic Planning

The first theme to emerge was the importance of strategic planning for operational efficiency. Participant responses to interview questions 1, 2, 3, 5, and 6 from both cases

indicated that each organization used strategic planning to guide the organizations in meeting their objectives. Participant 2X (P2X), Participant 3X (P3X), Participant 4X (P4X), and Participant 3Y (P3Y) agreed to have plans in place to achieve organizational goals. This theme supports Akindipe (2014) who indicated the need to establish a strategic production plan to ensure timely availability of materials and resources to achieve organizational goals. Participants rated strategic planning as an important theme and a useful tool to focus on organizational missions, goals, and increase organizational effectiveness. P2Y stated that using structured and functional plans enabled the organization to meet their production target.

The participants noted that the idea of developing an efficient production process involved using careful, systematic, and strategic planning to ensure the availability of materials, equipment, and human resources. P3X stated they have action plans and these plans are subdivided into units for each unit to know what they should handle. According to P3X, “We use daily, weekly, monthly, and yearly action plans to increase operational efficiency.” P2X added, “We make sure that people know what they are supposed to do to improve performance.” P4X noted, “We plan and revise our plans periodically to improve our performance.”

Participants expressed a planning strategy that illustrated the relationship that Jan-Khan and Khalique (2014b) found between effective planning and higher productivity. P2Y, P3Y, P1X, and P3X indicated they use planning to improve efficiency and productivity. The consequence of not implementing an effective strategic plan according to P2X is an inefficient production process. According to P1Y, a company needs

planning to succeed, and if companies fail to plan, they inadvertently plan to fail. This finding supports Szármes's (2015) conclusion that organizational leaders could lose the opportunity to achieve a higher productivity due to poor planning. However, P1Y maintained that planning is essential for efficient production process. Sosiawani et al. (2015) noted that leaders of manufacturing firms could use strategic planning to steer operations to a desirable direction and achieve operational efficiency. In Table 1, I illustrated the frequency the participants mentioned the necessity for strategic planning.

Table 1

References related to Strategic Planning

Source	Reference	Frequency (%)
Participant P1X, Interview questions 1, 2, 3, 6	6	19
Participant P2X, Interview questions 2, 4, 9	4	12.9
Participant P3X, Interview questions 1, 7, 8	3	9.7
Participant P4X, Interview questions 3, 4, 6, 7	5	16
Participant P1Y, Interview questions 2, 5, 8	4	12.9
Participant P2Y, Interview questions 4, 5	2	6.5
Participant P3Y, Interview questions 1, 4, 7	3	9.7
Participant P4Y, Interview questions 5, 7, 9	4	12.9

Participant P4X indicated that organizations are becoming increasingly interested in meeting the international standard through a strategic production plan. Company documents revealed some planning to achieve international standards. Participant P2X

stated they place substantial emphasis on planning to improve production processes and achieve higher standards. Company leaders who use new methods to improve their process may develop the capacity to keep pace with external demands and achieve higher standards (Sosiawani et al., 2015). Eight (100%) of the research participants confirmed that planning has significant impact on operational efficiency.

Theme 2: Continuous Process Improvement

The second major theme that emerged from interview questions 1, 3, 4, 6, and 8 and document review was continuous process improvement. Seven (88%) participants viewed continuous process improvement as an essential element in achieving operational efficiency. Participants maintained that adopting continuous process improvement as a productivity improvement strategy is a critical step in improving manufacturing operations. Other subthemes that emerged included continuous process improvement methods (CPI methods), waste elimination, and human capacity. In addition, documentation presented in support of this theme included a review of corporate quality policy, quality objectives, and vision and mission statements that reflected a focus on continuous process improvement. Table 2 contains a summary of how often participants responded regarding the need for continuous process improvement to achieve higher efficiency and productivity.

