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Total Quality Management Practices for Improving Procurement Performance of Petroleum Producing Companies

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This is to certify that the doctoral dissertation by

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Abstract

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MPhil, Walden University Minnesota, 2019

MSc, Robert Gordon University Aberdeen, 2012

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Management

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Abstract

In a petroleum producing company in Nigeria, a continual rise of procured technical materials' quality-related problems increased costs in the procurement overheads and technical services from $10.45M in 2012 to $19.00M in 2017, which is an 82% increase, aside the substantial financial outlay in implementing total quality management. Inquirers have attributed the continual quality-related problems to little attention given to total quality management practices (TQMP), employee training deficiencies, reduced quality control, and indecorous process management. This phenomenological study explored managers' lived experiences about total quality management practices connected to procurement performance. Less is known how managers' experiences contribute to quality performance and planned change initiation for continuous quality improvement. The conceptual framework consisted of planned change theories of Galambos, Dulmus, and Wodarski and Packard. Data were collected through semistructured interviews with 12 participants across eight organizations. Data were transcribed and analyzed as per van Manen's hermeneutic principle (whole-part-whole model). The study findings showed that TQMP (inspection tests and planning, quality assurance and quality control, process management, supplier relationship management, adherence to specification, and employee training) from managers' lived experiences initiated a planned change process and continuously improved quality performance. The study results could contribute to positive social change by aiding managers in addressing any challenges total quality management practices may pose on the procurement system and ensure quality skill acquisitions by local content employees and local technical suppliers.

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Dedication

This dissertation is dedicated principally to the Almighty God for his protections, mercy, grace, and love in my life exclusively during the 7 years in this doctoral program. Jane Fonda, *the American actress* said that “No pain, no gain! Endure the pain and make a difference! The reason you're going through what you're going through is to receive the things you've been praying for. Often the thing that brings you the most pain is the very thing that will lead you to the most gain and your breakthrough.”

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Chapter 1: Introduction to the Study

Effective quality management practices carry both prospects (Eniola & Olorunleke et al., 2018) and challenges (Hackman & Wageman, 2015; Kindleman & Shimbo, 2019; Mohammad & Price, 2004). Notably, petroleum producing companies are faced with challenging and increasingly nonconformities (Iannuzzi et al., 2018; Kindleman & Shimbo, 2019) related to quality-related problems in procured technical materials for project construction and oilfield facility maintenance activities (TOTAL Yearly Report, 2017).

Therefore, petroleum producing companies could strategically strengthen the conditions (Connolly, 2020; Eskandarian et al., 2016; Parvadavardini & Devadasan, 2016) that sustain them both in production processes (Kindleman & Shimbo, 2019) and continuous improvement (Dubey & Gunasekaran, 2015; Lam & Robertson, 2015; Timans et al., 2016) in revenue generation for the Nigerian government. Management should give attention to management practices in organizations (Dubey & Gunasekaran, 2015; Parvadavardini & Devadasan, 2016) for continuous improvement and maintenance of the procured technical material's quality to run its facilities and projects (Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017). The management practices in petroleum operations management are material management (Carstea et al., 2014) and total quality management (Muvunyi & Mulyungi, 2018).

In this study, I explored the influence of total quality management practices in the petroleum industry connected to procurement performance from managers' perspectives or lived experiences. Quality management practices are toolkits that organizational

managers use to improve procurement performance (Anil & Satish, 2016; Bowles & Morgan, 2016; Dubey & Gunasekaran, 2015). Applying total quality management practices in procurement functions is a primary planned change tool for organizations (Bowles & Morgan, 2016; Knight, 1966) and requires a renovation in the companies' strategic priorities (Yu et al., 2020), beliefs, culture, and processes, among others (Panuwatwanich & Nguyen, 2017; Valmohammadi & Roshanzamir, 2015). This quality feature is now an essential factor in global competition (Abdul et al., 2019; Abu Salim et al., 2019).

This study could help reduce costs in technical services and procurement overheads. It has the potential to effect positive social change through local employee training (see Amin et al., 2017) and local supplier development (see Tahir et al., 2014) in total quality management practices. There is also a possibility to improve quality (see Farzadnia et al., 2017), procurement skills (see Anane et al., 2019), and capacity development for the Nigerian workers and ensure wealth redistribution. The major sections of this chapter include background of the study, problem statement, purpose of the study, research questions, conceptual framework, nature of the study, definitions, assumptions, scope and delimitations, limitations, the significance of the study, summary, and transition.

Background of the Study

Petroleum producing companies' procurement processes have progressed significantly in the past few decades and are currently considered important departments in energy and oil and gas operations (Ehi & Asiodu-Otughwor, 2015). Petroleum

producing companies operating in multifaceted and dynamic environments are confronted with continual challenges, principally regarding activities in the supply chain, such as quality-related issues, according to the 3rd Procurement and Supply Chain Management for Oil and Gas Industry (2019).

Establishing the most effective quality management and cost-effective process strategies requires a continuing effort (Eniola & Olorunleke et al., 2018) while bearing in mind the continual and periodic distortions of production operations and project constructions (Connolly, 2020; Oludare & Oluseye, 2016) of companies due to perceived material quality issues in the supply chain (Eskandarian et al., 2016). It has also become imperative for a continuous reevaluation of processes for a planned organizational change (Galambos et al., 2005; Packard, 2013) from managers' lived experiences in the procurement functions of petroleum producing companies in Nigeria.

The continual rise of project constructions and oilfield facility maintenance technical materials that have quality-related problems in a petroleum producing company has increased costs in procurement overhead and technical services by 45% (TOTAL Yearly Report, 2017). The increase in quality issues spanned from 2012 through 2017 and resulted in the need for aggressive planned organizational change (Galambos et al., 2005; Packard, 2013; Rosenbaum et al., 2018) in the organization. Lived managers' experiences could mitigate the ongoing quality-related issues in procured technical materials (Carstea et al., 2014; Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017). These planned organizational changes may lead to employees' increased attention to total quality management practices related to procurement performance. Planned

organizational change has a considerable positive influence on an organization's productivity, project construction, and oilfield facility maintenance (Eskandarian et al., 2016; Ghavifekr et al., 2017; Knight, 1966; TOTAL Yearly Report, 2017).

Principal forecasting models are not enough for modeling the actual reasons for persistent technical material quality-related issues, notwithstanding the implementation of total quality management practices in the company (Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017). Therefore, managers' lived experiences regarding quality management practices connected to procurement performance have helped to discover the real causes of ongoing quality-related issues in procured technical materials (Eskandarian et al., 2016).

Earlier studies addressed how total quality management adoption has affected procurement performance in Kenya's manufacturing sector (Kihiu, 2016; Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018). Similarly, previous studies expanded the connectivity between total quality management practices related to procurement performance but were not specific on the actual causes and resolution of the continuous increase in associated quality issues despite the existence of total quality management implemented in the organization (Carstea et al., 2014; Chepkech, 2014; Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018; Sadikoglu & Olcay, 2014; Wu, 2015).

For instance, a study by Ngambi and Nkemkiafu (2015) revealed commitment through leadership, quality control, inspection, employee training, customer focus, and benchmarking to enhance product quality in a manufacturing firm. The study performed by Ngambi and Nkemkiafu demonstrated a positive influence of total quality

management practices on organizational performance based on quantitative design. On the other hand, Gumo et al. (2018) found a significant effect of a total quality management practice (leadership) on project performance of construction projects in Trans Nozia country. Likewise, Mambanda et al. (2017) showed a need for an organization to align with suppliers strategically as well as a need for quality culture to cut across top management commitment. Support and involvement of suppliers in the value chain (Bowles & Morgan, 2016) cause organizations to know the exact quality requirement in processes. However, neither Gumo et al. nor Mambanda et al. considered the resultant causes of the continuous increase in quality-related issues in project constructions and oilfield facility maintenance, notwithstanding the existence of quality practices in organizations. Notably, there are gaps in the existing research that consider planned change as a tool for quality improvement and managers' lived experiences for continuous quality improvement. No literature that I found addressed the causes of the constant rise in quality problems despite the existence of quality management practices and the research setting as petroleum producing companies or supply chain actors.

In a petroleum producing company environment where oil and gas production reflect 95% of the revenue generation for the Nigeria government, shortfalls in production need to be minimized to avoid sanctions by regulators.

> According to the Nigerian Oil and Gas Industry Annual Report (NOGIAR; 2018), Oil production marginally increased by 2.4% (y-o-y) to 773.8 million barrels of oil in 2018. In the last five years, the production capacity of production sharing contract (PSC) has steadily increased, averaging 3% growth, to account for about

> 35% of total production. Joint venture (JV) arrangements contributed about 55% of aggregate production in the preceding year. (p. 9)

Noticeably, there was a shortfall of 0.6% (i.e., 2.4% minus 3% = -0.6%), resulting from production shortfalls incurred by petroleum producing firms in Nigeria. In this regard, quality planning, quality assurance, and quality control need to be in place and monitored (Eskandarian et al., 2016; TOTAL Yearly Report, 2017). Issues of technical material quality led to production downtime, production shortfalls, delayed project constructions (Arditi et al., 2017), delayed facility maintenance, and a general loss of revenue for the Nigerian government (NOGIAR, 2018; Total Yearly Report, 2017).

For instance, in a 2017 report of the trends in a petroleum producing company, there was an unexpected increase in overall technical services costs and procurement overhead costs by 45% due to perceived deviation in procured technical materials' specifications (Total Yearly Report, 2017). The average value of procured materials with quality-related problems over the past 5 years was estimated at $19 million from an initial average value of $10.45 million (TOTAL Yearly Report, 2017). The quality-related issues in procured technical materials increased costs in the technical services, maintenance operations, and procurement overhead by 45% (Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017). Despite the significant financial expenditure in implementing total quality management, poor procurement performance has been recorded.

Efficacy and adeptness of an employee's total quality management, quality awareness, communication skills training, and specific problem-solving techniques such

as statistical quality control, safety, and technical aspects of the procurement process could be fundamental to a better procurement performance (Bowles & Morgan, 2016; Matthew, 2017). It is essential to consider exploring managers' lived experiences regarding total quality management practices related to procurement performance in this study for a planned change process initiation and continuous quality improvement in petroleum producing companies (Muvunyi & Mulyungi, 2018; Neyestani, 2017).

Problem Statement

Exploring the lived experiences of managers regarding total quality management practices related to procurement performance could be a suitable approach for a planned change process initiation, continuous improvement of the quality of procured technical materials, and remaining competitive in an ever-aggressive global market (Barton, 2017; Basheer et al., 2018; Nanda, 2016; Qutoshi, 2018). The procured materials such as bulk valves types, blind flanges, piping and fittings, steel structures, and electrical and instrument cables have quality-related issues (Total Yearly Report, 2017).

These materials are used for oilfield facility maintenance and project construction by petroleum producing companies in Nigeria. The quantities of materials in stock increased from 2012 to 2017 due to perceived quality-related issues and little attention given to total quality management practices (Carstea et al., 2014; Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017). The average value of procured materials with quality-related problems from 2012 to 2017 is estimated at $19 million from an initial average cost of $10.45million (TOTAL Yearly Report, 2017).

The general problem is that procured technical materials with quality-related issues have increased costs in the technical services, procurement overhead, and maintenance operations by $8.45 million (45%; Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017). The causes of these procured materials with quality-related problems in the procurement system of the petroleum producing company are not well known.

The specific problem is that the influences of total quality management practices on procurement performance in the petroleum industry are unknown despite the significant financial outlay by petroleum producing companies in implementing total quality management (Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017).

Purpose of the Study

The purpose of this qualitative phenomenological study was to explore managers' perceptions or lived experiences in petroleum producing companies about total quality management practices connected to procurement performance. I aimed to comprehend what managers' lived experiences were about total quality management practices related to procurement performance. The intent was to interpret meaning from the collected data. Managers' lived experiences regarding total quality management practices could be an opportunity to articulate and develop more awareness of themselves (Barton, 2017; Muvunyi & Mulyungi, 2018; Neubauer et al., 2019). The lived experiences could lead to management's actions for a planned organizational change and continuous improvements of the procurement performance, such as quality and the process (Barton, 2017; Qutoshi, 2018).

Research Questions

This qualitative research study provided answers to the following phenomenological research questions regarding managers' lived experiences about total quality management practices linked to procurement performance. This study's research questions were as follows:

Overarching question: What are the lived experiences of managers in the petroleum industry or their supply chain actors in using total quality management practices related to procurement performance?

Subquestion 1: What are the experiences in using total quality management practices in improving the quality of delivered materials?

Subquestion 2: What are managers' experiences in the petroleum industry or their supply chain actors in influencing the planned change process for improved quality of procured materials?

Conceptual Framework

Planned organizational change for continuous quality improvement of the procurement system served as the conceptual framework for this study. Organizational planned change refers to the process of preparing the whole organization, or a substantial part of it, for a new direction in the organization to continuously improve performance (Andreasson et al., 2018; Packard, 2013). This new direction implies internal structures, processes, cultures (Patyal et al. 2019), or any related aspects of the organization that may influence performance (Galambos et al., 2005; Haffar et al., 2016; Hilman et al., 2019). Application of this planned organizational change framework by managers of

petroleum producing companies could offer a new direction (Aziz, 2018) to achieve good quality of products or services to influence performance.

Galambos et al. (2005) recommended five ideologies for a planned organizational change framework: (a) develop a system for continuous discussion and feedback that includes external contingencies, (b) prepare the organization for growth through assessment and creation of an acceptance climate, (c) guarantee availability of resources for training and education, (d) advance a system for participation of employees for rewarding and recognizing staff, and (e) change effort to be used for agency development for a continuous improvement and change process.

Different organizations have improved their processes via continuous discussions and collaborations (Haffar et al., 2016). Guaranteed training and education could improve the skills and experiences of employee to improve effectiveness to function in organizations. Continuous feedback could highlight to management on the causes of quality-related issues in technical materials for project construction. Persistent quality issues in petroleum producing companies could be mitigated if management develops a forum for continuous feedback among supply chain actors to detect areas of improvement. Prior to planned change, need for change are analyzed and evaluated. Quality-related issues could trigger planned organizational change for a continual quality improvement of processes (Galambos et al., 2005) for procurement of technical materials for project construction. This study is in line with the five ideologies of planned change.

Nature of the Study

This qualitative phenomenological study addressed managers' perceptions or lived experiences about total quality management practices connected to procurement performance. The intent was to interpret meanings from the collected data about quality management practices related to procurement performance. The rationale for selecting this design was to use text reading and interpreting skills to make meaning of the participants' words or participants' experiences about total quality management practices connected to performance. The research design is suitable for a study when the type of data, method of sampling, collection of data, and processes of data analysis support the answers to the research questions (Patton, 2015). In this study, participants shared their lived experiences regarding total quality management practices connected to procurement performance through phenomenology. The phenomenological approach by van Manen (2014) produced and examined the participants' lived experiences, which was in line with the data gathering mechanism used in this study.

It is an accepted tradition that the choice of research methodology is founded partly on the nature of the research problem or research questions (Patton, 2015). The choice was made to carry out this qualitative research to explore and comprehend the meaning of total quality management practices and procurement performance (quality of procured technical materials) from managers' perspective or lived experiences. Sense could be created and managed through languages, symbols, visions, beliefs, myths, and ideologies (Patton, 2015). Creswell (2014) suggested that if there is a need to

comprehend a phenomenon or concept resulting from a little or no research conducted on it, then the study is bound to be performed with a qualitative approach by an individual.

Qualitative research was employed in this exploratory study because the factors that could influence performance were not known. Therefore, qualitative research is an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem (Creswell, 2014). Conducting a qualitative study entails analyses of complex words, participants' detailed views, and pictures in a natural setting as applicable in this study.

A qualitative method is an approach that gathers nonnumerical data (Ashworth, 2016; Nayak & Singh, 2015). Qualitative methods focus on collecting data through conversational and open-ended communications (Owen et al., 2019). This research method was a good fit for this study as initial questions and in-depth probing were asked as needed regarding the manager's lived experiences (see Ashworth, 2016; Greener, 2008). In this study, managers' experiences about total quality management practices related to procurement performance were sought and interpreted. The intent was to interpret meaning from the collected data. The results of qualitative methods are descriptive (Moustakas, 1994) and interpretive (van Manen, 2014), but the development of this study was interpretive. The focal resolves of phenomenological research are to seek realism from peoples' stories of their feelings and experiences and to produce in-depth descriptions of the phenomenon.

In this study, I adopted a purposeful sample size of 12 participants from eight organizations for data collection via semistructured interviews. For phenomenological

studies, Creswell (2014) recommended five to 25 participants, and Morse (1994) suggested at least six. These recommendations helped in estimating how many participants were needed as no new ideas or information were obtained after Participant 12's transcription review. However, some inquirers interrogate the data saturation value in research that is not theoretically grounded. For example, Saunders et al. (2018) contended that the saturation of data is a portion of a continual method of comparison and offers diminutive worth of study designs that are theoretically grounded. Saunders et al. suggested substituting saturation with power of data. Data power is a portion of the internal validity of a study and is fulfilled when research has adequate participants to attain the research aims or purposes (Saunders et al., 2018). Whether the state is known as saturation or data power, the information must be rich, thick, or detailed and must attain the conditions of the study. Inquirers have decided that efficacious phenomenological studies attain data saturation.

Inquirers have disagreed or remain undecided on the point of occurrence of data saturation (Giorgi, 2009; Moustakas, 1994; Palinkas et al., 2015; Patton, 2015). Palinkas et al. (2015) endorsed that research designs via interviews adopt semistructured interviews to attain data saturation. They suggested that saturation of data is connected to triangulation of data. Giorgi (2009) was in alliance with Moustakas's (1994) endorsement of continuous sampling until saturation is reached (or no new data or ideas are obtained from data collection). Data saturation occurs when no new information is obtained from the interview. Efficacious phenomenological investigations offer thick, detailed, or rich information related to the topic under investigation (Patton, 2015; van Manen, 2014).

Enormous sample sizes could prevent saturation of data by depressing profound reflection on the material. Detailed or rich, thick accounts require investigators to be reflexive and reflective during data review. The participants' rich, thick answers to the interview protocol present detailed information for phenomenological studies. The hermeneutic phenomenology of van Manen (2014) applies interview transcripts for reflecting on the phenomenon under study and with development of an interpretation. Continual revisions of the transcripts produced new insights. Being unable to attain data saturation would have necessitated supplementary interviews. I attained data saturation in this study with 12 participants when no new information or ideas were observed.

The semistructured interviews were analyzed and interpreted using van Manen's interpretive phenomenological data analysis procedure. Moustakas's 1994 phenomenology is more descriptive whereas van Manen's 2014 phenomenology is more interpretive. Therefore, the data analysis procedure included (a) preparing data for analysis, (b) reducing the data phenomenologically, (c) engaging in imaginative variation, and (d) uncovering the essence of the experience (see Hycner, 1985; Tran, 2018; van Manen, 2014). A reduction technique interpreted and analyzed specific individuals' lived experiences and brought out overarching themes. The participants' views and comments were not misinterpreted by using an audit trail and member checking (Totawar & Prasad, 2016; Tran, 2018).

Definitions

Total quality management practices comprise the best management practices such as benchmarking, customer focus, employee education and training, organizational

leadership commitment, people involvement, process management, quality control, and quality assurance to achieve a continual quality improvement (CQI) and planned organizational change in the procurement function. Organizations could focus on business reengineering practices and strategic quality planning based on managers' lived experiences for a significant planned change to improve quality, cost, and process. The following definitions are provided for this study.

Benchmarking: The business processes, performance, and metrics used to compare best practices of industries from other industries or organizations (Betancourt-Guerrero1δ & Franco-Ricaurte, 2018).

Continuous process improvement: A set of practices that are used to improve processes of business for long-standing performance and cost improvements (Jimoh et al., 2018).

Business process reengineering: A revolutionary improvement process that incorporates information technology (Khoshlafz & Hekmati, 2016; Porter, 2016).

Customer focus: Customer focus is a business philosophy that places the customer at the center of all business development and management decisions (Muvunyi & Mulyungi, 2018).

Employee education and training: Employee education and training development in organizations are exact efforts made for employees' skills development to use the new skills and knowledge to carry out their procurement jobs (Amin et al., 2017; Muvunyi & Mulyungi, 2018).

Lived experiences: Lived experience represents the experiences and choices of a given person and the knowledge they gain from these experiences and preferences (Given, 2008; Qutoshi, 2018).

Lived meaning: How a person derives and understands reality and meaning from their experience (van Manen, 2014).

Organizational leadership commitment: Leadership is responsible for encouraging the planned organization to restructure the procurement process (Daft & Lane, 2018).

People involvement: People who are engaged, experienced, and empowered at all levels of the organization to increase their capacity to create and deliver value in the procurement management (Bakotić & Rogošić, 2017; Lin et al., 2017).

Planned change: Planned change refers to the process of preparing the whole organization, or a substantial part of it, for a new direction in the organization for continuous performance improvement (Bowles & Morgan, 2016; Packard, 2013).

Process management: Process management means an alliance of processes with strategic goals of an organization, formation of process measurement systems in partnership with dreams of the organization, designing, and application of process architectures, and education as well as the organization of managers to manage processes successfully (Macharia & Mwangangi, 2016)

Procurement performance: Procurement performance is an identification measure of the degree to which the function of procurement can attain the aims and objectives with reduced costs (Bowles & Morgan, 2016; Macharia & Mwangangi, 2016)

Quality: Quality can be defined as "customer satisfaction," "zero defects," "doing things right the first time," or "fit for use" (Nanda, 2016).

Strategic quality planning: Strategic quality planning is a process of ensuring a planned organizational change process for continuous quality improvement with no conformity issues (Oschman, 2017).

Total quality management: Total quality management is a combinative philosophy of management targeted at endlessly refining the quality of the services, products, and processes by concentrating on exceeding or meeting the expectations of customers to improve performance and customer satisfaction (Sadikoglu & Olcay, 2014).

Total quality management practices (TQMP): TQMP are best practices of management, such as customer focus, leadership commitment, and employee involvement, to achieve a continual quality improvement (Muvunyi & Mulyungi, 2018).

Assumptions

Assumptions are specific beliefs related to the study that a researcher believes to be authentic or valid. Managers and assistant managers of petroleum producing companies and their major supply chain contractors were selected for this study. I assumed that the chosen participants or interviewees were the best-chosen participants for this study. Twelve interviewees, each from a different organization, were asked eight interview questions. I assumed that the interviewees provided answers that were true and accurate. I also believed that the concept of planned change and continuous improvement strategies would be shared among the different departments and organizational cultures (see Sinha et al., 2018; Valmohammadi & Roshanzamir, 2015). The transcripts' contents

were assumed to be accurate during the interpretation and analysis of the interview document results. The reasons for these assumptions were that these lived experiences were completely the managers', and I needed to make meaning of them to establish the researcher's world (see Porter, 2016; Qutoshi, 2018).

Scope and Delimitations

The scope of the study encompassed managers and assistant managers in petroleum producing companies and supply chain actors (SCA) of the petroleum producing companies with experiences in total quality management, purposively sampled within Nigeria. The identification and implementation of factors within total quality management practices that could detect and improve quality-related issues for continual improvement of procurement performance is supported by Macharia and Mwangangi (2016) and Muvunyi and Mulyungi (2018). Theofanidis and Fountouki (2019) presented a substitute for the delimitation as boundaries. Twelve participants from eight organizations participated in the study. The minimum of 12 respondents who responded to the interview questions during discussions via face-to-face or telephone related to the phenomenological studies was a delimitation. I formed the conceptual framework through planned change theory.

This framework provided a trajectory to explore managers' lived experience through the accounts offered by the managers and assistant managers from the creation of forums for discussion and a feedback system. I used the planned change theories of Galambos et al. (2005) and Packard (2013), that is, planned organizational change framework. The participants' selections in this study excluded SCAs (managers) who do

not have TQM experience, because technically, these managers do not possess the certifications to perform the supply chain activities related to technical material procurement for project constructions and oilfield facility maintenance. A person may be a manager in the organization but may not be in engineering, procurement, and quality department and thus have no active role in the procurement process or positive contribution to quality management. This study's results are transferrable to managers who want to improve processes in manufacturing, technical services, engineering, procurement, cost control, and project management.

Limitations

The limitations of this study contain three parts. First, I interpreted the lived experiences of participants and the planned changes they carried out as lived as per my personal perceptions and framework because this was qualitative research. The researcher is the instrument in a qualitative study (Palinkas et al., 2015). Second, the selection of methodology influenced my data collection and interpretation processes. Phenomenological data gathering and analysis does not have any specific procedures and steps, unlike most qualitative designs. To have chosen van Manen's (2014) hermeneutic principle entailed that I concentrated on the participants' words that were used to analyze the data. However, several phenomenological studies have adopted the use of coding to classify themes. Third, I used the purposive method of sampling for a population, and this limited the participants to only managers in the petroleum producing companies or supply chain actors to these companies with TQM experiences, instead of all employees. The

sample size of 12 participants surpassed the minimum of six participants suggested by Morse (1994) and permitted saturation of data to be attained.

In a qualitative study, findings are transferrable and not generalizable. If the findings of the study reverberate with the audience (readers), the investigator used lucid language, and study findings offer understanding; therefore, the study findings are transferrable (Patton, 2015; van Manen, 2014). In addition, phenomenology explores a question and does not generate experimental generalizations (van Manen, 2014). Nevertheless, managers from petroleum producing or supply chain organizations with TQM practices in place or planning to implement TQM may find the perceptions obtained from the study findings valuable.

Imperatively, the means for mitigating bias by the researcher is to know where and when the inquirer has bias. Bias could be problematic to notice because an inquirer may not be able to envisage another method of thinking or perception. The researcher should have awareness of personal biases. The research must also possess an initial understanding of how biases could affect data collection and analysis (Totawar & Prasad, 2016). To develop my consciousness of biases, I reserved a detailed inquiry log of all the research activities. I documented all meetings with participants and the choices of my data analysis. As I transcribed the interviews, my reflections, interpretations, and responses to participant experiences concerning the data were documented. The application of laborious checking and documentation backed up the strength of the study findings and research design.

Significance of the Study

This study was unique as I focused on an area with little research in the field of petroleum producing companies in Nigeria, which has significant financial implications on its managers, employees, and customers (see Chepkech, 2014; Muvunyi & Mulyungi, 2018). The results provided a better understanding of total quality management practices from the lived experiences of managers. This study could help company leaders address challenges total quality management practices may have on the procurement system, as these companies are a significant revenue-generating sector for the Nigerian government. Findings revealed the strategies managers could adopt for a planned organizational change for continuous quality improvement. More specifically, several kinds of literature have revealed the influence of total quality management practices on business, firm, and organizational performance. The consequential result is a lack of available hands-on information used by petroleum industries on how to alleviate the continuous increase in quality-related issues of procured technical materials for oilfield facility maintenance and project construction.

Significance to Business Practice

This study may be useful for managers regarding decision making on the procedure to handle an effective procurement process to practicably mitigate quality problems related to procured items for projects and production activities. Contributions to business practices include the complexity with which employees may understand managers' lived experiences about total quality management practices related to quality performance. The findings from this research help fill the gap in total quality

management practices and provide petroleum producing companies' employees with information to guide stock reduction initiatives, quality improvement processes, and cost savings in the technical services. This study contributed to the literature on total quality management and performance for continuous improvement in the quality of products and services.

Significance to Theory

Most total quality management practice research studies have been quantitative. Six quantitative investigations were case studies (see Carstea et al., 2014; Chepkech, 2014; Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018; Sadikoglu & Olcay, 2014; Wu, 2015). This current study's design was a hermeneutic phenomenological study, and van Manen's (2014) hermeneutic phenomenology was applied. The phenomenological method was suitable for exploring total quality management practices by managers related to performance as contributors to successful material quality management initiatives and planned organizational change.

TQM could add value to the procurement process and performance. Practicing TQM improves customer satisfaction by continually meeting the expectations of customers. Chepkech (2014) enlisted top management commitment, customer focus, and employee involvement as total quality management practices related to organizational performance. Macharia and Mwangangi (2016) listed customer focus, training, and process management as total quality management practices described to influence procurement performance in the telecommunication industry. By applying the TQM practices in organizations, the quality of products in the manufacturing sector could be

continuously improved, implying that the influence of management practices could lead to business reengineering, quality products, and improved performance. There could be other management practices not mentioned or applied by these authors and consequently, the need to research and implement them to add more value to the body of knowledge.

In this study, I assessed diverse TQM practices from the lived experiences of managers, that mitigated quality-related problems. My exploration of TQM practices was in alliance and to add credence to the literature on future studies. Macharia and Mwangangi (2016) suggested that efforts must be made to implement total quality management practices in to improve procurement performance. Muvunyi and Mulyungi (2018) also, listed that inadequate attention given to total quality management practices (leadership, people involvement, and process management) contributes to failure in procured material quality in project construction and oilfield facility maintenance. Ngambi and Nkemkiafu's (2015) wide-ranging list of management practices includes the components such as management commitment, training, process management, identified by Chepkech (2014), Macharia and Mwangangi (2016), and Muvunyi and Mulyungi. The lists Ngambi and Nkemkiafu provided (management commitment through leadership, quality control, inspection, employee training, customer focus, and benchmarking) as the basis for enhancing product quality, confirmed the significance of the works of the philosophers.

The design of this study offered three contributions to total quality management research. First, this study contributed to van Manen's (2014) hermeneutic phenomenological method. Researchers rarely use van Manen's method to explore

managers' lived experiences concerning total quality management practices related to procurement performance. Second, this study added value to the literature on the five philosophies of planned organizational change by Galambos et al. (2005) and Packard's (2013) development of framework system for continuous feedback, improvement, and discussion. Third, this study added credence to the literature by applying the Lincoln and Guba (1985) model for evaluating the research quality, reliability, and validity of qualitative research.

Significance to Social Change

This study has the potential for positive social change through local employee training and local supplier development in total quality management practices. This study could improve quality, procurement skills, and capacity development for Nigerian workers. This piece of work could also add value by enhancing personnel's experience and ensuring wealth redistribution. The underlying planned change resulting from managers' lived experience concerning total quality management may represent a favorable modification in the organization's position's economic values. The use of in-country capacity as per Nigerian vendors for the engineering, manufacturing, and procurement of quality project materials could be improved.

Total quality management practices and improvements could form a phenomenon that could transform the petroleum producing companies and their major supply chain actors. If a company can align with a quality management system that works, there could be continuous improvement of the quality of materials procured for projects and production operations. The spurious shutdown of production facilities could be

minimized. In addition, production shortfalls in onshore and offshore production facilities could be reduced. Such a situation could eventually benefit the organization and its employees, particularly when the oilfield plants are running on steady-state due to quality equipment and spare parts in all facility preventive or curative maintenance. From a social aspect of change, efficient quality management practices on the procurement process could improve material quality and cost benefits to the petroleum producing companies.

Summary and Transition

Petroleum producing companies could depend on quality supply chain actors to procure technical materials for the timely maintenance of oilfield facilities and project constructions. In the ever-aggressive market for petroleum products for revenue generation, failure to remain competitive by disregarding the practices of total quality management may give rise to oilfield and project technical material failures, thereby causing production downtime, shortfalls, and sanctions by regulators. Quality problems might be perceptible to the lived experiences that individuals may tell themselves regarding their perceptions about the organizational processes' quality initiative.

Requesting managers, assistant managers, and their major supply chain actors in oil and gas businesses with good knowledge in applying total quality management practices to share their lived experiences may aid in unveiling ways to stop or mitigate the increasing rate of quality problems in the procurement system. This study's findings may contribute to the existing literature supporting total quality management's social impact in organizations. A favorable social change implication may dwell in the

individuals going home with management principles' positive practices. In this chapter, I introduced how managers' lived experiences regarding total quality management practices could be adopted to initiate planned organizational change in the procurement function, mitigate quality-related issues, and achieve continuous quality improvement in overall processes.

In Chapter 2, the role of total quality management practices in procurement performance and the concepts of planned change from the outcome of organizational managers' lived experiences are explored in detail. In Chapter 3, a comprehensive exploration of van Manen's (2014) approach to hermeneutic phenomenology are covered, in Chapter 4, I covered the results of the study, and Chapter 5 explicitly highlighted the discussions, conclusion, and recommendation of the study.

Chapter 2: Literature Review

Technical materials procured for oilfield facilities maintenance and project development have quality-related issues that have increased costs in the procurement overheads, production operations, and technical services by $8.45 million (45%) over the past 5 years (Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017). Notwithstanding the substantial financial outlay by the petroleum industry in executing total quality management, the influences of total quality management practices are not known (Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017).

The purpose of this phenomenological qualitative study was to explore the managers' perceptions or lived experiences in petroleum producing companies about total quality management practices connected to procurement performance. The intent was to interpret meaning from the collected data and discover how managers' experiences may contribute to reduced quality-related issues in the procurement process through stories they tell about total quality management practices related to procurement performance. With this purpose in mind, I explored how quality may be improved based on managers' perceptions in the context of their lived experience.

Muvunyi and Mulyungi (2018) reported that to withstand new global business challenges and to avert nonconformities in quality, manufacturing, and producing, companies should adopt unique philosophies, such as total quality management and business process reengineering. They planned organizational changes to be more effective and reduced downtime in project construction, oilfield facility maintenances, and production operations. To understand how TQM practices could influence

procurement performance based on planned change framework in organizations, there was need to explore the causes of continuous quality-related problems and their mitigation measures. However, this chapter covers the literature search strategy, conceptual framework for the study, and the literature's central review. This chapter is finalized with a summary section and transition to Chapter 3.

Literature Search Strategy

The literature review included an examination of books and peer-reviewed articles linked to the research problem. The analysis comprised synopses of the study's conceptual framework, quality concepts, total quality management, total quality management practices (such as employee satisfaction, product quality performance, leadership commitment, process management, benchmarking, employee training, customer satisfaction, continuous improvement), and procurement performance. This study helps fill the knowledge gap in business practices from lived experiences and planned organizational change strategies that managers might share for the continuous improvement of the quality of procured materials for project construction and oilfield facility maintenance.

Various articles were retrieved from diverse databases as follows: ABI/Inform, ProQuest Central, Business Source Complete, ERIC, Science Direct, Academic Search Complete, SAGE, and Academic Search Premier from Walden University. A general-to-specific search strategy was used to question these databases. Keywords searched included *quality improvement, continuous improvement, total quality management practices (process improvement, leadership commitment, employee training,*

benchmarking, product quality performance, customer satisfaction, cost-efficacy, employee satisfaction), total quality management, procurement performance, organizational performance, sense-making, phenomenology, and *planned change.*

Conceptual Framework

The purpose of this phenomenological qualitative study was to explore managers' perceptions or lived experiences in petroleum producing companies about total quality management practices connected to procurement performance. Procurement is an integral part of an organization that needs to be restructured in terms of the processes for continuous improvement of the quality of procured materials for project construction, oilfield facilities maintenance, and production optimizations (Schwatka et al., 2018; TOTAL Yearly Report, 2017). The results of this study from the lived experiences of managers regarding total quality management practices may reduce quality-related issues and a significant planned change.

Planned change for continuous quality improvement of the procurement system served as the conceptual framework for this study. According to Packard (2013), planned change refers to the whole organization's preparation process, or a considerable part of it, for a new direction in the organization to continuously improve performance. This denotes the internal structures, processes, cultures, or any related aspects of the organization that may influence performance (Fuertes et al., 2020; Valmohammadi & Roshanzamir, 2015).

The planned change framework was employed to improve performance, increase organizational efficiency and effectiveness, reframe perceptions, solve problems, and

shape impending innovations (Farish et al., 2017; Oreg & Berson, 2016; Zeng et al., 2016). Stouten et al. (2018) reported the importance of a structured process, such as accommodation of social operations during change execution. The method of change initiation, management, and implementation in organizations plays a vital role in organizations' research (Farzadnia et al., 2017; Rosenbaum et al., 2018). The application of this planned change framework by managers may offer a new direction (Fuertes et al., 2020) to achieve a good quality of products or services to influence performance.

Galambos et al. (2005) suggested five principles for planned organizational change: (a) develop a system for continuous discussion and feedback that includes external contingencies, (b) prepare the organization for growth through assessment and creation of an acceptance climate, (c) guarantee availability of resources for training and education, (d) advance a system for participation of employees for rewarding and recognizing staff, and (e) use change effort for agency development for a continuous improvement and change process.

Steps in planned change could be adjusted in conformity with organizational goals and needs, especially managers' experiences (Bakari et al., 2017). Planned change could be used to solve problems and adapt to changes in the external environment, particularly when coping with unplanned changes, organizational performance improvements, and further changes (Galambos et al., 2005; Konlechner et al., 2018; Pearce & Pons, 2017). The planned change framework examines the activities that can be carried out to commence and perform organizational change. Change may come from the exploration of managers' lived experiences regarding process management,

organizational leadership commitment, employee training, customer focus, quality management, and benchmarking related to procurement performance (Muvunyi & Mulyungi, 2018; Ongwae et al., 2018).

Lewin (1947) reported a 3-step model of planned change based on a successful change project, such as unfreezing, moving, and refreezing. In unfreezing steps, Lewin believed that human being constancy was due to a quasi-stationary equilibrium reinforced by a multifaceted driving and preventive forces field. The balance must be unfrozen before discarding old behavior and adopting new behaviors, particularly in quality performance (Jehangiri, 2017). In moving steps, motivation is created to learn. Individuals should consider all workforces to identify and evaluate all available options on a trial-and-error basis. The refreezing aspect of the planned change model ensures new behaviors' safety by stabilizing the group at a new equilibrium (Lewin, 1947). However, change is principally targeted at effective operation and human improvement through participative, team- and group-based change programs (Galambos et al., 2005; Packard, 2013).

Companies use planned change to learn and grow (Packard, 2013). Change does not occur overnight; it is thought-through and planned. The general change model focuses on what process organizations shall use to implement change (Galambos et al., 2005; Ghavifekr et al., 2017). Quality improvement may be an outcome of planned change (Ghavifekr et al., 2017). Moreover, quality improvement may be achievable from the result of managers' lived experiences regarding total quality management practices related to performance.

Efficacious implementation of planned change is an essential part of remaining competitive in contemporary business (Haffar et al., 2017). The outcome of managers' experiences on the total quality management practices related to procurement performance may facilitate planned reorganization or planned change (Galambos et al., 2005; Packard, 2013) to reduce quality-related issues. Mitchell (2015) reported that executing planned change could be more perplexing and intricate than expected. Firms need to put in place the capability of continuous improvement that repeatedly pursues train-the-trainers to impact the workforce. Training the employees in the change process from managers' lived experiences could eradicate waste and restructure the methods and focus on the customer by workforces (Green & Schellenberg, 2018).