Table 2

Continuous Process Improvement

Source	Reference	Frequency (%)
Participant P1X, Interview questions 3, 4, 5, 7	5	14.7
Participant P2X, Interview questions 1, 3	2	5.9
Participant P3X, Interview questions 1, 2, 3, 8	8	24
Participant P4X, Interview questions 3, 5, 7	4	12
Participant P1Y, Interview questions 4, 6, 8, 9	6	18
Participant P2Y, Interview questions 1, 7	4	12
Participant P4Y, Interview questions 2, 5, 8	5	14.7

CPI methods. The evidence of the existing CPI methods such as total quality management, standardized policies, evaluation and review policies, and ISO 9001:2015 certification gleaned from the interview data and document review proved an affirmation of the management commitment to continuous process improvement. P2X noted that one of the corporate quality objectives of the organization was to provide exclusive high-quality cable and wire products with continual improvement to national and international standards. P1X, P2X, P2Y, P3Y, P4Y maintained that they have ISO 9001:2015 certification and they keep pushing hard each year to meet the standard required best practice. P4X voiced, “The core values of my organization include (a) boldness, (b) excellence, (c) innovation, (d) integrity, and (e) openness.” The organizational documents

indicated leaders' commitments to high performance standards to achieve core mission values and process improvement.

To maintain and raise quality standards, P1Y stressed that they carry out inspection, follow up, and get feedback on product quality from customers on a regular basis. Eight (100%) of the research participants viewed continuous improvement effort as an essential to efficient manufacturing process and higher performance. Khayrullina et al. (2015) explained that developing a system of continuous improvement that includes consistent measures to raise manufacturing performance could enhance operational process.

Waste elimination. PIY shared that they eliminate waste through ensuring an efficient process. P3X shared, "We recycle and reuse materials to eliminate waste." According to P3X, they plan ahead of time in all their procurement process to avoid a shortage of material. P3Y informed, "We have a department assigned with the responsibility to check raw materials availability." They deploy the right staff to the right place to ensure they do the job right the first time according to P2Y. P1X noted, "We minimize bureaucracy in getting resource approval for our operational activities and thereby saving lots of time."

Furthermore, P2X, P3X, P4Y mentioned they do research and explore avenues for improvement. P4X indicated, "We do studies on marketplace competition, capacity and process problems, key customer needs, and the risk analysis in each area." To minimize waste, P1X explained, "We do market analysis and ask customers to tell us what they need, and we look inwards to know if we have the capacity to meet their needs." Singh et

al. (2015) stated that organizational leaders are increasingly implementing various process management techniques to identify constraints and achieve strategic objectives.

P2X noted that they eliminate wastes through the review of their action plans and by comparing the input of resources with the output. According to P3Y, they review to assess the effectiveness of their action plans and make adjustments where necessary. P4X maintained, “We improve our performance through process review and strong top management involvement and buy-in.” Organizational leaders should carefully evaluate each technique’s deployment to achieve continuous process improvement (Lodgaard et al., 2016).

Human capacity. P3Y noted, “We invest in human capacity and building competence for our workforce.” Eight (100%) participants maintained that highly skilled individuals are more effective employees who contribute to a higher standard of performance and, in turn, the creation of more value within the organization. P2X stressed that they save time and lots of materials through using a competent and experienced workforce. P1X stated that their organization invests much in staff development. According to P1X, “We attend relevant external courses for top management and senior management levels, and the leadership of our firm encourages workers to join professional associations.” P2Y noted that their company is embarking on training and retraining of all staff and getting more experienced personnel for the jobs. P1Y mentioned, “When we engage new staff, we train them and help them grow in their professional career.”

P4X indicated, “We have skill certification programs for our staff whereby every staff employed is assigned a supervisor to monitor, mentor, and appraise him/her on the jobs.” P3X noted that they try to get more officers exposed to strategic management to ensure they become competent to execute their jobs. According to P1X, if they place a staff member in a new position, they assign a job description and provide a key performance indicator and from time-to-time use the key performance indicator as a yardstick for measuring the performance. Leaders of organizations need to take long-term perspectives in building resources and capabilities that can enhance operational efficiency (Kabue & Kilika, 2016).

Theme 3: Strategic Equipment Maintenance

The third theme pertained to the importance of strategic equipment maintenance to achieve operational efficiency and originated from interview questions 1, 2, 3, 5, and 8. Each participant mentioned the importance of equipment maintenance to enhance manufacturing operations. P2X voiced that their organizations invest in equipment maintenance to enhance manufacturing operations. According to P4Y, “We do regular equipment maintenance to improve our performance.”