Employees may resist planned change for many reasons, such as lack of reward, fear of failure, cultural conflict, and fear of the unknown (Packard, 2013). Employees may embrace change by adopting the total quality management practices related to procurement performance, an integral part of the organization, for continuous quality improvement. Serban (2015) examined the readiness to planned change in terms of adherence to managers' lived experiences in organizations through employees' attitudes, intentions, and beliefs. Recognition of the need for a planned change is a vital aspect of change readiness in business reorganization. The organizational workforce should be ready to embrace change from the result of managers' lived experiences regarding total quality management practices related to performance.

Serban (2015) reported that it remains the responsibility of organizational managers to efficaciously initiate and execute change for improved quality even though

planned change is a model for accomplishing organizational change goals. Managers are more comfortable creating, leading, and responding to external forces during the process of change. Managers could develop and initiate a planned change in organizations from their perceptions about total quality management practices linked to procurement performance. Additionally, managers' openness in their lived experiences may lead to the successful implementation of planned change for continuous improvement (Galambos et al., 2005; Green & Schellenberg, 2018; Jehangiri, 2017).

Managers may perceive planned change accurately through the organization's perspective and influence the process of growth as they adjust it to an interactive hierarchy (Ghavifekr et al., 2017), which may be a process that further actualizes reduction in quality-related issues. Effective implementation of planned change implies that the entire organization and the leadership need to share the same values, ethics, and goals during the transition (Galambos et al., 2005). Any organization with an ethical and healthy work environment may have low or no barriers to planned change from the outcome of managers' lived experiences.

The way to communicate a planned change is crucial in organizations to avoid change's controversial nature (Petrou et al., 2016). Execution of planned change without relaying the information of the direction and need for the transition to employees may derail them from the organization's vision and mission statements. If communication is not well planned during planned change, it can escalate concerns among employees (Packard, 2013; Petrou et al., 2016). Managers must devise a way to communicate the employees for a planned change by face-to-face meetings to get employees' feedback

concerning proposed changes. They should inform the employees how the planned changes will affect their department or processes (Galambos et al., 2005; Otokiti et al., 2018), an integral part of the whole organization.

I employed the planned change framework of Galambos et al. (2005) and Packard (2013) as the conceptual framework of this study for numerous reasons. Most noticeably, Galambos et al.'s (2005) suggestion of planned change was founded on the organizational five principles of change. For this research, the concept encompassed the development of a new system from the outcome of managers' lived experiences for continuous discussion, feedback, and improvement. This study was conceptualized through the manager's preparation of the organization for change by assessing and creating an acceptance climate (Naslund & Norrman, 2019; Onugha, 2019). I did not put together this study from the framework of ensuring that resources are available for education and training. The participation of employees in this planned change allowed their recognition and reward and usage of the change effort to build into the agency for a continuous change process and improve performance (see Petrou et al., 2016).

If companies applied this conceptual framework, it could lead to the sustainability of new procurement systems, structures, cultures, working practices, and continuous quality performance (Sinha et al., 2016; Valmohammadi & Roshanzamir, 2015). Sustaining the change could be observed as a process that can be managed based on planned change overview. Table 1 summarizes the diverse frameworks articulated from the literature as a change model to effect a planned change in an organization's

procurement process from lived experiences, which could mitigate ongoing quality issues in procured materials for project construction and oilfield facility maintenance.

Table 1

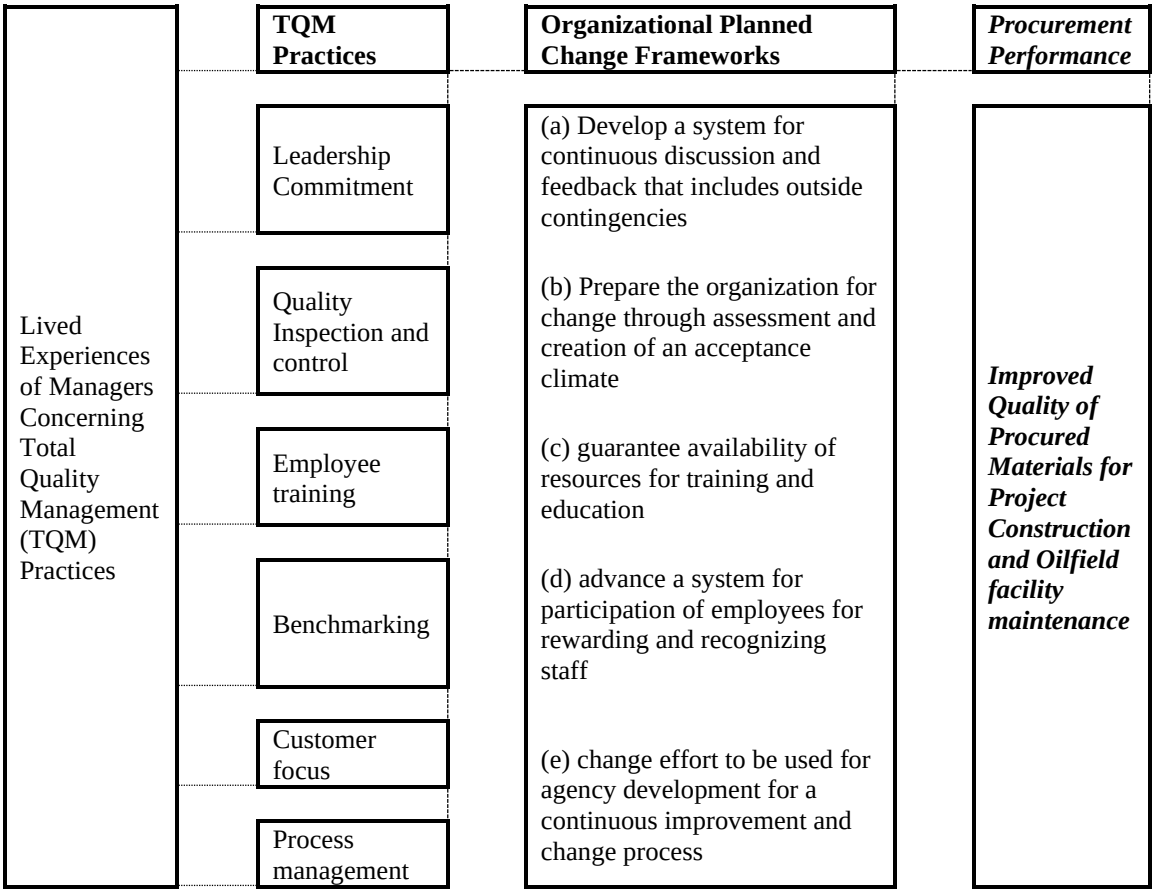
Planned Change Authors and Their Ideas

Authors	Idea of planned change from lived experience
Andreasson et al. (2018)	Strategical implementation of planned change is an important part of businesses remaining competitive
Aziz (2018)	Adoption of competencies and strategies by the leaders of higher education for effective planned in organization
Bakari et al. (2017)	The readiness to planned change "in terms of adherence to leaders' lived experiences" in organizations through the attitudes, intentions, and beliefs of employees towards business re-organization in adherence to Lewin's theory
Konlechner et al (2018)	Openness by mangers in their lived experiences for a potential sensemaking and successful implementation of planned change for continuous improvement
Naslund & Norrman (2019)	Targeted at effective operation and performance management system to initiate planned change of the organization through participative, team- and group-based change programs
Oreg & Berson (2016)	Employed leaders to improve performance, increase organizational efficiency and effectiveness, reframe perceptions, solve problems, and shape impending innovations
Petrou et al. (2016)	Well planned employee communication to de-escalate concerns among employees during planned change; successful change in organization based on employee role.
Galambos et al. (2005)	Develop a system for continuous discussion and feedback that includes outside contingencies
Lewin (1947)	Successful change project, such as unfreezing, moving, and refreezing
Rosenbaum et al. (2018)	Change process initiation, management, and execution in organizations. Planned organization change from forward to past.
Schwatka et al. (2018)	Responsibility of organizational managers in small business to efficaciously initiate and execute change for improved quality, even though planned change is a model for accomplishing organizational change goals
Onugha (2019)	Adopted change in organizational culture for Planned change influence on the effectiveness of the organization.
Packard (2013)	Organizational preparation process or a substantial part of it, for a new direction (internal structures, processes, cultures) in the organization to continuously improve performance.
Stouten et al. (2018)	A successful organizational change via management practice integration in the organizational processes

Figure 1 shows the conceptual framework by Galambos et al. (2005).

Figure 1

Conceptual Framework Illustration



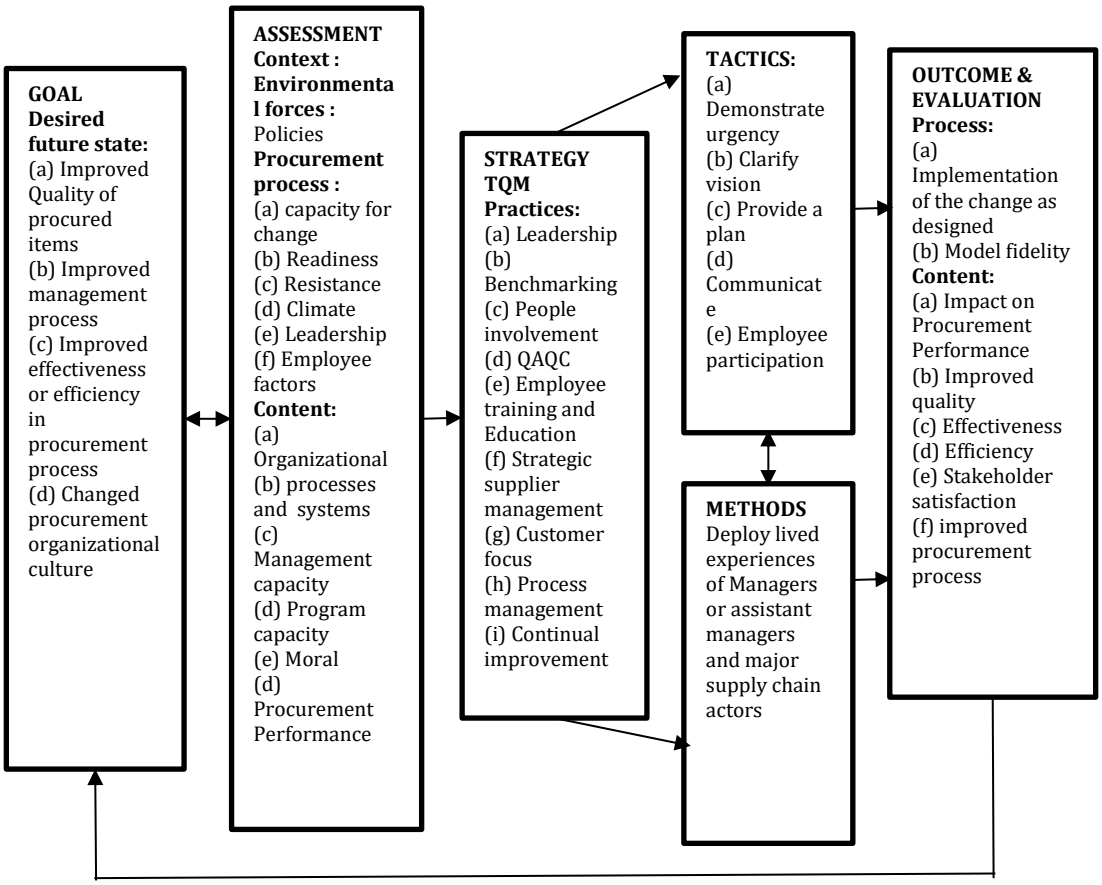
Note. Adapted from "The effect of total quality management adoption on procurement performance of the manufacturing sector in Rwanda: A case study of Bralirwa ltd" by Muvunyi, G., & Mulyungi, P., 2018, *International Journal of Research in Management, Economics, and Commerce, 8*(5), 152-158 (http://www.indusedu.org) and

Adapted from "Principles for organizational change in human service organization" by Galambos et al., 2005), *Journal of Human Behavior in the Social Environment*, *11*(1), 63–78. (https://doi.org/10.1300/J137v11n01_05)

Figure 2 shows the conceptual framework of planned by Packard (2013)

Figure 2

Conceptual Framework Illustration of Planned Change



Note. Adapted from "Organizational change: A conceptual framework to advance the evidence base" by Packard, T., 2013, *Journal of Human Behavior in the Social Environment, 23*(1) 75-90 (https://doi.org/10.1080/10911359.2013.739534)

Literature Review

In this literature review, I sought to advance a brief description of total quality management, total quality management practices, and procurement performance in Chapter 1. This review of the literature provided a background of quality-related issues in procured materials. The significant apparatuses of total quality management practices

related to procurement performance were described. Additionally, total quality management practices and procurement performance were studied in the context of other schools of thought, planned change, or continuous improvement literature. These clarifications provided an underpinning for readers as they read the participants' perceptions or interpretations of total quality management practices related to procurement performance.

The literature reviewed showed that the causes of persistent quality problems may be due to low product design, effects of system failures, changes in customer behavior, increased competition from suppliers, unawareness of quality, poorly trained local employees, and little attention given to total quality management practices (Carstea et al., 2014; Chepkech, 2014; Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018; Sadikoglu & Olcay, 2014; Wu, 2015). However, no literature reviewed validated the influence of total quality management practices related to procurement performance based on managers' perceptions and their lived experiences. This literature review's objective was to explore the gap in the body of knowledge for quality performance in procurement. The following sections reviewed literature related to quality management, total quality management, total quality management practices, procurement performance, and closed with an overview and synthesis of current findings.

Overview and Discussion of the Literature

Quality Concepts

Quality is needed in every aspect of a company's operations (Dahlgaard et al., 2019; Farzadnia et al., 2017), such as crude oil production, project constructions, oilfield

facility maintenance, manufacturing, material procurement, and services (Arditi et al., 2017; Eskandarian et al., 2016). The definition of quality can be very complex based on an instinctive knowledge of the idea and the role of quality in petroleum producing companies and other organizations (Dahlgaard-Park et al., 2018; Dawabsheh et al., 2019). For standardization, quality can be defined as "customer satisfaction," "zero defects," "doing things right the first time," or "fit for use" (Dawabsheh et al., 2019; Kobylińska, 2016; Pradhan, 2017).

These definitions are suitable because quality signifies "degrees of excellence." Quality signifies how something is (Kobylińska, 2016). For instance, if a product's quality is high, it implies that it fits the purpose. Chepkech (2014) argued that higher quality products cost more money because the materials used to manufacture products are better or more effective. Conversely, low-quality things are cheap and are manufactured from low grades of materials. Quality is applicable in producing and stabilizing produced crude oil in petroleum companies (Onyemeh, 2017), where the final products are in line with standard specifications and operating conditions (Hamilton et al., 2019). For instance, controlling of the process parameters in the oilfield facilities follows a quality procedure to stabilize the crude oil to standard pressure and temperature of 1 bar and 40 degrees Celsius before the expedition to berthed tankers in the offshore environment (NOGIAR, 2018; Onyemeh, 2017; Rahmanian et al., 2018).

A world-class floating, production, storage, and offloading (FPSO) vessel in the deep offshore of a petroleum producing company produces 185bbls/d of oil and 14Mstcft of the gas, oil with storage capacity of 2Mbbls every five days. This FPSO

offloads 1Mbbls of crude oil every five days to satisfy a frame contract of quality oil and gas supply to generate revenue to the Nigeria Government. Failure to use quality materials in the oilfield facility's periodic maintenance may cause downtime and shortfalls in production and impact the revenue generation. The Nigerian government could fine the petroleum producing companies for violating a frame contract for the Nigerian government's oil revenue generation (NOGIAR, 2018).

In project construction, achieving a positive quality performance through the procurement process and material resources management could positively influence the delivery lead-time, cost, and quality of the project facility (Carstea et al., 2014; Onyemeh, 2017). Procurement of project materials in line with project and company general specifications and adherence to total quality management related to the procurement process may enhance quality performance (Cherng-Yee et al., 2019).

However, quality issues in procured materials may cause a delay in project delivery (Adedeji, Badiru, Samuel, & Osisanya, 2017; Iannuzzi et al., 2018) and increase overheads since the same materials may be procured twice due to non-conformity of delivered project materials. To mitigate quality issues in procured materials, organizations may create a material management system in line with total quality management practices and prepare for planned change in the procurement function.

Table 2 shows some notable definitions for quality by different authors.

Table 2

Notable Quality Definitions

Authors	Definition
Allen & Kilmann (2001)	Satisfaction of customers
American Society for Quality 2020	A product or service free of deficiencies
Chepkech (2014)	Meeting the requirements and expectations in service or product that were committed to
Chowdhury (2005)	Quality combines people power and process power
Crosby (1979)	Conformance to requirement
Drucker (1985)	what the customer gets out and is willing to pay for
Fu, Chou, Chen, & Wang (2015)	A combination of artefacts, core values, and underlying assumptions
Matthew (2017)	Number of defects per million opportunities
Nanda (2016)	non-inferiority or superiority of something
Nanda (2016)	Satisfaction of applicable specifications
Pirsig (1974)	The result of care
Ree (2009)	zero defects, doing things right the first time, or fit for use
Taguchi (1992)	Uniformity around a target value
TC 176/SC (2005)	Degree to which a set of inherent characteristics fulfills requirements
Walton and Deming (1988)	Costs go down and productivity goes up as improvement of quality is accomplished by better management of design, engineering, testing and by improvement of processes

Overview of Total Quality Management in General

Study findings of total quality management, total quality management practices, and planned organizational change are problematic to change from academic to business practice because of a lack of collective meaning for each of the terms (Kothari et al., 2017; Muvunyi, & Mulyungi, 2018). No study has advanced a conclusive meaning or complete definition of total quality management. This situation influences the meanings

assigned by different readers, study participants, and researchers. This inconsistency of meaning affects the worth of findings and whether a prototype could control a situation or organization. These multifaceted accurate meanings are a model of uniqueness and signify a clear illustration of how organizations or individuals could use the same term, make an observation of events, and arrive at the same conclusions. Subsequently, the meanings associated with total quality management practices, procurement performance, and planned organizational change were illustrated.

Total Quality Management

There have been failures by different researchers to agree on a sole definition of total quality management despite agreement on the elements that constitute total quality management (Kihiu, 2016; Muvunyi & Mulyungi, 2018). Total quality management surpasses quality initiative and is a management approach that traverses all aspects of an organization (Muvunyi & Mulyungi, 2018). Several researchers have defined total quality management as processes, tools, and practices for continuous quality management (Sumardi & Fernandes, 2020; Timans et al., 2016; Vimal & Sharma, 2017). Some have a change in TQM perception after conducting research and, thus, bringing in more confusion in the definition of total quality management. The kernel of total quality management eliminates errors and faults in the manufacturing process, supply chain, factory, distribution, and customer services (Sinha et al., 2016; Sreedharan et al., 2017). Quality management's primary goals are to achieve zero defects, quality improvement, and maximize customer satisfaction (Muvunyi & Mulyungi, 2018; Nuseir & Madanat, 2017).

The nature of total quality management commences when engineers and managers set the standards of quality based on an item's measurements. The set of standards described what establishes the rate of quality. Managers select a suitable range about the model. The measurements showcase whatever the engineers can measure to the set precision such as color, material composition, dimensions, surface finish, and gap sizes (Knight, 1966).

Sadikoglu and Olcay (2014) argued that total quality control is an integral part of the production. For instance, quality issues could arise in procured materials if fabrication measurements are outside an acceptable range and could influence procurement performance. Sadikoglu and Olcay (2014) expressed total quality management in terms of values, principles, stakeholders, and functions related to product quality. The diverse articulations of other parts of total quality management include leadership, administration, policy and procedures, strategy and planning, procurement, customer and customer service, staff recruitment, training, product design, operations, and manufacturing (Lam & Robertson, 2015; O'Reilly et al., 2015; Pradhan, 2017). Companies need to integrate the management practices related to total quality for survival. Total quality management could support organizations.

Total Quality Management Practices

Petroleum producing companies and other industries have an unanimity view that companies should trail several practices in a cohesive way for the achievement of total quality management applications. Besides defining critical success factors of management practices related to procurement performance, various studies have been

performed. Diverse instruments were developed by different researchers such as Carstea et al. (2014), Chepkech (2014), Kihiu (2016), Macharia and Mwangangi (2016), Muvunyi and Mulyungi (2018), Sadikoglu and Olcay (2014), Wu (2015), and Ngambi and Nkemkiafu (2015). Based on previous models and studies, the following six total quality management practices: process management, organizational leadership commitment, employee training, customer focus, strategic quality management, and benchmarking were chosen to review their influences on procurement performance based on lived experiences of people. I explored managers' lived experiences about total quality management practices related to procurement performance. The resolve was to understand what managers experience is about total quality management practices linked to procurement performance. Participants' meanings of experiences were interpreted from the collected data.

Strategic Quality Management

Strategic quality management ensures that a petroleum industry's service or product is reliable (Bryson et al., 2018; Oschman, 2017). There are four quality management components, such as quality planning, quality assurance, quality control, and quality improvement. Farinha et al. (2016) focused quality management system not only on the product and service quality but also on its means. Companies could use assurance of quality, process control, and products to accomplish more dependable quality. Farinha et al. (2016), in their study, provided quality management execution guidelines that could permit managers, academicians, technicians, students, and engineers, a real replication on the quality management system execution to get a

globalized market's competitive advantage. A quality management system could ensure that petroleum producing companies possess a sustainable foundation (Bryson et al., 2018; Yu et al., 2020).

The International Standard for Quality Management (ISO 9001:2015) adopted quality management practices that top management could use to guide their organizational processes or an integral part of the organization (procurement process) towards improved performance. Macharia and Mwangangi (2016) explored the application of eight modern total quality management principles of ISO 9000 in procurement management, such as leadership, customer focus, process management, people involvement, continual improvement, system management, supplier relationship, and factual approach to decision making.

Macharia and Mwangangi (2016) described the quality of suppliers' product and manufacturing process as influencing final product quality in an organization. It means that both a high quality of products and services could attract a corresponding high-quality control level in procurement management to ensure competitiveness (Farinha et al., 2016). The reason for the competitive advantage could be for the performance of the whole procurement process. Strategic quality planning in procurement management aided managers and engineers in a planned organizational change process to continuously improve procured materials' quality with reduced conformity issues (Bryson et al., 2018; Iqbal et al., 2017).

Organizations may confront a continuous bombardment of requirements for quality improvement. Eskandarian et al. (2016) reported that strategic quality planning is

a process for continuous improvement. This planning process may ensure that quality professionals, quality managers, and quality departments assume in their organization to categorize the "conformed" quality initiatives for the best management of today's quality and future (Bryson et al., 2018). Researchers have included the following standards: strategic quality objectives development, quality policy development, analysis of the internal and external environment, quality plan development, quality monitoring, strategy development, and mission development in quality management (Eskandarian et al., 2016; Farinha et al., 2016; Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018)

Organizational Leadership Commitment

Organizational leaders at all management levels establish unity of direction and purpose and develop conditions for engaging people in accomplishing the quality objectives of an organization (Daft & Lane, 2018; Iqbal et al., 2017). Management leadership should have the responsibility of taking up the vital changes required for improvement of quality and supporting quality sense throughout the organization. The administration is responsible for encouraging the planned organizational change to restructure the procurement process for cost and right quality materials for project construction and oilfield maintenance (Daft & Lane, 2018; Imran et al., 2018). Muvunyi and Mulyungi (2018) suggested that the establishment of the unity of purpose, direction, and people engagement made organizational objectives to be in alliance with its processes, strategies, resources, and policies.

Customer Focus

The main idea and principle of total quality management is customer focus since the customer's needs emanate from quality efforts and stop with customers' acceptance (Kihiu, 2016; Muvunyi & Mulyungi, 2018). In procurement condition, the customer does not only mean the end, but other key players include the sellers, manufacturers, suppliers, etc. Muvunyi and Mulyungi (2018) reported that greater than half of the quality issues in procurement originates from specifications due to insufficient interactions among supply chain actors. In many instances, the procured materials' specifications as provided by the purchaser are ambiguous, and suppliers cannot contend against purchasing officers regarding the specifications during the tender process. Consequently, the leading enterprise must give attention to the end user's needs and expectations (Imran et al., 2018; Jimoh et al., 2016). The operation of the process of procurement system based on total quality management to deliver quality goods could be improved through the end user's fulfillment (Jimoh et al., 2016; Muvunyi & Mulyungi, 2018).

Process Management

Process management means an alliance of processes with an organization's strategic goals, forming process measurement systems in partnership with dreams of the organization, designing and applying process architectures. (Macharia & Mwangangi, 2016). Managers could successfully manage organizational change with total strategic quality management practices (Bryson et al., 2018; Packard, 2013). The process of achieving a good quality of procured materials could be in alliance with a planned organizational change to mitigate quality-related problems. Macharia and Mwangangi (2016) reported that the activities of the organization could be regarded as processes.

Process management in the supply chain becomes necessary if the total quality management initiative goal is the overall quality performance achievement. The control of the process becomes a critical requirement (Khoshlafz & Hekmati, 2016).

Process management (PM) is well-thought-out as a conformance quality concern. One vital component of PM is to ensure that the process's capability could accomplish the requirements of production (Ehi & Asiodu-Otughwor, 2015; O'Reilly et al., 2015). Sadikoglu and Olcay (2014) argued that PM is the trajectory to convince organizational employees that it is their responsibility to perform customer satisfaction tasks. Macharia and Mwangangi (2016) emphasized the addition of value to a process, enhancement of organizational employees' productivity, and continually improving the procurement performance. Researchers achieved predictable and consistent results efficiently and effectively when they comprehended and managed activities as interrelated processes. Macharia and Mwangangi (2016) argued that learning interrelated processes enabled organizations to optimize the system and its performances.

People Involvement

Involving people in the total quality management process improved procurement performance (Bakotić & Rogošić, 2017; Lin et al., 2017). People who are engaged, experienced, and empowered at all levels of the organization are essential to increase their capacity to create and deliver value in the procurement management (Ngambi & Nkemkiafu, 2015; Reio, 2016). To succeed in an organization efficiently and effectively, Sadikoglu and Olcay (2014) stressed the importance of involving people at all organizational levels. The organization's quality objectives are facilitated by

empowerment, enhancement, and competence (Bakotić & Rogošić, 2017; Sadikoglu & Olcay, 2014). Employees' involvement is essential for achieving the quality of procured materials for project construction and maintenance of oilfield facility maintenance. Revilla and Knoppen (2015) argued that employee participation might be performed using work teams by looking for chances to build employee's competence levels, the share of return on experiences, and information. Ngambi and Nkemkiafu (2015) and Sadikoglu and Olcay (2014) concentrated on enhancing quality activities via training, education, employee commitment, and employee suggestions.

Employee Training and Development

Training of the procurement employees of petroleum producing companies and other industries influenced procurement performance (Eskandarian et al., 2016; Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018). Employee training and development in organizations are exact efforts made for employees' skills development to use the new skills and knowledge to carry out their procurement jobs (Amin et al., 2017; Muvunyi & Mulyungi, 2018). According to Muvunyi and Mulyungi (2018), employee training depicted programs that offered information, new skills, and professional development to workers. If an employee is continuously trained in the procurement process, quality-related procurement management issues are be mitigated.

Macharia and Mwangangi (2016) reported that training could occur in many ways, viz-a-viz organization, outside the organization, on the job, or outside the job. The employee needs to comprehend the overall processes involved in the procurement system for continual improvement. New knowledge acquired aided the management for both

current and future circumstances and planned organizational change (Eskandarian, Marthandan, Malarvizhi, & Tehrani, 2016; Tahir et al., 2014). Employees could perform their role in the quality improvement process based on the right training accorded to them for a significant planned change.

Rapidly changing business environment needs continuous learning for employees and organizations to cope and remain competitive (Alonso-Almeida et al., 2015; Macharia & Mwangangi, 2016). Notwithstanding these progressive training outcomes, some researchers have argued otherwise. Wu (2015), while admitting that employee education has been used widely by companies as an economic strategy, reported that there is a meaningful changing discussion among professionals and researchers as to the influence of employee training related to procurement performance. Wu (2015) suggested a school of thought that employee training contributed to increased turnover. Other schools of thought stipulated that employee training is a tool that contributed to enhanced employee retention (Abdul et al., 2019; Al-Ababneh et al., 2017). In exploiting this strength, petroleum producing companies could develop an achievable organizational quality culture (Arditi et al., 2017; Hilman et al., 2019) through employees' training to contribute their maximum potentials. Training programs increased the productivity and performance of employees related to procurement performance.

The effect of employee training and development related to procurement performance are both direct and indirect. Iqbal et al. (2018) reported that the employee training program role is perceived as a measurement tool for employee improvement in progressive procurement performance. Training contributes to a better-quality

management initiative of the procurement process to improve the quality of the procured materials for project construction and oilfield facilities maintenance. For instance, in a planned change situation, petroleum producing companies could invest in improving the skills and knowledge of its workforce. The return on investment (ROI) could be in the form of more effective and productive employees for a successful quality achievement (Jehangiri, 2017) related to procurement performance.

Tahir et al. (2014) studied the influence of employee training related to productivity and procurement performance leading to employee engagement. Training and development of the workforce prepared the organization for a planned change (Kimoru & Kwasira, 2017). Training and development influenced productivity related to procurement performance (Kimoru & Kwasira, 2017). In Spain, Psomas and Jaca (2016) connected the training and development of employee activities to service companies' business development. The researchers also posited that development and training events have been adopted by service companies to ensure a well-informed employee to support a planned organizational change. Consequently, service companies' workforces achieved the chance to assume higher tasks as well as being able to identify non-conformities related to performance. Muvunyi and Mulyungi (2018) noted that total quality management practices (training) influenced procurement performance, focusing on Kenya's telecommunication companies.

Benchmarking

Ngambi and Nkemkiafu (2015) described benchmarking as the practice of likening the processes of business, metrics, and performance to industries best practices

from other companies. Dimensions of focus or interest include quality, lead time, and products and services. Benchmarking is adopted to measure performance with the use of a definite indicator. Performance measurement of benchmarking are achieved by defects per unit of measure, or cycle time of x per unit of measure, productivity per unit of measure, and cost per unit of measure (Ngambi & Nkemkiafu, 2015). These measures resulted in performance metrics, which is compared to another.

The management of petroleum producing companies uses process benchmarking or best practice benchmarking to evaluate different facets of their processes regarding best-practice companies' strategies. Benchmarking influenced organizational performance or an integral part of the organization (Ngambi & Nkemkiafu, 2015; Patyal & Koilakuntla, 2017). Benchmarking affected the quality of procured materials related to procurement performance (Muvunyi & Mulyungi, 2018), usually compared to other procured materials. This total quality management practice may allow the management of petroleum producing companies to develop plans for improvement or adaptation of the exact best ways to improve quality related to procurement performance (Androwis et al., 2018; Invernizzi et al., 2017). According to Invernizzi et al. (2017), benchmarking can be treated as a continuous process for companies to continuously seek to prepare for planned change or improve their business practices.

In project construction and management, benchmarking could support the planning, selection, and delivery of procured materials without a quality problem and project delivery (Betancourt-Guerrero1δ & Franco-Ricaurte, 2018; Invernizzi et al., 2017). Managers and engineers could compare material requisition documents with

previous or other archived ones to ensure that such items' procurement could be as per project specifications without non-conformity problems. Benchmarking could prevent project construction delays since all the processes involved are pre-determined or designed to feed 3-D models of project designs during basic and detailed engineering periods (Arditi, Nayak, & Damci, 2017; Eskandarian et al., 2016).

In the best practice benchmarking process, organizational management should recognize the best firms within the industry or other industries with similar strategies and continuously compare their targeted results and methods (Invernizzi et al., 2018). In this way, management could learn how to maintain quality and ensure zero defects of procured materials for project construction and oilfield facilities maintenances. Benchmarking provides a planned organizational change and a successful business process (Neyestani & Juanzon, 2016).

For instance, according to the National Council on Measurement in Education in 2017, assessments via benchmark are petite assessments that teachers at different times used during the school year to provide monitoring of the progress of students in some aspects of the curriculum of the school as interim assessments. This interim assessment provided quality students for future usage in various schools of thought.

According to Ngambi and Nkemkiafu (2015), internal benchmarking associated practices, processes, and performance against other business parts such as individuals, groups, business units, and various teams. Benchmarking is essential in planned organizational change and business development. It improved upon a procedure and process to save supplies, equipment, and lead time (Invernizzi et al., 2017). For instance,

if the field operation workforce spends less time on the operational ends or maintenance of facilities, it means more available time to enhance revenue for the Nigerian government (Tang et al., 2020).

Managers and engineers concentrate on best practices from their competitors by allowing them to obtain comparisons between various benchmarking processes. Muvunyi and Mulyungi (2018) reported procurement benchmarking as one of the best total quality management practices which companies develop towards world-class practices. Organizations benchmark other top-performing companies to provide a gap analysis to world-class practices and advance achievement plans to bridge the gap. For instance, recently, all international oil companies (IOCs) agreed and developed a platform known as AMPELIUS for benchmarking and marketing of unused or surplus project construction materials to reduce lead-time, cost, whilst maintaining the quality of procured items.

Development of the AMPELIUS platform means that IOCs may obtain surplus or unused project materials with the right project specifications from one another at reduced cost and delivery lead time with good quality without any non-conformity issues. Although quantity might be an issue and material availability would depend on an integrity test outcome (i.e., quality control and assurance and inspection conducted on materials).

Continuous Process Improvement

Continuous improvement is a primary component and target of total quality management (Timans et al., 2016). This component may lead to higher and improved

quality processes. Expressions of managers' meaning and lived experiences regarding total quality management practices lead to a planned change in organizational processes for continual improvement of the quality process (Sinha, Garg, & Dhall, 2016; Sinha et al., 2016). The continuous improvement process aims to increase quality, reduce costs, and increase operations (Lam, O'Donnell, & Robertson, 2015). Organizations improved new processes from existing ones by developing a set of collective actions and cross-functional teams (Mclean et al., 2015).

Operationalizing the philosophy of total quality management and quality management standards continuously improved the requirements of customers. Organizations incorporated total quality management by the involvement of people at all organizational levels to be successful. Panuwatwanich and Nguyen (2017) suggested that quality improvements are eminent when organizations mold the corporate systems or their culture in alliance with set total quality management goals. Mclean et al. (2015) argued that organizations must encourage and empower their employees to be creative to achieve continuous improvement in the work environment. All workers need to embrace planned changes necessary to carry out their operations to improve the procurement systems. Timans et al. (2016) suggested that planned quality cultural change must commence from organizational leadership.

Total quality organizations necessitate that all workers in the organization continually improve what they do. Regular examination and re-examination of systems and processes using data collected from continuous improvement tools aided managers in a planned change of the whole or part of the organization (procurement systems) to

improve quality performance. The outcome of lived experiences may trigger steps systematically for a planned change to improve processes and procedures (Packard, 2013). Organizations achieved quality improvement by going through the cycles such as (a) planning the change – identification of improvement chance between existing and anticipated situation, (b) making or doing the change by data collection, (c) making the study and doing data analysis, observe change effects, and evaluate learning outcomes, and (d) continue the investigation by going over to step one for continuous improvement of processes (Lam & Robertson, 2015; Packard, 2013).

Continuous improvement in the purchasing process involves the supplier's total quality management control procedure (Sinha, Garg, & Dhall, 2016). Quality management procedures may lead to accomplishing goals of quality in procured materials for project construction and oilfield facility maintenances. As a business management method, total quality management may add values to customers of organizations by continually improving its processes and systems.

Continual improvement certifies that organizations discover novel traditions and methods in better products' quality development, a competitive product, and surpass customer expectations (Sinha, Garg, & Dhall, 2016). The design of continuous improvement in companies is for them to apply their resources effectively and efficiently to accomplish quality motivated culture. Additionally, continuous improvement aims to eliminate waste in processes and systems for sustained improvement culture (Arditi et al., 2017).

Quality and Material Management in Petroleum Producing Companies

In project construction, oilfield facility maintenance, and production operations, the resolve of materials management guarantees that the right materials, right quantities, and good qualities are available at the right time with optimum cost (Lisitsa et al., 2019). The purpose of this challenging task of material management is vital for the oil and gas operations in onshore and offshore facilities (Levina & Lepekhin, 2019). In the management of materials in the oil and gas industry, there are many opportunities for continuous improvement of procured materials for project construction and oilfield maintenances, such as adherence to the manager's lived experiences concerning total quality management practices performance. For the past years, petroleum producing companies have been focusing on ensuring uptime of its asset, on-time project delivery, and within cost and developing risk awareness in supply chain management (Basheer et al., 2018; Levina & Lepekhin, 2019). The supply chain risks may not be removed entirely but may only be mitigated as low and reasonably practicable.

For many years, petroleum producing companies have focused on ensuring their asset's uptime and broader usage of enterprise resource planning (ERP) systems for material delivery and management. ERP systems concept is a unique way to offer the mechanisms of planning, execution, and control in processes to achieve continuous improvement. Although, overreliance on the ERP systems can backfire to indicate that a poorly designed system is a recipe for failure. Despite the implementation of total quality management related to material management systems, ERPs, and total quality management practices, the rate of material quality issues increased by 45% in the past

five years (TOTAL E&P, 2017). Good material and quality management and total quality management practices may streamline and add value to the petroleum producing companies' at large (Basheer et al., 2018).

Procurement Performance

The quantities of materials in stock have increased over the past five years due to perceived quality-related issues and little attention given to total quality management practices (Carstea et al., 2014; Muvunyi & Mulyungi, 2018; TOTAL yearly report, 2017). The average value of procured materials with quality-related problems from 2012 to 2017 is estimated at $19 million from an initial average value of $10.45million (TOTAL Yearly Report, 2017). The research problem is that procured technical materials with quality-related issues have increased costs in the technical services, procurement overhead, and maintenance operations by $8.45million (45%) (Muvunyi & Mulyungi, 2018; TOTAL yearly report, 2017). The causes of these quality-related problems in the procurement system of this petroleum producing company in Nigeria are not well known. The influences of total quality management practices on procurement performance are unknown despite the significant financial outlay by this oil-producing company in implementing total quality management (Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017). There is a poor-quality performance and so, increased technical service costs.

Technical costs and procurement overheads increased in the project construction and oilfield facility maintenance operations due to quality issues related to procurement performance (Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017). Cost increases

are predominantly grave with crude oil production fields. For oilfield facilities, the front-end engineering designs (FEED) and project construction activities must be performed as effectively and efficiently as feasible. The stock, project construction, and oilfield maintenance materials require a coordinated effort among engineering, procurement, and project construction teams (Eskandarian, Marthandan, Malarvizhi, & Tehrani, 2016). Before procurement of materials, the engineering and procurement teams make available the specifications, drawings, and materials to the contractors that organize and control facility construction, maintenance, and connection of systems and equipment. The technical and engineering teams' objective would be to provide correct drawings in alliance with the materials and equipment produced to reduce rework (quality issue mitigation) and project delays.