P1X maintained, “You don’t have to wait until a fan belt breaks before you make a replacement.” The findings support Xiaohui et al. (2015) in that developing preventive maintenance strategies with regular inspections can enhance equipment availability and seamless operation. P3X explained that there should be a time for maintenance and once it is time, whether the fan belt breaks or not, you take it out and replace with a new one. P1Y and P4X indicated that there must be a minimum time to change oil and service the

generators. Table 3 contains the frequency participants indicated the need to adopt strategic equipment maintenance.

Table 3

Strategic Equipment Maintenance

Source	Reference	Frequency (%)
Participant P1X, Interview questions 3, 4, 7	6	18.2
Participant P2X, Interview questions 2, 4, 9	4	12
Participant P3X, Interview questions 7, 8	3	9
Participant P4X, Interview questions 3, 4, 6, 7	7	21
Participant P1Y, Interview questions 2, 5, 8	4	12
Participant P2Y, Interview questions 4, 5	2	6
Participant P3Y, Interview questions 1, 4, 7	3	9
Participant P4Y, Interview questions 5, 7, 9	4	12

Participants stressed that reliable equipment may result in repeatable and predictable process that might reduce unplanned stoppages and delays in meeting customer needs. According to Azizi (2015), organizational leaders should perform equipment maintenance in a planned manner to guarantee continuous performance.

According to P4Y, the key to reducing unscheduled downtime is to develop a preventive equipment maintenance culture. P2X, P3Y, and P4X argued that if unscheduled downtime is reduced, the operation cost will be lower, which will enhance productivity. Although the participants acknowledge the relevance of preventive

maintenance, they argued that unscheduled downtimes have sometimes stopped the factory from doing preventive maintenance to solving emergency breakdown repairs and thereby causing production stoppages. Nonetheless, P2Y cautioned that the factory should not keep the equipment running until it breaks down completely because of priority in meeting immediate customer orders or in resolving backlogs. Kouedeu et al. (2014) maintained that the failure rate of the machines depends on the production rate and decreasing productivity to realize gains in reliability may be beneficial. Preventive maintenance to ensure any equipment continues to be available and effective is essential in increasing efficiency and minimizing total production cost (Al-Turki et al., 2015).

Developing a deeper knowledge of the cause of machine failures and how best to handle maintenance will improve productivity according to P1X. Machines are the key factors in production and having an in-depth knowledge of system performance, and a good understanding of maintenance management may increase OEE (Karim & Huifang, 2015). P3X maintained that linking maintenance practice to manufacturing and organizational goals will enhance productivity. According to Khaled et al. (2015), high availability and reliability of machines are the key points for successful manufacturing operations. Eight (100%) of the research participants viewed machine maintenance as critical to production process.

Theme 4: Strategic Capacity Expansion

The fourth major theme that emerged from interview questions 1, 2, 3, 6, 7, 8, and the document review was a focus on strategic capacity expansion as an aspect of operations management. Expanding the capacity of a manufacturing plant has helped to

improve production process (Ighosewe & Akpokerere, 2015). P2X noted, “We utilize workers’ overtime to expand capacity for operational efficiency” According to P1Y, they add shifts or overtime when it becomes obvious that the capacity within the system may not meet their production target. P3X mentioned that at times they add shifts with supervisors for each group to ensure they meet their weekly production plan. P4Y stated, “At times, we run our machines at full capacity to ensure we meet immediate customer needs.” Wu and Onari (2016) shared that adding shifts or overtime, outsourcing or purchasing new equipment can enhance operational efficiency.

P2Y indicated, “Whenever we have a pressure of work due to backlogs or immediate customer needs, and if we don’t have the skills in-house to meet our production target, we outsource to increase productivity.” P3X stated they outsourced to meet the production target. According to P4Y, they use outsourcing and spot contract engagement to meet their production target. Although eight (100%) participants maintained that they increase capacity through outsourcing to enhance production process; however, P1X cautioned that in expanding capacity to meet their production target, they must make sure they engage only the accredited partners to ensure they maintain the same quality standard. Increasing the manufacturing capacity in a manner involving using overtime and outsourcing to meet immediate customer demand can promote efficiency and increase productivity (White & Censlive, 2016). In Table 4, I indicated the frequency participants mentioned the need for a strategic capacity expansion.