According to Eskandarian et al. (2016), the aim of the engineering, procurement, and management is demonstrated in the simple subjects of total quality management, categorically ensuring management could strive to have zero defects in materials procurement for efficient and effective process operations. Zero defects on products and services concentrate on not only customer-driven quality performance, but also an effort for a planned organization change to drive continuous improvement. Soares et al. (2017) revealed that moving a constant improvement process could be via quality at source by doing the task right the first time, recognizing, teamwork, improved methods, and eliminating rework during project activities or facility maintenance. However, procurement performance entails achieving the right quality by doing it right the first

time, which is an imperative factor for cost minimization for facility design and construction.

Researchers have described procurement performance as an identification measure of the degree to which procurement function can attain the aims and objectives with reduced costs (Gumo et al., 2018). Khalife (2019) noted that efficiency and effectiveness are the two core features of procurement performance. Procurement effectiveness is the degree to which formerly defined objectives and goals are being accomplished. Procurement effectiveness entails the connectivity between human activity's planned and actual performance (Khalife, 2019). Simultaneously, procurement efficiency is the connectivity between existing and planned resources needed to accomplish the developed objectives and goals as per actual and planned costs (Khalife, 2019).

Muvunyi and Mulyungi (2018), in their study in the telecommunication industry in Kenya, suggested that the driver for the procurement performance of manufacturers is supplier performance. To ensure planned organizational change and become more competitive, Muvunyi and Mulyungi (2018) proposed procurement performance as an essential variable for continuous quality improvement. The absence of it acts as a planned change barrier in the procurement function. Inappropriate procurement performance may cause purchasing function deterioration (Anane et al., 2019; Muvunyi & Mulyungi, 2018). Procurement performance is defined as cost-effectiveness and supplier sourcing (Muvunyi & Mulyungi, 2018).

Procurement performance offers the foundation for real control and monitoring of resources. It establishes the procurement function value. Macharia and Mwangangi (2016) argued that some companies are devoid of performance measures to assess procurement effectiveness and efficiency. Organizations need to define specific targets and not qualitative statements to have quality procurement measurements and significant planned change (Busu & Mihail, 2017).

In procurement performance, the total cost of ownerships (TCO) is indispensable procurement rule (Mambanda et al., 2017). TCO includes not only the cost of purchase, but also quality management, resources, and expended time in the cause of the chase of ownership. By comprehending the procurement steps, it is practicable to understand better the actual cost of service or products (Mambanda et al., 2017).

A well-thought-out procurement function makes it easier to recognize where quality performance is well and where it needs improvement. The procurement function is extolled where the costs of procured items have declined, but if there is savings declination, then the procurement function shall be questioned. To maximize the efficiency of procurement, organizations should focus on purchasing through cost minimization.

According to the 3rd Procurement and Supply Chain Management conference for the oil and gas industry (2019) in Amsterdam, procurement performance measures in terms of business finance may disregard the market dynamics and enhance the complication in total acquirement of products and services for petroleum producing companies.

Connolly (2020) argued that petroleum organizations might face problems in the procurement process if not well-planned and unnoticed leakage of finance. Organizations regularly fail to comprehend the productivities that can be realized via necessary business automation (Muvunyi & Mulyungi, 2018). Business automation may help organizations develop a procurement function with a progressive influence on quality, related to procurement performance.

The advancement of the procurement function and its influence on firm performance may depend upon two elements: the value of money and the opportunities to save costs, with consistency in quality. For instance, adopting total quality management principles in managing high volume and value purchases could offer high-cost savings and better quality of procured items (Hamilton et al., 2019).

Direct and indirect costs may affect procurement effectiveness. The structure of petroleum companies, division of labor, and operation efficacy are essential modules that adjust procurement function effectiveness. The procedures and processes of procurement also, relate to other organizational functions and on their adeptness as well. For example, as per planned change, improvements in quality issues and on-time delivery may affect total cost of acquisition on the side of production. Additionally, a decrease in total costs can be professed as a reduction in the product's quality. Still, cost-efficient procurement does not suggest that the product or service quality would reduce.

Macharia and Mwangangi (2016) suggested that procurement performance emanates from a procurement function that is effective and efficient, implying that every entity involved in the process can be proactive in accomplishing performance levels.

Managers need implementation of total quality management to actualize a planned change in the procurement function for continual improvement in performance. For instance, organizations could modify their focus and stay more competitive in the quality and delivery of components for projects and oilfield facilities.

Macharia and Mwangangi (2016) argued that performance is an essential vehicle for material quality improvement since the absence of performance could be a planned change barrier and may distort the quality management process, leading to purchasing deterioration. The lack of performance in petroleum producing companies' procedures, processes, and intentional change means lower employee turnover, higher customer satisfaction, and lower performance (Wu, 2015). Performance measurement produced profits to petroleum producing organizations such as improved quality, reduced cost, assured supplies, competitive advantage, and increased profitability, as was noted by the Chartered Institute of Procurement and Supply (CIPS)' 2018 publication.

CIPS's 2018 publication revealed a general criterion for measurement of procurement performance. They indorsed a five-right model and suggested the model as a traditional formula describing the procurement rudimentary objectives. The criteria for measuring procurement performance of procured rudimentary procurement to the previous requirements publication are that the goods and services should be of quality, in the right quantity, right place, delivery at the right time, and procured right price. In 2018, CIPS had added the source, as the sixth right in their publication. Different researchers have indicated different procurement performance in organizations such as telecommunications, schools, health sector but excluded right quality as performance

measurement. Quality is included, and measure of performance to explore the manager's' lived experiences about total quality management practices could influence procurement performance.

A report generated by Ardent partner research 2011 indicated a wide-ranging, industry-wide assessment of what happened in the procurement world previously by illustrating the performance, experience, and viewpoint of almost 250 executives and chief officers of procurement. The report comprised the core procurement performance and benchmark operations (total quality management practice) used by procurement leaders to measure their organizations' achievement. Their report found on the average; the department of procurement accomplished 60.6% of total spend under management. The procurement organization influenced or managed the direct and indirect spending (percentage of the enterprise total spend) and ensured that procurement specifications and procedures are adhered to avoid non-conformity.

On average, the procurement department realized a yearly savings of 6.7% and obtained 52.6% of spend that was addressable with a compliance rate of 62.6% in their contract. Within this period, it was found that procurement performance was defined with a well-planned procurement function. This study addressed the influence of total quality management practices related to procurement performance from managers' lived experiences for continuous quality improvement and possible planned change.

Total Quality Management Practices and Procurement Performance

The success of adoption of total quality management practices in petroleum producing companies resulted in improved competitive advantage, increased

productivity, improved employee involvement, improved customer satisfaction, reduced costs of low quality, improved quality, and less reworks (Al-Zoubi & Alomari 2017; Anil, & Satish, 2017; Ehi, & Asiodu-Otughwor, 2015; Hamilton et al., 2019; Muvunyi & Mulyungi, 2018; TOTAL Yearly Report, 2017). In juxtaposition, little attention given to total quality management practices increased technical costs and procurement overheads due to quality-related issues may have forced a petroleum producing company in Nigeria to demand higher quality products and services from original equipment manufacturers (OEM), local and foreign suppliers (Muvunyi & Mulyungi, 2018; TOTAL, 2017). Right quality products and services improved project delivery, oilfield facility maintenance, and procurement performance.

Most earlier researches reported that total quality management practices have positively been related to material resources management (Carstea et al., 2014), organizational performance (Alnuaimi & Yaakub 2020; Antunes et al., 2018; Chepkech, 2014; Mehralian et al., 2017; Muzayen & Alkhalil, 2018), productivity and manufacturing performance (Dubey & Gunasekaran, 2015; Mclean et al., 2015), innovation performance (Abu Salim et al., 2019; Farish et al., 2017; Zeng et al., 2016), procurement performance (Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018; Wu, 2015), financial performance (Alonso-Almeida et al., 2015). Conversely, some researchers have found insignificant outcomes (Sadikoglu, 2014). From previous studies, few studies have focused on total quality management against procurement performance. The current research explored how managers' lived experiences about the phenomenon understudy influenced procurement performance in petroleum producing companies.

Critical factors were quality-related issues of procured materials for project and facility maintenance, and total quality management practices (Heine et al., 2016), which needed progressive attention, action, and effective procurement performance outcomes. Numerous studies showed that different total quality management practices influenced procurement performance, such as costs, lead-time, quantity, etc. Still, none conclusively addressed the causes of the reoccurrence of quality-related issues despite total quality management principles in organizations. Additionally, no studies adopted the methodology of managers' lived experiences about total quality management practices related to procurement performance.

Carstea et al. (2014) explored quality management in the procurement and management of material resources to underscore that the procurement process and material resources management directly influenced the quality of final products and organizational performance. The authors argued that the procurement process, material resources management, and supplier relationships influenced the quality of the final product and, in turn, influenced the organization's effectiveness and efficiency. Quality has turned into an influential factor in the competitive struggle (Heine et al., 2016). PM may strike a balance between customer needs and the resources of material available to function efficiently and effectively in a planned change. From a quality management-oriented approach, Carstea et al. (2014) suggested that management should manage quality processes to carry out business effectively and efficiently.

Chepkech (2014) explored the influence of total management practices related to Kenya's performance, which is the same as Nigeria. Top management commitment,

customer focus, and employee involvement influenced organizational performance (Bakotić & Rogošić, 2017). As prices are exposed to ever-increasing pressure, competitiveness shifts from the competition of price to quality (Ehi & Asiodu-Otughwor, 2015; Hair, 2017). Quality as procurement performance could be achieved to reduce the reorder of materials or rework services (Sahoo, 2018).

To attain customers' growing demands, organizations concentrate on their struggles and management strategies to reach these requirements through continuous improvement of organization and planned change (Chepkech, 2014; Huang et al., 2019). The procurement process and materials resources management play an essential role in ensuring better procurement performance, material, and service regarding quality (Huang et al., 2019). Supplied materials' quality controlled the quality of the final products.

In compliance with ISO 9001:2008, it is a compulsory requirement to keep the total quality management practices such as procurement and material resource management processes under control (Drosos et al., 2017; ISO, 2015), to achieve good quality in procured materials for project construction and oilfield maintenance. Petroleum producing organizations may realize justifiable achievement by instigating a system of quality management planned to improve performance continually, according to the standards of ISO 9000, and ISO 9000: 2005, ISO 9001: 2008, ISO 9004: 2009. Supporting the quality management system, Farinha et al. (2016) and Drosos et al. (2017) argued that quality management system targets rationalizing the processes, lowering costs, adding value, and enhancing compliance to customer need per quality performance.

Aquilani et al. (2017) explored the total quality management critical success factors in organizations. They reported that organizations with a high level of quality management practices implementation outpaced those with low-level employment of total quality management practices. Researchers such as Alonso-Almeida et al. (2015) argued that employee satisfaction and customer satisfaction influenced business efficiency and performance. Quality improvement in procured materials is of interest in the current study and was not addressed.

Alonso-Almeida et al. (2015) supported that customer satisfaction has a positive influence on quality management and maybe because total quality management practices may encourage repeat purchasing, decrease complaints, and improve service quality. Alonso-Almeida et al. (2015) examined this connectivity between total quality management practices and performance using regression analysis and modeling the structural equation, which is different from the current research methodology. They focused on business performance in terms of financial and operational outcomes from primary data.

Macharia and Mwangangi (2016) explored the influence of total quality management practices on Kenya's procurement performance, which are the same as in Nigeria. Product quality, customer focus, training, and PM are total quality management principles that may influence the procurement performance of a telecommunication company in Kenya (Macharia & Mwangangi, 2016). Procurement performance includes cost reduction, timely delivery, and customer satisfaction (Macharia & Mwangangi, 2016, p. 17; Nguyen & Nagase, 2019). The authors did not include quality management

in the performance but suggested that future studies be carried out to have quality performance. In their conclusions, Macharia and Mwangangi (2016) proposed that the implementations of those total quality management practices not being effectively practiced may be studied to improve procurement performance.

With a descriptive research design to study the influence of total quality management practices on performance, the targeted populations were only Safaricom Kenya Company Limited (Macharia & Mwangangi, 2016). Data collection was via stratified random sampling of the workforce. The top and middle line and management staff, acquisition procurement, and planning were the sample frame for answering questionnaires regarding total quality practices and procurement performance. The current study used semi-structured interviews to perform real-time data collection of managers' lived experiences for a significant planned change of the procurement function, based on interpreted meanings. Product quality has a strong influence on procurement performance (Gherardini et al., 2017). Customer focus, PM, and training via total quality management are correlated positively to procurement performance (Macharia & Mwangangi, 2016; Nguyen & Nagase, 2019).

Employment of quality function deployment is needed (Macharia & Mwangangi, 2016). The quality functional organization could cause quality systems to be implemented on customers' needs and exceed the expectations of customers (p. 31). Muvunyi and Mulyungi (2018) suggested that not meeting customers' expectations in terms of quality could make organizations develop a problem of poor customer relations and customer loss. Companies need to contribute to creating a system of a quality award

to improve performance (Nguyen & Nagase, 2019). For example, subscription to ISO certification helped organizations establish all the measures and practice of total quality management as per the highest level (Barton, 2017; Drosos et al., 2017; Macharia & Mwangangi, 2016).

Efforts to improve quality should be respected (Macharia & Mwangangi, 2016). Organizations need to develop a system for thankfulness and acknowledgment of quality efforts to motivate employees to work effectively and efficiently to improve products and services (Muvunyi & Mulyungi, 2018). To prevent production downtime, petroleum producing companies may procure modern materials/equipment based on standard specifications to avoid quality-related issues such as part number issues, dimension deviations, etc. and reduce production costs.

Additionally, high production costs could contribute to the high pricing of facility maintenance items, and quality needs to be maintained to prevent technical services and procurement overhead costs. One way to maintain and improve quality is to build trust among employees for teamwork improvement (Bourini et al., 2019). Teamwork boosts performance and improves employee participation, which is crucial to total quality management practice to advance procurement performance.

There was a gap regarding the total quality management practices and procurement performance regarding the quality of materials. Workforces need to share quality management ideas to aid in improving performance. The preliminary structural block in managing quality defined what a high-quality version is (Hackman & Wageman, 2015), to focus and reveal why quality issues occurred and the mitigation factors.

Leadership is essential in total quality management (Daft & Lane, 2018; Sainis et al., 2019) for a planned change in the procurement functions. Leadership conceptualization related to total quality management needs to be inclusive of lived experiences that managers and employees both use to strategize the mitigation of quality issues and planned procurement change (Hackman & Wageman, 2015; Sahoo, 2018; Sainis et al., 2019).

Muvunyi and Mulyungi (2018) studied the effect of adopting total quality management on a manufacturing company's procurement performance in Rwanda. The total quality management practices include PM, leadership, knowledge management, and their influence on procurement performance (Muvunyi & Mulyungi, 2018). Supplier sourcing and cost-effectiveness were the procurement performance variables and measures studied. Researchers did not include quality improvement as a measure of procurement performance in their study. They recommended that further research should consist of the management of quality as performance.

Organizations are to do more intelligence in looking for ways to withstand and improve competitive advantage related to material quality. Fighting innovative worldwide quality challenges, companies need to espouse ideas that include lean production, business reengineering, and total quality management to conduct manufacturing businesses effectively (Khoshlafz & Hekmati, 2016; Muvunyi & Mulyungi, 2018). Organizations may optimize performance in their market targets, both internally and externally. An increase in competitive pressures may cause a rise in prices, high customer expectations on service and product quality, and increased interest rates

(Sinha, Garg, & Dhall, 2016). The focus was to seek ways to improve material quality and maintain cost-effectiveness continually.

Quality of product implies the notch to which products and services attain specification and customer needs to evade reworks. Total quality management guarantees a continual quality improvement of the processes by focusing on customer needs and expectations per increased customer satisfaction and organization performance (Sadikoglu & Olcay, 2014). However, Sadikoglu and Olcay (2014) argued that mixed results exist regarding the relationship between total quality management practices and performance.

Muvunyi and Mulyungi (2018) argued that supply chain management is related to total quality management. Supply chain management decreases and streamlines the base of a supplier to develop strategic associations with suppliers, work with suppliers for meeting quality expectations, simplify suppliers' relationship management, and early involvement of suppliers in process development (Raghothamarao, 2016; Soares et al., 2017). The supplier's input improves product quality. Suppliers may establish phase one of products and services produced for a planned organizational change. Companies may adopt total quality management and participate in the process for quality to be managed or enhanced. It was also suggested that operational supply chain management practices lead to suppliers approving quality management to provide unfailing and timely high-quality materials for project construction and oilfield facility maintenance (Tsinopoulos & Mena, 2015; Yazdani et al., 2016).

According to Muvunyi and Mulyungi (2018), total quality management is a suitable explanation to stay competitive in the global market that is ever aggressive. Customer behavioral changes and competition increases from organizations developed persistence quality issues in manufacturing firms and lead to the delivery of materials with non-conformities. Non-conformities in delivered materials arose from effects of ignorance of quality, system failures, untrained staff, delivery delays, and low product designs (Muvunyi & Mulyungi, 2018).

Significant adoption of total quality management practices helped companies prepare management for planned change (Schachter, 2017; Sayyad, 2017). The complete procurement performance is dependent on its okay positioning in direction to aid the organization. Mismanagement of the procurement performance could jeopardize the procurement and the total quality management processes, and lead to inefficiencies and poor-quality performance. Inefficiencies in the total quality management practices resulted in low-quality activity, poor quality control, and system failure (Gumo et al., 2018).

Additionally, Muvunyi and Mulyungi (2018) argued that not recognizing corporate business paradigms changed the organization's procurement practices, leading to reduced performance. If companies' paradigms are known, a planned change could be useful (Packard, 2013; Sayyad, 2017). Procurement management became a more interested area to manage quality, wastes, and costs conspicuously. Procurement management results in stakeholders' generation of values and high customer satisfaction (Nguyen & Nagase, 2019; Shafiq et al., 2019).

Shafiq et al. (2019) noted that organizations are challenged by the market's dynamic and competitive setting. Companies do many things to continue their role of leadership in their organizations. Total quality management documentation, such as work instructions, procedures, and quality plans in organizations, may not essentially replicate the occurrence of operational policies and practices required to ensure a quality management procedure. Quality management offers customer satisfaction (Nguyen & Nagase, 2019), which improved procurement performance. Lack of knowledge in quality management causes reduced performance.

In their study, Muvunyi and Mulyungi (2018) established that "adopting total quality management, contributed to the procurement performance (supplier sourcing and cost effectiveness)" (p. 157). They noted connectivity between the adoption of total quality management (leadership, knowledge management, and PM) and procurement performance. Company leaderships should encourage their employees towards their objectives and goals (Jimoh et al., 2018; Oh & Kuchinke, 2017). Adherence to the information that proposes new approaches to comprehend the organization's environment is key to successful planned change on an integral part of the organization, such as procurement function. Yusr et al. (2017) suggested that top management of organizations improved innovation's capacity via the power of knowledge.

Sadikoglu and Olcay (2014) argued that total quality management practice might lead to a planned organizational change or a change in the firm's integral part. Performance defined as the dependent variable in their study includes operational, inventory management, employee, innovation, social responsibility, customer results,

market, and financial performance (Farish et al., 2017; Sadikoglu & Olcay, 2014; Zeng et al., 2016). Overall total quality management practices include leadership, knowledge management and PM, training, customer focus, and strategic quality planning (Bryson et al., 2018; Sadikoglu & Olcay, 2014). This current study explored the causes of the persistence of quality-related issues in procured materials, despite substantial financial outlay in implementing total quality management practices in the company.

In alliance with many types of research, Sadikoglu and Olcay (2014) reiterated that quality management practices embrace the diverse approaches organization and its employees trailed to ensure customers' highest level of satisfaction in service or quality product. Stakeholders' and every member's involvement are necessary (Sainis et al., 2016). Eskandarian et al. (2016) suggested that total quality management may decrease costs all through a firm, particularly in field service, rework, and scrap when applied repetitively. Emphasis on total quality management is an improvement of quality inside a process, instead of quality inspection into a process (Kihiu, 2016).

Top management's commitment to and participation in total quality management practices are success factors for quality management (Vimal & Sharma, 2017). The outcome of managers' lived experiences demonstrated a planned change in the procurement function. Managers proved additional leadership than out-of-date management behaviors to enhance employees' quality activities awareness in the adoption of total quality management and principles related to procurement performance (Oh & Kuchinke, 2017).

Sadikoglu and Olcay (2014) argued that for employees to acquire accurate, consistent, reliable, timely, and essential information and data for effective and efficient operations, companies should practice knowledge and PM. With precise information, the anticipated benefits of total quality management practices could be realized. PM practices entail activities, but not behavioral actions. Practices of PM mean a proactive and preventive method to the management of quality to moderate differences in the process and improve the product quality (Mambanda et al., 2017).

Sadikoglu and Olcay (2014) suggested that the process and knowledge management's successful practices monitored quality data for effective PM. Effective management of the process improves inventory and purchases material's turnover rate. Process errors could be thought-out and rectified on time if the process is monitored effectively (Schachter, 2017). Periodic control of the methods and data monitoring improved quality continually and aid planned change activities in the procurement function. The quality of procured materials is enhanced with the practical process and knowledge management designs in companies.

As highlighted by other total quality practices studies, Sadikoglu and Olcay (2014) concurred that companies could offer essential training to every employee for preparation for planned change and improvement of employee competences to achieve their tasks. Companies achieved success in their planned change activities related to quality as they practiced operative training in quality improvement and management.

Effective learning and knowledge capability of workforces offered quality management sustainability (Basheer et al., 2019) in petroleum producing companies.

Learning organizations may acclimatize swiftly to the planned changes and advance exclusive behavior, which differentiates them from organizations and enables them to acquire improved outcomes. Quality management is the responsibility of organizations (Sadikoglu & Olcay, 2014), but employees need to be trained (Yu, Park & Hong, 2020) based on training needs. Effective training practices by companies ensure the employees know the company's structure and the industry and are prepared for any planned change for quality improvement. Muvunyi and Mulyungi (2018) suggested that training employees effectively improved motivation, employee loyalty to the organization, and work performance. For example, if a workforce is trained in producing or manufacturing unfailing and high-quality services and products, his production involvement would be more prolific (Sadikoglu & Olcay, 2014) and improves performance. Therefore, the satisfaction of the customer could increase, and complaints from the customer reduces.

Sadikoglu and Olcay (2014) further suggested that supplier quality management, customer focus, and strategic quality planning influenced procurement performance. To ensure quality improvement, companies need to reduce and streamline supplier base, improve suppliers' strategic alliances, meet suppliers' expectations (Bryson et al., 2018). The company should allow for early supplier's participation in procuring materials (Al-Damen, 2017; Revilla & Knoppen, 2015). For instance, instead of involving many suppliers in a call for tender, it was better to work with the OEM based on the general product specification and design to ensure a fit-for-purpose product.

Wu (2015) focused on the influence of quality culture on total quality management and performance. Quality culture in organizations positively influenced

planned change in procurement function and quality performances. Quality is precarious to satisfied customers. Companies retain their loyalty to continue to procure quality materials or services from customers in the future. Reduced quality-related issues in procured materials improves procurement performance. There are long-term profitability and revenue with quality products (Hebbar & Mathew, 2017). Companies maintain higher prices with quality products. Hebbar and Mathew (2017) argued that quality cultural practices might be taken for granted, but it summarizes its ideologies. Quality culture related to total quality management holds companies together (Valmohammadi & Roshanzamir, 2015). For instance, organizations that do not have quality culture may have product or service quality issues (Arditi et al., 2017). If organizations possess a quality culture, their operational processes, including the procurement function, may positively influence performance.

The elements of quality culture are antecedents of quality management practices of procured materials for project construction (Eniola & Olorunleke et al., 2018). Quality culture is critical for quality management to produce a considerable progressive influence on procurement performance (quality performance). Wu (2015) argued that quality culture has a chain effect, and quality management is system work. For instance, if a process or procedure to implement a task breaks as per the chain, this distortion could result in a quality problem.

One generally mentioned problem in the quality practices enactment is resistance to cultural change (Gambi et al., 2015; Wu, 2015). Organizations that implement total quality management practices in their processes could strive to pay attention to it because

any planned change could depend on it (Packard, 2013). While the importance of total quality management practices to procurement performance has been recognized in recent literature, little is known about how total quality management practices influence continuous quality-related issues in procured materials (TOTAL Yearly Report, 2017). Companies with persistence quality issues may build quality advantage instead of cost (Gorondutse & Abdullah, 2016).

The reason for the implementation of total quality management practices in organizations are to improve production line capacity, the customer satisfaction, productivity, product quality, employee performance (Ozdal & Oyebamiji; 2018; Ongwae et al., 2018), competitive stance, market share, and quality of work-life (García-Bernal & Ramírez-Alesón, 2015; Lee et al., 2015; Ramlawati & Putra, 2018). Muvunyi and Mulyungi (2018) suggested total quality management practices implementation to reduce downtime in production development, turnover of employees, delivery lead times, cost, work in process, complaints, and inventory wastes.

Also, Barnes et al. (2019) disintegrated quality management practice into three methods: quality planning, quality assurance, and quality control. The predominant of these three practices is the continuous improvement concept, which is the plan-do-check-act improvements in procured materials for project constructions. For organizations to ensure quality planning, assurance, and control of produced surfactants, quality assurance, and control (QAQC) programs should be designed and implemented. For example, the Shell Petroleum Development Company (SPDC) applied the process of QAQC for concentrate of surfactant-blend with 60% and 20% active matter (high/low)

for process illustration. With QAQC definitions, Barnes et al. (2019) defined a clear framework to upscale from laboratory to an enhanced production with precise general specifications. Program-dependent experiments in the laboratory could aid in unambiguous decisions.

Table 3 comprises information regarding related studies about total quality management practices and procurement performance that were reviewed. The table explains the methodologies different researchers used to show the influence of total quality management practices on performance with the advice of expanding the phenomenon under study.

Table 3

Summary of Studies Carried Out in Multifaced Locations About Total Quality Management Practices and Performance

Researcher	Population	Study location	Methodology	Purpose
Carstea, Paun, and Paun (2014)	Proceedings of the 7th international management conference	Romania	Qualitative interview	How can quality management in procurement and material resources management be established?
Chepkech (2014)	Population was 421 comprising Head of departments and tutors in the tertiary institutions within Uasin Gishu County	Kenya	Explanatory research design.	What is the influence of TQM practices (top management commitment, customer focus, and employee involvement performance?
Macharia and Mwangangi (2016)	92 employees drawn from various departments of the organization	Kenya	Descriptive research design	What is the influence of TQM practices on procurement performance in telecommunication industry in Kenya?
Muvunyi and Mulyungi (2018)	82 employees of BRALIRWA Ltd and was selected by using purposive sampling techniques from a targeted population of 82 employees from departments of Human resources, procurement, marketing, production, and finance.	Kigali Rwanda	Descriptive research design	To what extent does process management, leadership, and knowledge management affect procurement performance of BRALIRWA Ltd?

Researcher	Population	Study location	Methodology	Purpose
Sadikoglu and Olcay (2014)	242 usable questionnaires, with a satisfactory response rate of 48.4 percent from Turkish Quality Association and the firms located in the Kocaeli-Gebze Organized Industrial Zone	Turkey	Cross-sectional survey	Finding the impact of TQM practices (Leadership, knowledge and process management, training, customer focus etc.) on various firm performances
Wu (2015)	Data was collected from 397 Chinese manufacturing firms.	China	Structural equation model.	How does nurturing of quality culture in a firm influence quality performance.
Kihiu (2016)	Sample size of 30 Saccos was randomly selected from a total of 35 Saccos accredited by the SASRA in Kiambu County.	Kiambu sub country, Kenya	Descriptive technique	Establishing the influence of total quality management practices on the performance of SACCOs in Kiambu Sub County
Muzayen (2018)	63 employees drawn from three Islamic banks, (Syrian International Islamic Bank SIIB, Baraka BankandSham Bank) in the upper and middle management levels	Damascus	Questionnaire	What is the impact of TQM practices (employees' involvement and customer focus) on performance (financial, client, and internal operations)
Anam Iqbal, A., & Asrar-ul-Haq, M. (2017)	2300 employees drawn from registered software houses in Punjab province of Pakistan and Islamabad (capital territory)	Pakistan	uses 'positivism approach' as it includes the confirmatory verification of different experiences rather intuitive approach	What is the relationship between Total Quality Management (TQM) practices and employee performance in dynamic technological sector

Researcher	Population	Study location	Methodology	Purpose
Tarı, Moliner, Ortega, Lo´pez-Gamero and Azorı´n (2018)	Survey data from 3- to 5-star individual hotel establishments, including independent and chain-affiliated hotels	Spain	Structured questionnaire	Does quality management improve performance or vice versa?
Vimal Kumar, R.R.K. Sharma, (2017)	Data drawn from a survey of 111 firms in India	India	Survey	What are critical success factors influencing the successful TQM implementation for firms with different strategic orientation
Qasrawi, Almahamid, and Qasrawi (2017)	477 questionnaires were valid for analysis	Jordan	Survey instrument	What is the impact of total quality management (TQM) practices (leadership, strategic planning, customer focus, teamwork, process management, information, and analysis) on performance in Jordanian telecommunications companies
Sinha, Garg, and Dhall (2016)	Survey data collected from quality heads of 120 Auto component SMEs in India	India	Descriptive and correlation analysis	What is the influence of application of TQM principles (Process Approach, Mutually Beneficial Supplier Relationship, and Factual Approach to Decision-Making) on the performance of Indian auto component SMEs?
Amin, Aldakhil, Wu, Rezaei, and Cobanoglu (2017)	625 questionnaires were distributed randomly to both employees and managers.	Malaysia	Judgmental sampling technique	The structural relationships between total quality management, performance, and employee satisfaction
Soares, Soltani and Liao (2017)	Collected 325 questionnaires from a sample of manufacturing companies in UK.	United Kingdom	Multi-item scale Web-based survey	Investigate performance impact of supply chain quality management (SCQM) practices on quality

Researcher	Population	Study location	Methodology	Purpose
Jimoh, Oyewobi, Isa, and Waziri (2018)	One hundred and twenty-eight valid questionnaires from well-structured questionnaires that were self-administered to 155 medium- and large-sized construction companies	Nigeria	Sequential mixed methods	To examine influence of TQM practices and strategies for continuous improvement on different measures of performance among large- and medium-sized construction companies in the Nigerian construction industry
Yazdani et al (2016)	191 questionnaires sent to employees of automobile part manufacturing and suppliers' plants	Iran	Confirmatory Factor Analysis	Determine the correlations between TQM and organizational learning in the context of automobile part manufacturing and suppliers of Iran
Ngambi and Nkemkiafu (2015)	Data were drawn from 30 manufacturing firms in Cameroon. Questionnaires to total of 300 employees and 100 managers working in the area of TQM	Cameroon	Multiple linear regression	to explore the degree of effectiveness of TQM practices in performance
Androwis, Sweis, Tarhini, Moarefi, and Mahmood (2018)	160 questionnaires were distributed to 28 companies	Jordan	Exploratory factor analysis; Multiple linear regression; Correlation analysis	To examine the relationship between TQM practices and the construction chemicals firms' performance

Gap in the Literature

The literature reviewed falls short of addressing how petroleum producing companies could address persistent quality-related issues in procured materials despite the existence of total quality management practices related to procurement performance. None of the literature discussed managers' lived experiences in the context of quality-related issues in procured materials for project construction, oilfield facility maintenance, and stock management. Macharia and Mwangangi (2016) stated that "efforts must be made to implement those total quality management practices which are not being effectively practiced, to improve on procurement performance as per quality" (p. 31). Quality functional deployment could allow quality systems to be made in organizations, to reduce ongoing quality-related issues and exceed customers' expectations (Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018).

Lived Experiences of Managers and Planned Organizational Change

Exploring the lived experiences of managers regarding total quality management practices in petroleum producing companies related to procurement performance could be a suitable approach for a planned organizational change and continuous improvement of the quality of procured materials as well as for remaining competitive in an ever-aggressive global market (Albertazzi, 2018; Muvunyi & Mulyungi, 2018). The procured materials such as bulk valves, blind flanges, piping and fittings, steel structures, and electrical and instrument cables have quality-related issues in a petroleum producing company (TOTAL Yearly Report, 2017). The interpreted meanings from lived

experience may be used as a planned change tool in the organization or a part of the organization (procurement system) to improve performance.

According to Barton (2017), lived experiences represent choices and experiences of managers in the companies over the years. Lived experiences are a representation of various acquired knowledge by managers from quality practices related to procurement performance. Managers told stories about the phenomenon under study to mitigate ongoing quality issues in project and oilfield maintenance materials. Storytelling was used as a tool to narrate lived experiences and initiate a planned change for continuous improvement of quality.

According to Wilhelm Dilthey's philosophy, lived experiences forms human science. Human science is essentially dissimilar from the natural sciences (scientific experiences) (Albertazzi, 2018). All lived experiences have both subjective and objective components, and the researcher needs to comprehend all facets of it.

Lived experience was the focal object of this study. The goal was not to understand the managers' lived experiences as a fact; instead, the goal was to determine the reasonable meaning of such managers' experiences regarding total quality management practices related to procurement performances. The lived experiences being portrayed in this study was the recollective lived experiences, where manager's experiences were reflected on after managers had lived or completed the experiences and not about reflecting on the experiences managers are currently living through (Bynum & Varpio, 2017; Marshall & Rossman, 2011).

In this study, there was a comprehension of the most profound deliberation of the manager's lived experiences regarding the phenomenon under study. Petroleum producing companies' managers expressed themselves and their lived experiences through stories (Moran, 2018; Van Manen, 2014). The expression was through the way deemed necessary by them without any form of persecution or distortion. Using the analysis of phenomenology reveals the essence of exploring the lived experiences of managers and permitting the participants to describe their lived experiences (Gill, 2015; Moran, 2018; Neubauer et al. 2019) for a planned organization change in the procurement part.

Summary and Conclusions

The total quality management practice literature is significant, multifaceted, and ever developing with novel ideas and concepts. There is an elementary unanimity about reasons for total quality management practices, and that is to reduce rework, downtime in production, work in process, turnover of employees, delivery lead times, cost, complaints, quality issues, and inventory wastes (Carstea et al., 2014; Chepkech, 2014; Kihiu, 2016; Muvunyi & Mulyungi, 2018; Sadikoglu & Olcay, 2014; Wu, 2015; Ngambi & Nkemkiafu, 2015; TOTAL, 2017). Companies could make efforts to implement those total quality management practices which are not being effectively practiced, to continuously improve quality issues related to procurement performance (Macharia & Mwangangi, 2016).

It was underscored that the procurement process's quality management and material resources directly influenced final product quality and organizational

performance (Carstea et al., 2014). Top management involvement in the quality process improves organizational performance. Customer focus and employee involvement influence organizational performance (Chepkech, 2014). Macharia and Mwangangi (2016) listed customer focus, training, and PM as quality management principles that influenced procurement performance in the telecommunication industry. Researchers emphasized the need to exercise efforts to implement those management practices in the area of study to improve procurement performance and hence the need for this study.

Muvunyi and Mulyungi (2018) had concentrated on how the adoption of total quality management influenced procurement performance in the manufacturing sector. Leadership, people involvement, and PM could affect procurement performance.

Researchers highlighted the reasons for the barriers to quality management practices, and these impediments have caused downtime in production activities, maintenance activities, and project constructions (Sadikoglu & Olcay, 2014). Inadequate attention given to total quality management practices lead to failure in procuring technical materials for projects and field facility maintenances. Quality culture influenced performance, as highlighted by Wu (2015). Organizational culture could influence planned change for the effective and efficient procurement process. Ngambi and Nkemkiafu (2015)'s wide-ranging list of management practices included the components identified by Chepkech (2014), Macharia and Mwangangi (2016), and Muvunyi and Mulyungi (2018).

Even though the quality works by different researchers, none detected the causes of the continuous rise of quality-related issues in procured technical materials and the

need to explore the lived experience of people in the petroleum industry. In Chapter 3, I discussed the research design and rationale, the researcher's roles, methodology, and trustworthiness issues.

Chapter 3: Research Method

The purpose of this phenomenological qualitative study was to explore the managers' perceptions or lived experiences in petroleum producing companies about total quality management practices connected to procurement performance. I aimed to understand the manager's experiences about total quality management practices related to procurement performance. The intent was to interpret meaning from the collected data. Exploring managers' lived experiences regarding total quality management practices was an opportunity for them to articulate and develop more awareness of themselves. The hermeneutic phenomenological model of van Manen (2014) was applied to gather managers' lived experiences. Managers' perspectives could lead to management's actions for a planned organizational change and continuous improvement (Galambos et al., 2005; Packard, 2013) of procurement performance, such as quality and the process.

I sought to elucidate participants' lived experiences regarding total quality management practices. Managers provided a rich, thick explanation of their perspectives and lived experiences that they use to develop a robust planned change process for improved procurement quality. Additionally, according to van Manen (2014) and Yanchar (2015), participants' enormous, rich, and elaborate explanations are required to deliver the perspectives or lived experiences in an exploration of total quality management practices related to procurement performance. This chapter comprises the study's methodology, the researcher's role, the composition of the sample and the sample size, and the guide to the semistructured interviews. It contains the procedures for the collection and analysis of data. The chapter highlights the dependability, confirmability,

transferability, and credibility methods. The chapter ends with the management of ethical issues, description, and participant protection during the study.

Research Design and Rationale

This study's research question was as follows:

Overarching question: What are the lived experiences of managers in the petroleum industry or their supply chain actors in using total quality management practices related to procurement performance?

Subquestion 1: What are the experiences in using total quality management practices in improving the quality of delivered materials?

Subquestion 2: What are managers' experiences in the petroleum industry or their supply chain actors in influencing the planned change process for improved quality of procured materials?

The underpinning for this study was the lived experiences of participants. Individuals provided these memoirs through the vehicle of stories or storytelling about the phenomenon (see Neubauer et al. 2019). Researchers make sense of these perceptions or lived experiences stories (Colville et al., 2016; Ito & Inoharab, 2015). Thus, these memoirs become a representation of each participant's ideas or know-how, which may initiate a planned organizational change in procurement functions.

Exploring participants' experiences can help researchers recommend how the lived experiences influenced the participants’ selections about total quality management practices for a planned organizational change and improved procured materials quality continuously. Participants selected for this study were the managers who were previous

or current petroleum producing industry employees. Attainment to the level of a manager in the contract, procurement, and engineering sections of the petroleum industry implies some level of know-how of management practices that mitigated quality-related issues in project construction and oilfield facility maintenance materials.