Table 4

Strategic Capacity Expansion

Source	Reference	Frequency (%)
Participant P1X, Interview questions 3, 4, 6	3	13
Participant P2X, Interview questions 2, 3, 5, 8	6	26
Participant P3X, Interview questions 1, 6, 9	4	17.4
Participant P4X, Interview questions 1, 3, 7	3	13
Participant P1Y, Interview questions 4, 8	2	8.7
Participant P2Y, Interview questions 2, 7	2	8.7
Participant P3Y, Interview questions 5	1	4.3
Participant P4Y, Interview questions 4, 5	2	8.7

The findings indicate the need for strategic planning and efficient functioning of the production processes to achieve continuous manufacturing improvement. Due to the turbulent business environment, strategic planning and efficient resource management for continuous improvement may be an imperative (Akindipe, 2014). However, Agwu and Emeti (2014) noted that manufacturing firms in Nigeria are still inefficient due to the inadequate functioning of the manufacturing processes. Hassan et al. (2016) warned that to maximize the benefits of the implementation of process improvement tools; the practitioners should carefully plan, select, and review the techniques. Adopting effective manufacturing strategies is imperative to achieving process improvement (Ehie & Muogboh, 2016).

Findings Aligned With the Theory of Constraints

According to Mathu (2014), the central idea in TOC is the ability of the organizational leaders to identify constraints and plan to overcome the constraints to improve every aspect of the manufacturing process. TOC has relevance to several themes that emerged from this study. Participants focus on strategic planning as a theme aligned with TOC. Constraints occur due to poor planning and administrative policies that act as the limiting factor to hinder workflow (Okutmus et al., 2016). Participants rated strategic planning as an important theme and a useful tool to overcome constraints and increase organizational effectiveness. Constraints are the main obstacles to achieving organizational goals, and if companies can identify operational constraints in their systems, they would experience continuous process improvement (Şimşit et al., 2014).

Continuous process improvement was another theme in this study. Okutmus et al. (2016) identified continuous process improvement as an essential factor in the implementation of TOC. Seven (88%) participants viewed continuous process improvement as an essential element in achieving operational efficiency. Participants maintained that adopting continuous process improvement as a productivity improvement strategy is a critical step in improving the production process. Most firms implement TOC as a broad-based process management strategy to improve effectiveness, efficiency, and increase productivity (Mora, 2014).

A focus on waste elimination also emerged as a theme in this study. Waste elimination is an essential component of TOC improvement process (Linhart & Skorkovsky, 2014). Şimşit et al. (2014) affirmed that reduction of wastes increases

production performance. Participants asserted they achieved continual production improvement through the reduction in bureaucratic process, waste material, disorder process, and delivery time. According to Okutmus et al. (2016), TOC theorists focus on improving efficiency and effectiveness through decreases in waste materials, operating cost, production time, order delivery time, and disorder in process. Waste elimination as a theme aligns properly with TOC improvement process used as a conceptual framework for this study.

Okutmus et al. (2016) noted that one of the key components of TOC process involves identifying a constraint and elevating the constraint by expanding the capacity to eliminate the constraint. Eight (100%) participants maintained that increasing capacity through adding shifts, overtime, and outsourcing could enhance production process and achieve operational efficiency. Organizational leaders should make strategic decisions about the capacity of their plant to eliminate constraints (Pacheco et al., 2014). Strategic capacity expansion supported the premise of TOC that was the conceptual framework for this study.