Many researchers have explored the influences of management practices (Carstea et al., 2014; Chepkech, 2014; Kihiu, 2016; Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018; Ngambi & Nkemkiafu, 2015; Sadikoglu & Olcay, 2014; TOTAL, 2017; Wu, 2015) on procurement performance. These researchers used quantitative methods to study the phenomenon, whereas in the current study, I adopted a qualitative approach. The research design of this study as phenomenology was appropriate for studying the lived experiences of participants.

Research Design

The research method used in this study was the qualitative method, and the design was interpretive phenomenology. A qualitative methodology is an approach that gathers nonnumerical data (Green & Schellenberg, 2018; Marshall & Rossman, 2014; Smith, 2015). The qualitative method focuses on collecting data through conversational and open-ended communications. This research method was a good fit for this study as initial in-depth questions and probing are asked as needed regarding the manager's lived experiences (see Berger, 2015; Greener, 2008). I sought to know managers' experiences about total quality management practices related to procurement performance. The intent was to interpret meaning from the collected data. The results of qualitative methods are descriptive and interpretive (see Moustakas, 1994; van Manen, 2014).

Qualitative research designs are suitable for studies that address human beings' experiences, such as participants' experiences (Churchill, 2018; Totawar & Prasad, 2016). People with lived experiences of management practices tell stories regarding the phenomenon (Given, 2008; Neubauer et al. 2019), leading to a planned change initiative. Phenomenology epitomizes a chosen method of human experiences by not explaining why human beings experience a phenomenon differently (Anosike et al., 2016; Gill, 2014).

My focus in this study was on the experiences the study participants had to improve persistent quality problems and positively influence procurement performance. The descriptions and explanations participants provided about the management principles influenced a planned change strategy in the procurement functions for continuous quality improvement.

Since the early 1920s, phenomenology has changed. Husserl in 1923 intended to develop a philosophy and psychology that shifted from science and scientific knowledge and moved back to the things themselves to know the necessary structures of knowledge. Anosike et al. (2016), Moustakas (1994), and van Manen (2014) noted that Husserl was recognized with phenomenology conception as a method and a philosophy. Husserl continuously reviewed the phenomenological approach throughout his life to proffer some uneasiness to scholarly practitioners looking for an easy way. Phenomenology is referred to as a tradition of traditions and is applied in diverse ways.

Therefore, phenomenological detractors have contended that Husserl’s phenomenology is vague because investigators may have diverse interpretations of the

same participant's experience (Anosike et al., 2016; Moustakas, 1994; Van Manen, 2014). Still, humans are vague; hence, the phenomenological approach provided a unique methodology for collecting information that provided answers to this study's research questions.

In management's context, the values of phenomenological research method are of twofold:

> (a) phenomenological method of research permits a more general understanding of the nature of management's experience in organizations, the indispensable nature of which has escaped management research so far, and (b) it promises the framework of methodology upon which to build the foundation for more arduous theory building and empirical testing of management concepts. (Anosike et al., 2016, p. 14)

This design heightened understanding and awareness about multifaceted phenomena such as total quality management practices and management activities, as are experienced in the petroleum industry.

Researchers have conducted phenomenological studies in many ways. Giorgi's (2009) research led to the emergence of modern phenomenological research. He advanced diverse approaches, defined procedures used, and developed his understanding of the principle of lived experiences. Giorgi addressed reliability and validity in qualitative studies and thought it necessary to be reflexive and vivid in methodology approaches. Van Manen (2014) defined phenomenology as heading towards lived experience and interpreting hermeneutics (i.e., life texts). Van Manen's approach to

phenomenology refers to a strong interaction among activities of six types of research. In his practice, the researcher becomes the phenomenon and reveals the critical theme of nature's lived experience.

Next, the researcher inscribes the phenomenon description (Yanchar, 2015). Van Manen (2014) combined both story and interpretive processes to interpret and mediate between diverse meanings of experience. Moustakas (1994) focused less on interpretations and more on descriptions of participants' lived experiences. Moustakas concentrated on Husserl's (1906) epoche and bracketing concepts to acquire a new perspective of the phenomenon under study. Van Manen's combination of descriptive and interpretive components heightened the suitability of choosing this approach for the current study. The participants' experiences that were obtained in the interview scripts form provided an organizational planned change tool and viewpoint of discovering opportunities for positive social change.

The phenomenological approach requires eliciting, recording, and transcribing participant materials (Alase, 2017; Elliot, 2018). The language managers used to describe their lived experiences and how they told stories regarding their experiences was precarious in interpreting managers' experiences of total quality management related to procurement performance. Van Manen (2014) explained that the interviews portray lived experiences as wordings. I interpreted these wordings by reflecting on the word meaning and connectivity of the phrase. Interpretations of the texts revealed the participants' lived experiences that reverberate with the reader. Alase (2017) noted that this reverberation's motive is that the reader, researcher, and participants are part of the worldview. Van

Manen's (2014) phenomenological approach based on descriptive and interpretive elements was the most reasonable approach for collecting and exploring participants' lived experiences related to this study.

Research Rationale

Moustakas (1994) focused less on interpretations and more on descriptions of participants' lived experiences. Van Manen (2014) focused more on both description and an interpretive process for interpreting and mediation between diverse meanings of lived experiences. As a scholarly practitioner to effect social change, van Manen's phenomenological research approach is pragmatic. Participants share their lived experiences through phenomenology. The phenomenological approach by van Manen allowed me to produce and examine the participants' lived experiences, which was in line with the data gathering mechanism used in this study.

The use of semistructured interviews to collect data was critical to this study. Communication is the art of persuasion. The participant's language reflects a perceptive construction, as suggested by van Manen (2014). For instance, in a planned change framework, participants' lived experiences offer the strategy for the five change principles of organization, as illustrated in the conceptual framework through Galambos et al.'s (2005) principles. Telling stories about a phenomenon under study was relevant to van Manen's approach to examining the research topic.

Philosophers categorize phenomenological approaches depending on the methods applied to the phenomena. Many researchers widely group approaches to phenomenology into descriptive and interpretive (Anosike et al., 2016; Gill, 2014; Giorgi, 2009; Marshall

& Rossman, 2014; Saunders et al., 2018; Smith, 2015). For instance, methodology specialists have categorized hermeneutic phenomenology as an interpretive method (Yanchar, 2015). This approach involves an inquirer to have text reading and interpreting skills (Anosike et al., 2016; Gill, 2014) because the inquirer makes meaning of the participants' words or how participants have experienced the phenomenon under investigation. Using text readings and interpreting skills to make meaning of participants' lived experiences formed the rationale for this study. Inquirers can use different approaches to explore the experiences of human beings.

The different approaches qualitative researchers could use to explore people's lived experiences include narrative research, case study, phenomenology, ethnography, and grounded theory. Occasionally, researchers can use the approach of mixed methods of inquiry to explore a phenomenon. For instance, Barton (2017) used diverse methods, semistructured interviews, qualitative methods, and physical measures to investigate employee lived experiences and initiative success in Arkansas quality award recipient organizations. Park and Park (2016) contended that there is no absolute rule for research design development. Instead, the researcher defines the appropriate research design as the blueprint for the sampling method, data collection, measurement, and analysis to effectively address the research problem (Hih-Pei & Yan-Yi, 2017; Patton, 2015; Whitehead & Whitehead, 2016). In this study, ethnography, case study, the narrative method, and the phenomenological approach could have been probable methods. Patton's (2015) qualitative research and evaluation methods directed my assessment of these potential qualitative methods for this study commencing with ethnography.

This study was conducted over a short period of time; however, ethnography requires enough time to complete to produce full and wide-ranging accounts of diverse social phenomena. A case study could allow researchers to inquire about participants' experiences regarding a phenomenon in an organization to improve the quality problem. Numerous inquirers have used case studies to explore total quality management practices and quality issues (Carstea et al., 2014; Chepkech, 2014; Gumo et al., 2018; Kihiu, 2016; Macharia & Mwangangi, 2016; Mambanda et al., 2017; Muvunyi & Mulyungi, 2018; Sadikoglu & Olcay, 2014; Wu, 2015). Though I wanted to inquire about the lived experiences of participants in petroleum producing companies regarding the phenomenon under study, I did not possess the time needed to obtain permission from the petroleum producing companies. The phenomenology and the narrative inquiry were two potential approaches that could have been used to collect data to answer the research questions.

Inquirers have adopted narrative inquiry and phenomenology or case study to examine participants' stories in several organizational settings (Jennifer et al., 2018). Graham and Johns (2019) noted that narrative research can be used with other approaches to research. The researchers provided a convincing case for adding narrative inquiry when researching meaning of knowledge or experiences. Bruce et al. (2016) argued that narrative inquiry uses stories, family stories, autobiographies, life experience, and journals to analyze the experiences, inquire, and comprehend how participants make meaning. Allen (2017) suggested that narrative analysis "is a frame of analysis whereby researchers interpret stories that participants tell within the research context or shared in their everyday live" (p. 33). Allen focused on four elements in a narrative analysis, which

include (a) how the story is structured, (b) what functions the story serves, (c) what the information of the story is, and (d) how the action is performed to obtain considerable and significant conclusions. Additionally, Patton (2015) suggested that narrative research comprises stories, whereas lived experiences are the unit of analysis for phenomenological design. In this study, I focused on managers' lived experiences and not personal stories; therefore, the phenomenological inquiry method was selected for this study.

Research Questions

The selection of this interpretive phenomenological study design and statement of the problem informed the nature of the research questions. The research questions were used to build the semistructured interview questions to collect data from the participants.

Overarching question: What are the lived experiences of managers in the petroleum industry or their supply chain actors in using total quality management practices related to procurement performance?

Subquestion 1: What are the experiences in using total quality management practices in improving the quality of delivered materials?

Subquestion 2: What are managers' experiences in the petroleum industry or their supply chain actors in influencing the planned change process for improved quality of procured materials?

Role of the Researcher

The researcher is the instrument in a qualitative inquiry. The researcher accesses the feelings and thoughts of the participants of the study. Moustakas (1994) uses the term

'co-researcher' for participants because participants are included in the meaning of the phenomenon's essence and the researcher. Participants should be made to be aware of their status and role (Gaillet & Guglielmo, 2014; Moustakas (1994). Participants were interviewed with semistructured questions to gather data regarding their lived experiences of the phenomenon under study. Next, the collected information was organized and analyzed. Next, the results were interpreted.

A researcher should possess certain research instrument features such as (a) understand the response of participants, (b) have knowledge concerning the phenomenon, (c) know the placement of information as provided by the informant, and (d) the type of information required by the researcher (Gaillet & Guglielmo, 2014). Gaillet and Guglielmo (2014) noted that it might not be difficult for researchers who have good experience of the phenomenon to perform the research study. Being an experienced procurement manager with strong professional engineering background and experience in total quality management practices, any change in my perspective was identified.

The researcher's knowledge about the phenomenon may influence honesty concerning the informants and their information. During interviews and data analysis, the researcher's standardization as a research instrument may change (Gaillet & Guglielmo, 2014). Thoughtful journaling was used to build consciousness of any change. Van Manen (2014) noted phenomenological research must meet epoché and reflexivity conditions to be successful. It was ensured that bracketing (epoché) was performed by blocking biases and assumptions (reducing preconceptions effects) to explain the phenomenon to participants.

An attitude of reflection (reflexivity) should be evoked to offer more effective and impartial analysis and consciously acknowledging and examining the preconceptions that could brought to a qualitative study (Berger, 2015). Therefore, before the interview, all preconceptions and anticipations were recorded. Next to the semistructured interview, the responses and impressions to the informants' reactions were registered. During the analysis period, all the recordings were reviewed simultaneously with the semistructured interview materials. During the informants' recruitment (i.e., sessions for pre-interview and post-interview), the informants were prompted that the researcher's role was independent of any relationship or professional affiliation. The observations concerning the participant's behavior, body language, and tone of the voice were recorded as a participant observer. During the coronavirus pandemic, participants' interviews were conducted through online Zoom, Teams, Skype, or Freeconference.com. Next, described the study methodology.

Methodology

Participant Selection Logic

The population in this study came from petroleum producing companies and her major SCAs. This phenomenological qualitative study required recruiting individuals who have been employed by petroleum producing companies or her major suppliers between 2001 and 2019. Recruitment of participants was through employees of petroleum producing companies, and individuals connected to my network, associations of the procurement profession, project engineering, construction, contract, procurement personnel, and registered equipment suppliers and manufacturers. Individuals obviously

could make available their lived experiences about a phenomenon to make meaning of their experience (Colville et al., 2016). These populations knew total quality management practices from companies or organizations they have worked for at least five years. Experienced managers had participated in organizational planned change activities to suggest suitable solutions that may lead to continuous quality improvement of procured technical materials for project construction and oilfield facility maintenance.

Planned change may occur from management managers' lived experiences concerning total quality management related to procurement performance (Karatepe, 2015; Otokiti et al., 2018). This study explored the lived experiences of managers in the petroleum industry regarding total quality management practices connected to procurement performance.

Sampling Strategy

Purposive sampling was used as a sampling strategy for this phenomenological qualitative study. Purposive (selective) sampling epitomizes the primary method of sampling centered on the research question. It is a nonprobability sampling in which researchers depend on the researcher's judgment when selecting population members for participation in a qualitative study (Giorgi, 2009; Moustakas, 1994; Saunders et al., 2018; Van Manen, 2014).

Foley (2018) highlights that one of the purposive sampling method's weaknesses is that the inquirer needs wide-ranging knowledge to get a suitable sample. Qualitative researchers should possess extensive knowledge of the phenomenon in choosing the

sample (Whitehead & Whitehead, 2016). In this study, a purposive sample size of 12 participants collected data through semistructured interviews.

For phenomenological studies, Creswell (2014) recommended 5–25 participants, and Morse (1994) suggested at least six. These recommendations aided in estimating how many participants there were needed, but the required number of participants ultimately depended on when data saturation is reached. Data saturation in qualitative research may be realized with few or more participants (Giorgi, 2009; Moustakas, 1994; Saunders et al., 2018; Van Manen, 2014). Criteria samples may be used to confirm where informants are working. Snowball sampling was used to produce a prospective participant known as the study's potential participant.

Nonrandom sampling was not used to select participants. Purposive sampling methods was used in qualitative studies due to the researcher's interest in a phenomenon as the participant experienced it. The qualitative sampling methods are used when the participants could offer information regarding the topic of research in detail. Conversely, in a quantitative study piloted by numerical stance, there is no existence of a uniformly agreed model for determining a sample size (Patton, 2015). Patton (2015) suggested that there is no existence of rules of sample sizes for researches that adopted qualitative studies. Additionally, varied sampling approaches are used in qualitative methods, and being inductive, the identification of the actual number of sample sizes to be interviewed poses an issue.

There is no agreement on sample size requirements between inquirers who applied the same method of phenomenology in a valid study. Van Manen (2014) evaded

a suitable sample size problem. Therefore, any inquirer using Van Manen's sampling size approach may not choose a pre-accepted sample size. According to Van Manen's argument regarding the term sample, there could be generalizability of study outcome. Van Manen advised inquirers to recruit respondents who can offer a thick, rich explanation of the phenomenon under study. I recruited participants who provided rick thick description of total quality management practices. With the availability of rich lived experiences of participants, a study that provides philosophical treatment of the phenomenon under study was achieved.

Generally, qualitative researchers could adopt smaller sample sizes to study the specifics of a phenomenon under study. Saunders et al. (2018) highlighted that phrasing of research questions could determine the size of samples and sample selection criteria. For example, the research questions of a study used to comprehend a group in a locality may adopt a smaller sample size. Again, if a qualitative study's inquirers do not intend to generalize a study, a small sample size would be applicable (Giorgi, 2009).

While it is essential to determine a quality sample size that could be used to study a phenomenon, a model of a quantifiable sample size could offer researchers a qualitative study with an undeviating method for the selection of the size of the sample for the qualitative research. According to Malterud et al. (2015), qualitative researchers could adopt their sample size model to determine the acceptable, smaller sample size for their qualitative study. In their proposed model, smaller sample sizes could be suitable (a) for barely engrossed studies, (b) if respondents can offer sufficient information regarding the phenomenon under study, (c) if the qualitative study uses a well-known theory, and (d) if

the investigator can get from the participants, plentifully comprehensive information (Malterud et al., 2015). This model's application to the current study helped identified the sample size range since this study was in line with the four mentioned attributes.

Saturation

Data saturation is typical in a qualitative study. Saturation is the point in research where no new information is found in data analysis (Moustakas, 1994; Van Manen, 2014). Inquirers concurred that effective phenomenological designs could achieve saturation of data. Patton (2015) was doubtful at the point at which saturation could occur. Fusch and Ness (2015) suggested that phenomenological researchers use semistructured interviews to attain data saturation. Data saturation could lead to triangulation (Fusch & Ness, 2015). Despite the sampling size of 10 - 15 participants proposed in this study, the required number of participants depends on when data saturation is reached (Moustakas, 1994; Van Manen, 2014). Data description was achieved by following Moustakas' or Van Manen's procedure of phenomenological data analysis. Data analysis included preparing data for analysis, reducing the data phenomenologically, engaging in imaginative variation, and uncovering the experience's essence (Hycner, 1985; Moustakas, 1994; Van Manen, 2014).

The reduction technique was adopted to describe and analyze specific individuals' statements to bring out overarching themes. The participants' views and comments were not misinterpreted by using an audit trail and member checking (Moustakas, 1994; Van Manen, 2014). Efficacious phenomenology should highlight rich, thick pragmatic materials regarding the research topic (Van Manen, 2014). Enormous sample sizes may

encumber the saturation of data by depressing profound thinking on the material. Researchers may be reflexive and reflective of detailed and thick descriptions during data reviews (Harding, 2013; Hashimov, 2015; Miles et al., 2014).

Fush and Ness (2015) recommended that semistructured interviews be used to achieve or reach data saturation in phenomenological qualitative research design. Sampling could be a continuous process until no further information is realized from interview materials, meaning that there is no more new information (saturation is attained). Therefore, phenomenological researches are successful when it offers a rick and thick pragmatic materials concerning the research topic (Van Manen (2014).

Instrumentation

Qualitative data were collected through an interview guide (as shown in appendix B, p. 293) produced by researchers, audio recordings, and field notes. Alase (2017) stated that (a) the phenomenon under study is expected to be built within a setting, (b) the concept of generalization may not be an issue, and (c) it is less important to adopt a predesigned instrument if the expression of the concept's meanings and terms are locally specified. This study was in line with these criteria. Transcripts were reviewed as part of the process of data analysis for this study. Semistructured questions (appendix B, p. 293) were designed in this qualitative study to get rich, thick explanations from participants regarding the phenomenon.

An audio recording of informant responses was carried out in this study. A recording allowed the researcher to focus on capturing the field notes. Audio recordings and field note capturing may contribute to a rich, thick representative explanation (Allen,

2017). The mode of data gathering depends on the qualitative researcher to perform a productive qualitative interview. Patton (2015) reprimanded that research questions and qualitative interview questions may not be the same. Interpretive research does not commence with the analysis of data (Alase, 2017); the semistructured interview needs to produce the lifeworld or lived experience of the informant (interviewee) to enable the inquirer to place the phenomenon in the setting (Patton, 2015). The appropriate detail amount for an interview guide is not well known.

Researchers have supported an approach of a subtopic that encapsulated a few vital questions regarding each topic (Patton, 2015). Alase (2017) suggested highlighting probing questions at the end of the interviews. Saunders et al. (2018) contended that qualitative study interviewers need to adopt little comprehensive questions that could discover participants' lived experiences, values and opinions, sensory impressions, knowledge, and beliefs. Researchers have also taken qualitative interviews via a structural approach by associating the interview process to a script (Anosike et al., 2016). An interview guide that aided the interviewer sustain the interview tone was essential in this interpretive phenomenological approach.