Findings Aligned With the Existing Literature on Business Practice

The findings from this study might assist leaders to address the gap existing in the literature review regarding strategies leaders of manufacturing firms use to minimize operational inefficiency for increased productivity. Hu, Kapucu, and O'Byrne (2014) noted that strategic planning is not without flaws because planning is inherently turbulent in nature and lengthy planning is often ignored in manufacturing firms. Researchers have concluded that planning is time consuming, and requires a competent staff as a facilitator

and prior education on strategic planning (Hu et al., 2014). Agwu and Emeti (2014) explained that the Nigerian manufacturing firms are inefficient due to poor planning. The participants maintained that the consequence of not implementing proper strategic production plan is the inefficient production process. Şimşit et al. (2014) noted that poor planning existed that could make organizational leaders lose the benefits from continuous process improvement to achieve higher productivity. However, sufficient studies do not exist to examine the application of strategic planning and evaluate the benefits and challenges that could result from participating in strategic planning (Hu et al., 2014). Participants indicated that establishing a structured and functional strategic plan could enhance operational efficiency.

Hassan et al. (2016) affirmed that limited literature exists regarding how to maximize the benefits of the implementation of process improvement techniques to achieve higher productivity. Lopes et al. (2015) cautioned that implementing process improvement technique remains the greatest challenge, and if not properly planned it might raise many obstacles such as resistance to change and reluctance to show commitment. Robson et al. (2013) enumerated factors that may contribute to failure in adopting process improvement techniques as (a) lack of resources, (b) poor selection and implementation, (c) lack of management commitment, (d) poor communication, and (e) poor training. Participants maintained they improve their performance through a process review and top management involvement and buy-in. Organizational leaders should carefully evaluate each technique’s deployment to achieve continuous process improvement (Lodgaard et al., 2016).

Application to Professional Practice

The focus of this study is to identify strategies leaders of manufacturing firms use to minimize operational inefficiency for increased productivity. Agwu and Emeti (2014) stated that the Nigerian manufacturing industry has experienced numerous growth challenges due to operational inefficiency and lack of managerial skills resulting in many firms incurring losses and losing business opportunities. The results of the study may be of value to some leaders of manufacturing firms in Nigeria in determining strategies to increase efficient production process to minimize operational inefficiencies.

Ehie and Muogboh (2016) noted that adopting effective manufacturing strategies and employing several process improvement tools could help business leaders to achieve high productivity. The findings of this study might help some leaders of the Nigerian manufacturing sector to minimize undesirable production practices by implementing continuous improvement strategies and steering operation in a desirable direction. Moreover, the findings could result in overall improved organizational performance to increase manufacturing performance and productivity.

Rafiei et al. (2014) maintained that developing a strategic production plan could have a significant impact on improving performance and operational efficiency. Optimal production planning such as material availability and machine reliability can enhance productivity (Nehzati et al., 2015). The findings from this study could help organizational leaders establish a functional strategic plan to improve manufacturing process.

Participants indicated that developing a deeper knowledge of the cause of machine failures and how best to handle maintenance will improve productivity.

Machines are the key factors in production and having an in-depth knowledge of system performance, and an understanding of maintenance management may increase OEE (Karim & Huifang, 2015). Results of this study may help organizational leaders to gain a deeper understanding of equipment performance and maintenance resulting in high availability and reliability of machines for a successful manufacturing operations.

Implications for Social Change

Ezeaku, Anidiobu, and Okolie (2017) explained that the manufacturing sector is critical to sustainable economic growth and as a catalyst in stimulating other sectors of the economy and reducing poverty. Results from this study might spur industrial growth and social change by helping to improve the manufacturing process and enhance sustainable economic growth. Obioma et al. (2015) stated that the Nigerian manufacturing sector has many dynamic benefits crucial for economic transformation and an enormous potential to support the economic development necessary for diversity. Results from this research might provide the basis for developing an advanced manufacturing practice for some Nigerian manufacturing firms that could contribute to social change by improving production operations and sustainable economic growth throughout Nigeria.

Nwosu et al. (2016) asserted that the manufacturing sector has enormous potential for high technological innovations, the development of managerial talents and entrepreneurial mindset, and improvement in technical skills which normally promote productivity and better living standards. The results of this study may be beneficial in developing highly skilled leaders and efficient workforce that contribute to higher

standards of work and creation of more value within the organization. Creation of efficient and effective workforce have a trickle-down effect where improved corporate performance results in economic growth within the country. In addition, the findings from this study may be beneficial in building capacity in terms of business knowledge, preventive equipment maintenance, and strategic planning imperative for operational efficiency and business success.

Recommendations for Action

The manufacturing sector plays a vital role in the industrial growth of any nation and has dynamic benefits crucial for the growth of a robust economy (Obioma et al., 2015). De-Felice et al. (2014) maintained that organizational leaders should continue to improve their competencies and competitive strategies to achieve continuous process improvement and sustainable economic growth. Therefore, leaders of manufacturing firms are focusing on understanding their structure in terms of processes and finding the best practice to increase productivity (Şimşit et al., 2014). Based on the research findings, I recommend the following actions:

- Leaders of manufacturing firms in Nigeria should establish effective strategies to mitigate inefficiencies for continuous process improvement.
- Leaders of the manufacturing sector should select and develop a functional strategic plan to efficiently use the limited resources to support the program objectives and missions of the organizations.
- Leaders of companies in Nigeria should develop a highly skilled and effective workforce through specific and regular training, workshops, seminars, and

conferences to keep up with the changing business environment and enhance organizational performance

- Leaders should provide a deeper understanding of the critical role of equipment to ensure increased availability and reliability for higher productivity.
- Leaders should develop a framework that would help in identifying the process improvement techniques that best suits the needs of the organization.
- The Nigerian government should address the unfavorable business environment coupled with political instability to increase investment and boost local manufacturing.

I will disseminate my research results through publications in peer-reviewed journals and professional conferences focused on improving manufacturing efficiency. Moreover, I will make available the findings from this study to Manufacturers Association of Nigeria (MAN), Nigerian Chamber of Commerce (NCC), and Small and Medium Enterprise Development Agency of Nigeria (SMEDAN). In addition, leaders of manufacturing firms in Nigeria could integrate the findings from this study into corporate training, seminars, and publications.

Recommendations for Further Research

The findings from this study may contribute to the existing and future research regarding strategies leaders use to minimize operational inefficiency and achieve higher productivity. Khayrullina et al. (2015) noted that organizational leaders should develop a system of continuous improvement that includes consistent measures to raise

performance standards in all the production processes throughout the manufacturing plant. A limitation of this study was the choice of a multiple case study. Future research should focus on other research designs such as ethnography, phenomenology, and narrative inquiry. Another limitation was the small sample size of this case study research. Further research might consider increasing the sample size in a large geographical area using mixed method research. Another limitation was the restriction of participants based on organizational policies. Further research should include government agencies and a broad array of manufacturing firms. The last limitation was that the research focused on Nigerian manufacturing firms. Future research should include multinational companies operating in Nigeria to potentially be transferable to other firms in Nigeria.

Further research may include studies on the effects of company policies and procedures on organizational performance and productivity. In addition, future research might explore the influence of motivational factors on manufacturing performance and productivity. Further research could focus on the issues, challenges, and prospects of manufacturing firms in Nigeria. Future research should focus on the analysis of operating environment of manufacturing firms in Nigeria.

Reflections

Using a qualitative multiple case study, I explored strategies leaders of manufacturing firms use to minimize operational inefficiency for increased productivity. I found that my doctoral study experience enhanced my scholarly knowledge. The understanding I gained through the interactions with my classmates, the weekly

assignments, the Walden University resources, and the feedback process from my professors will enhance my current and future career developments. Furthermore, I gained an increased understanding of the challenges of most manufacturing firms in Nigeria by interviewing and carefully listing to the leaders of the participating organizations. I broadened my knowledge of the strategies leaders of manufacturing firms use to improve the manufacturing process.

Moreover, I discovered that embarking on a doctoral study was a herculean task and the rigor needed to complete each stage was daunting. In addition, my preconception about my data collection process influenced my research process. I did not anticipate the enormous effort required to locate willing organizations to participate in the study. My initial attempt to secure cooperation agreement with the potential organizations was not successful. I succeeded after several attempts through persistent e-mails and numerous telephone calls. I did not envisage the amount of time required to schedule and conduct the interviews. Some organizations agreed to participate but had limited time for the interview due to busy work schedule resulting in several trips and arrangements to complete the data collection process.

Summary and Study Conclusion

The purpose of this qualitative multiple case study was to explore strategies leaders of manufacturing firms in Nigeria use to support efficient manufacturing operations. Eight participants from the manufacturing firms in Nigeria participated in the study. I used methodological triangulation of data sources that included data from the review of organizational documents (archival data) and transcribed interview data to

address the research question. The major themes that emerged were (a) strategic planning, (b) continuous process improvement, (c) strategic equipment maintenance, and (d) strategic capacity expansion.

My findings indicated the need for leaders of manufacturing firms in Nigeria to establish effective strategies to mitigate the inefficiencies for continuous process improvement. In addition, leaders need to select and develop a functional strategic plan to efficiently use the limited resources to support the program objectives and missions of the organizations. Moreover, leaders of companies in Nigeria should develop a highly skilled and effective workforce through specific and regular training, workshops, seminars, and conferences to keep up with the changing business environment and enhance organizational performance. Furthermore, leaders should provide a deeper understanding of the critical role of equipment to ensure increased availability and reliability for higher productivity. Several research participants maintained that the development of a continuous process improvement focused on the elimination of wastes such as poor quality, downtime, low efficiency, failed delivery, and efficient utilization of resources enhanced productivity.

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Appendix A: Interview Questions

The interview questions for the study were as follows:

1. What factors contribute to high operational efficiency in your organization?
2. What strategies do you use to support manufacturing improvement implementation in your organization?
3. What strategic initiatives do you use as proactive measures to minimize operational inefficiencies?
4. How do you determine the effectiveness of strategies adopted by leaders for a continuous process improvement?
5. How do you identify constraints to support efficient manufacturing operation?
6. How do you overcome constraints to support efficient manufacturing operation?
7. What resources do you use to overcome constraints?
8. What strategies do you use to expand capacity to reduce the effects of constraints?
9. What more can you add that I have not asked that is relevant to my research?

Appendix B: Interview Protocol

Participant's Pseudonym:_____ Participant Code:_____

Interview Date: _____ Total Time:_____

What to do	**What I will say**
Start interview protocol	-
Introduce myself to the participants and purpose of the study.	My name is Fabian Aniemene and I am a doctoral student of Walden University. Thank you for your time and for granting me the opportunity to conduct this interview with you. The purpose of this interview is to explore strategies leaders of manufacturing firms in Nigeria use to support efficient manufacturing process.
Present consent forms to the participants, go over the consent, and answer question if any.	Participation in this study is voluntary. Everyone has right to participate in or withdraw from the study without penalty. No one will treat you differently if you decide not to be part of the study. You are free to pull out by not completing the form. However, participants who complete the form might choose to withdraw later by sending a notification via e-mail, regular postal mail, calling my mobile telephone, or could even withdraw in person without any problem. Your decision to withdraw would be final. Furthermore, our interview today will be recorded to ensure information accuracy.
Turn on the recording device, note date, time, and location.	Start the audio recording and/or be prepared to take notes.
Follow the procedure to introduce participants with pseudonym/coded identification, record the date and time.	Interview participants with (P1, P2, P3…..P10), date, time, and location.
Start the interview with question #1; follow through on the final question. Follow up with additional questions	1. What factors contribute to high operational efficiency in your organization? 2. What strategies do you use to support manufacturing improvement implementation in your organization?

	3. What strategic initiatives do you use as proactive measures to minimize operational inefficiencies? 4. How do you determine the effectiveness of strategies adopted by leaders for a continuous process improvement? 5. How do you identify constraints to support efficient manufacturing operation? 6. How do you overcome constraints to support efficient manufacturing operation? 7. What resources do you use to overcome constraints? 8. What strategies do you use to expand capacity to reduce the effects of constraints? 9. What more can you add that I have not asked that is relevant to my research?
Wrap up the interview and thank the participants for their part in the study. Stop audio recording.	This concludes the interview, thank you for your time and active participation.
Schedule follow up member checking interview	I am going to verbatim transcribe the interview and summarize your responses within 15 days. On the 20th day from today, I will come again with the summary of interpretations for your validation.
Reiterate contact numbers for follow up questions and concerns from participants	My e-mail address is XXX and my mobile telephone number is XXX-XXX-XXX.
Thank the participants again	Thank you once again for your time.
End of the interview protocol	