An interpretive phenomenological approach is essential because the researcher should not be a cross-examiner (Alase, 2017; Guerrero-Castañeda et al., 2017). A well-constructed interview protocol (guide) was built, allowing the researcher to acquire elaborate descriptions centered on total quality management practices i.e., the phenomenon under study (Høffding & Martiny, 2015). Saunders et al. (2018) viewed the interview guide as a trajectory to develop an objective data development approach in a

phenomenological study. According to van Manen (2014), a real interview guide implied that the inquirer should guide the interviewee through recalling their lived experiences. Høffding and Martiny (2015) warned inquirers to evade the respondents' manipulation if inquirers decide to adopt an interview guide in the research process. In this study, an interview guide was established with open-ended questions and in a semistructured set-up. A dependable structure and approach were used for the research interviews. This interpretive phenomenological interview design inspired respondents to circulate participants' lived experiences as an integral part of the discussion.

The semistructured interview questions comprised information regarding the phenomenon under study; otherwise, the interviews may not establish useful data. The interview questions used common concepts of total quality management practices connected to procurement performance derived from the literature review. Diverse inquirers have recommended a run of the procedure (Patton, 2015). Researchers should use the participant's language to ask them to define some terms during the interview (Patton, 2015). In this study, experts in this subject were required to review the interview guide accordingly. Chapter 4 of this study comprises of the pilot study information. Qualitative data were collected from four managers and two assistant managers from petroleum producing companies, and six managers from major supply chain actors.

Pilot Study

A pilot study is a feasibility study made up of a small version of the primary research, planned methods' trial runs, or a small-scale version of the survey to guide the research plan development and provide an answer to a methodological question (Castillo-

Montoya, 2016). A pilot study was conducted to test some factors that are connected to the primary research. In this pilot study, data was collected from a few participants, and then IRB's approval was vital in this regard. This qualitative study required the conduction of a pilot study to test the credibility and dependability of the qualitative research instruments that have been developed. In uncovering unforeseen problems in this study, a pilot study was conducted with four participants.

This research study adopted a pilot study for the precise use of a dependable method with the methodology of this research. Thabane et al. (2010) defined a pilot study as an initial small-scale study conducted to appraise research feasibility, cost, opposing measures, duration, and improve upon the research study's design before carrying out the full-scale research project. Harding (2013) recommended that researchers must use pilot study to detect latent problems and lessen the danger of gathering faulty data. Therefore, a pilot study was conducted to validate the semistructured interview questions, check estimated interview time, and clarify all questions.

The research setting includes offices of petroleum producing companies and their major supply chain actors in Port Harcourt and Lagos, Nigeria, but was not practicable because of the pandemic. Interviews were planned to be performed face-to-face in offices, but because of this current COVID-19 pandemic, data were collected through Online Teams, Zoom, Skype, or Telephones from participants. Four participants were chosen to participate in the pilot study based on a purposive sampling strategy. These four individuals formed part of 12 participants sample size. These pilot research

participants were contacted verbally, by phone, email, or snowballing to obtain their commitment to participate and schedule the time of the interview for each of them.

Before the interviews, the pilot study participants were notified through email or verbally that participation in the pilot interview was voluntary, and no incentive shall be provided. It was planned to conduct this interview with each participant for approximately 30 to 60 minutes. Participants came from managers or assistant managers (heads or supervisors) in procurement, engineering, contract, health safety security, environment, and quality (HSSEQ), production, and major supply chain actors that possessed frame contracts with petroleum producing companies.

Qualitative interviews provide a rich, thick, and detailed information in comprehending the lived experiences of people. It may be challenging to carry out the qualitative interview by inexperienced researchers adequately. Pilot interviews are a part of qualitative and are valuable in the qualitative research process as it shows the major study's improvisation. The purpose of the pilot study is to make modifications to (a) criteria for selecting potential participants and (b) improving the interview guide, particularly the interview questions (Majid et al., 2017) and this study aligned with these criteria.

The criteria for selecting participants for the pilot study were based on: (a) participants had previous work experience or recent work experience with the phenomenon of total quality management practices, (b) participants have full-time or part-time positions in companies, and (c) participants have been/are direct labor contractors/suppliers or major supply chain actor in project constructions within the

petroleum producing companies. The overall intent was to perform an interview with the participants that possessed some experiences and who could state their lived experiences with total quality management practices related to quality performance (procurement performance). Harding (2013) maintained that interviews are often well-thought-out to be qualitative research's gold standard. The recruitment of participants for the pilot study commenced when the Walden University Institutional Review Board (IRB) approved the study.

Procedures for Recruitment, Participation, and Data Collection

Recruitment of participants commenced when the Walden University Institutional Review Board (IRB) approved this study. The IRB approval number (02-19-21-0397720) was included in the completed dissertation. As stated earlier, a semistructured interview protocol was developed for this study based on the questions from the pilot study.

The protocol for the semistructured interviews ensured a procedure that is constant with each interview. The design of the interview protocol aided to support this study's dependability. Semistructured interviews of approximately 30 to 60 minutes was used to gather information regarding lived experiences of the phenomenon under study from participants. Høffding and Martiny (2015) suggested that the interview process's cautious groundwork will improve the possibility of gathering valuable data.

Before meeting each respondent, a digital recorder should be provided to record the researcher's anticipations, thoughts, and preconceptions (Guerrero-Castaneda, Menezes & Ojeda-Vargas, 2017). At the starting of the meeting, each participant was briefed concerning the interview's purpose and the participant's rights. The respondents

made any clarifications concerning the interview process of the topic under study from the researcher. The participants had the chance to withdraw at any point in time from the phenomenological study. Agreement form was filled, signed, confirmed, and information on the participant's demography before asking the semistructured interview questions was ascertained.

Each of the respondents had the chance to go through the semistructured interview questions before commencing the interviews. All respondents received the interview questions and demographic questions during the confirmation of the interview meeting's time/date. The Interview Guide (appendix B, p 293) comprised the information on demography concerning years of experiences of total quality management practices related to procurement performance. The places respondent has worked with the employer were ascertained. The participant's possession of any certifications in engineering, quality, and procurement process were equally ascertained. In the research setting, face-to-face interviews with one audio recorder for the interview and another audio recorder for the participant were recorded, making two audio recorders.

The interviews could not take place at the site of the research participants. Although, due to the COVID – 19 pandemics, the data collection strategy was changed i.e., through online Microsoft Team meetings, through Skype, or Zoom. The Online Microsoft Team meeting and Skype interviews were recorded with digital recorders in case there is any recording failure within the system. The interview sequence was followed when asking the interview questions. A binder was used to record field notes. According to Høffding and Martiny (2015) and Allen (2017), efficacious interviewers

may mix recording of respondents' responses with observations. Body languages of the participants and other non-verbal indications in the online team meeting, Skype videos, and face-to-face interviews were watched and observed. Next, summaries of participants' statements using phrases and keywords were gotten, instead of capturing their responses in the field notes verbatim.

During the post-interview of the participants, the participants will be debriefed. Next, participants were given a copy of the transcript to review the summary of member experience. Next, each debriefs was recorded to obtain any anticipations, thoughts, and preconceptions concerning the digital recorder's content. The pre-interview files and the post-interview became brackets used in the next phase of data analysis. A member check was done by using the review of the transcript by the participants (Moustakas, 1994; van Manen's, 2014), to aid in supporting the credibility of this interpretive phenomenological design. The digital recorders were used to make each member check's meeting recording.

Van Manen's (2014) phenomenology is more interpretive than Moustakas' (1994) analysis, which is more descriptive (Alase, 2017; Anosike et al., 2016; Miles et al., 2014). Therefore, van Manen's (2014) phenomenology was adopted to relate the participant experience's interpretation of the participant's meaning of the experience. The transcribed interviews will be sent to the participants for further clarifications during the phases of interpretation and transcription, and to consolidate experiential questions of the participant that emerged with other participant's interviews.

Data Analysis Plan

The hermeneutic phenomenological methodology was adopted in this research. The data analysis plan was developed with literature guidelines concerning the orderliness and valuable research data interpretations. Additionally, the method used was specific to this study based on experiences drawn from the expert's knowledge.

Six data analysis stages were adopted in this study (figure 3). A continuous interpretation of the phenomenon of total quality management practices was made. There was a consistent interpretation of the research text. There were continuous testing of the pre-research assumptions concerning these management practices by comparing the study's beliefs and the research text's outcome. Any prejudices arising from my personal experience and the literature was addressed via comparison. Closeness to the participants' constructs was kept by continuously cross-checking the interpretations with the primary transcripts. Next was the breakdown of the data analysis plan for this study.

Phenomenological and hermeneutic strategies were adopted in the data analysis plan. The purpose of the phenomenological analysis of data was to "change lived experience of participants into a textual appearance of its essence – in such a way that the effect of the text was at once a reflexive re-living and a reflective appropriation of something meaningful" (van Manen, 1997, p. 36). Van Manen meant that analyzed data in phenomenology are transformed to a meaningful text for the reader to come to life with strength in its own lived experience and easily comprehend the meaning of the experience. Leavy and Saldaña (2014) viewed the text as both phenomenological research data and a product. Phenomenological researchers intend to construct human

actions, behaviors, experiences, and intentions with enlivening, suggestive text descriptions related to their lifeworld (Harding, 2013). According to van Manen (2014), "accounts of phenomenology are evocative and rich, thick explanation about the phenomenon under study, so excellently elucidated that they too may have practiced" (p. 27). The exploration and description of a phenomenon should be made forthright such that the audience who have experienced the phenomenon could perform the real analysis with the recognized themes (Ajjawi & Higgs, 2007, p. 622). Researchers should also, understand phenomenology themes as experience structures that provide a detailed, thick phenomenal description.

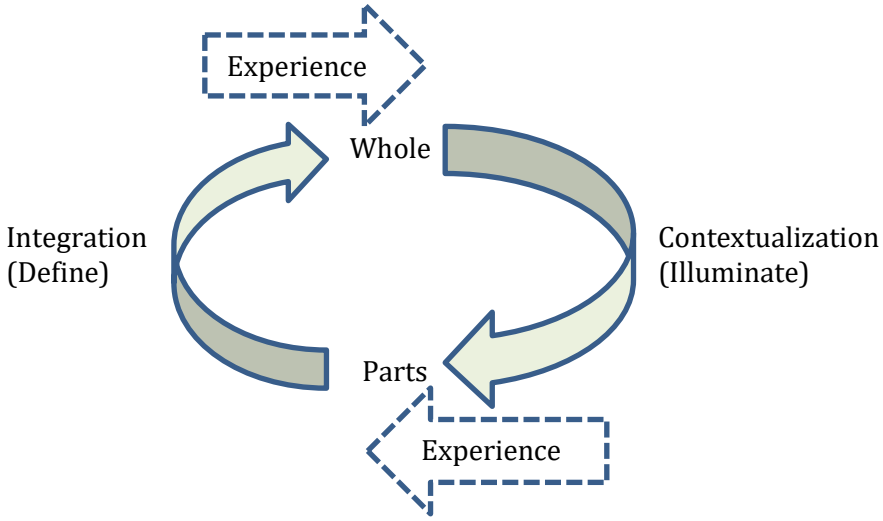
According to a phenomenological philosopher, van Manen (2014), organized thematic analysis of data methods should perform data analysis. This systematic method may provide organized documentation of participants' constructs and interpretations related to the researcher's arrangements, understandings, and constructs (van Manen, 2014).

The meaning of the hermeneutic strategy of data analysis in this study was simply an analysis method based on systematic process of interpretation. Hermeneutic analysis aids the researcher in the in-depth interpretation and understanding of meaning of the phenomenon, implying "a movement between parts (data) and whole (developing an understanding of the phenomenon under study)" (Ajjawi & Higgs, 2007, p. 622). Questions and answers through circle and dialogue was used as extracted from phenomenological literature in this study. The hermeneutic circle and dialogue process gave meaning to each other and made the data analysis iterative and circular. Openness to

the emerging questions during the study of the phenomenon was maintained in the research, and texts were permitted. As the text could be allowed to speak, the answer emerged in the text. There was the creation of the text from the data that were collected from respondents. During the dialogue process, understanding emerged between the research text and researcher per van Manen, 2014. In this instance, interpretation may be a steady merging of perception of the researcher's part and the text (Ajjawi & Higgs, 2007). Figure 3 shows the hermrutic circle (whole-part-whole).

Figure 3

Hermeneutic Circle



Notes. Adapted from **"**Using hermeneutic phenomenology to investigate how experience practitioners learn to communicate clinical reasoning" by Ajjawi, R., and Higgs, J., 2007, *The Qualitative Report, 12*(4), 612-638. (https://doi.org/10.46743/2160-3715/2007.1616)

Stage 1 of Data Analysis Plan: Immersion by Text Organization

The first stage of data analysis was immersion by text organization. The texts were constructed for each study participant using the transcripts of the interview, written exercises, and field notes. It was ensured that each respondent was familiar with the set of texts by reading and re-reading the transcripts of interviews, field notes, and written exercises. The interview audio recording, together with the field notes, were listened to repetitively. Van Manen (2014) explained that repeated listening of the transcripts' audio recording from interviews is known as immersion (in the data).

Immersion involves the engagement of the text meanings, aiming for sensemaking or initial interpretation of texts. Sensemaking or interpretation of texts enables coding (Harding, 2013). Field notes from interaction and observation with respondents were used to simplify the context's reformation for the occurrence of reasoning and communication as a vital aspect of interpretation. During the data analysis, the committee chair may read the transcript, field notes, and written segments to be acquainted with texts from interviews. This acquaintance will allow dialogue with the researcher concerning emergent coding (van Manen, 2014). Dialogue amid the researchers aided to reflect on ideas that are emerging to develop the ideas. The emerging thoughts in memos' form connected to the text's pertinent segment in NVivo software were documented.

Stage 2 of Data Analysis Plan: Understanding by Identification of Preliminary Order Constructs

Preliminary order constructs imply the ideas of the respondent's voice in phrases (own words) and denote the details of the participant's expressions (van Manen, 2014). The construct was related to total quality management practices related to procurement performance. The participants' preliminary (first) order constructs in the total quality management practices group were identified and used for coding other respondents, with continuous checking of the process for construct appropriateness. Texts were coded in NVivo for construct identification. Member checking was adopted to offer a progressive rich, thick comprehension of the participants' experiences.

Stage 3 of Data Analysis Plan: Creation of Themes and Subthemes by Identification of Constructs of Second Order

Personal knowledge was used to generate constructs of second order based on first-order construct abstractions. Computer files aided in copying the relevant files extracted from written exercises, interview transcripts, and other comments derived from the first-order constructs. A picture of the whole participant's data with each interview transcript interpretation was formed to have a rich, thick understanding of the phenomena' evolution. This grouping answered the main research questions and other sub-questions.

Stage 4 of Data Analysis Plan: Synthesis and Development of Themes

Themes were developed from the one to three analysis stages. The construct of two files were formed into a smaller number of broader themes. Clarification of the relationship between themes and sub-themes will be done by data reading and re-reading them. Stage four comprised of continual back and forth movements between texts of

research, previous analysis, and literature, part-to-whole movements as per hermeneutic circle (Ajjawi & Higgs, 2007). From this part-to-whole movement process, research phenomenon interpretation of total quality management practices related to procurement performance evolved. The detailed interpretation aided in recognizing meanings that the respondents may not have expressed. Van Manen (2014) noted that "in shaping theme's crucial quality, our supreme anxiety is to regulate themes qualities that encompass the phenomenon, else, the phenomenon will not be recognizable" (p. 107).

Van Manen implied that determining the theme's universal quality should be the researcher's concerns to find out the aspects of the theme that make the phenomenon its real nature, and without knowing the theme's quality, then the phenomenon may not be recognized. In this instance, exhaustive interpretation helped identify the meanings that could not be articulated by the participants, due to the multifaced nature of the phenomenon under study. Sub-themes and themes will be presented to Walden University to receive feedback concerning the credibility, the sub-themes and themes, and the finding's transferability.

Stage 5 of Data Analysis Plan: Phenomena Illumination and Illustration

In this stage of analysis, this literature examined for connectivity to the sub-themes, themes, and patterns recognized from the data. Likewise, the researcher looked for connectivity between principal themes for additional sustenance of theory development. Reconstruction of participants' lived experiences using my own words was based on the interrelations between themes and sub-themes for illumination and

highlighting essential findings. This stage provided feedback on the story quality. It was ensured that the built stories were authentic to the participant's lived experiences.

Stage 6 of Data Analysis Plan: Integration by Themes' Testing and Refining

This stage involved researchers' critiques and literature's final review to understand the phenomenon better. The phenomenological findings will be presented to the facility of Management at Walden University for further critiques and tests for the relevance of findings in academics and management professionals. The crucial factor in phenomenology is the language for expressing the lived experience of the participant. The text check affords the solutions for comprehending the experience (Singh et al., 2019). The hermeneutic circle signifies the analyst's movement of back and forth from a part to a whole during text examinations (Ajjawi & Higgs, 2007; Patton, 2015).

High-amplitude phenomenological researchers advocate for a whole-part-whole process describing phenomenological data analysis (Saunders et al., 2018; Thackeray, 2015; Yanchar, 2015). In this study, van Manen's (2014) data analysis guidance and plan were adopted since his phenomenological design is more interpretive, unlike Moustakas (1994)'s more descriptive designs. Patton (2015) noted that the research analyst should make a reflective meaning of the lived experiences of participants. The reflective characteristics reproduce how respondents make meaning of the experience and how their storytelling or told experiences are explained. Table 4 summarizes the data analysis stages adopted for this study.

Table 4

Summary of Data Analysis Stages for This Study

Data analysis stages	Task to be performed
1. Immersion by organization of text	• Dataset were organized into texts • Text's readings were done iteratively • Texts were preliminarily interpreted to facilitate coding
2. Comprehending	• Identification of first order constructs were done (respondents) • Data were coded with NVivo software
3. Creation of themes and sub-themes (Abstractions)	• Identification of constructs of second order were done (researcher) • Second order constructs were grouped into sub-themes
4. Theme synthesis and development	• Sub-themes were grouped into themes • Themes were further elaborated • Themes were compared across groups of sub-discipline
5. Phenomena Illumination and Illustration	• Literature was linked to the identified themes above • Interpretations were reconstructed into stories
6. Critique and integration	• I critiqued the themes with external bodies • I reported the final interpretation of the findings

Issues of Trustworthiness

Beginning a phenomenological research's trustworthiness can encompass various measures than other researches with other qualitative approaches. Phenomenological researchers have adopted different quality of phenomenological evaluation criteria (Moustakas, 1994; Patton, 2015; van Manen, 2014). Van Manen (2014) suggested about seven principles such as (a) experiential questioning, (b) detailed, thick description, (c) explanatory depth (interpretive), (d) individual thoroughness (e) strong meaning, (f) pragmatic emergent, and (g) deeper and original insight (conceptual epiphany).

This study could be valid if (a) it produces a good sense, (b) it has an understandable, detailed, thick description by the external audience, (c) it offers a thoughtful insight, (e) it incessantly concentrates on the phenomenon under study, (e) it reverberates with the audience, (f) the audience could describe their own experience using a clear language, and (g) the study can propose clarifications or new insight (van Manen, 2014). These attributes were kept in mind in conducting the study, analyzing responses from respondents, and inscriptions about participants' lived experiences or perceptions by vigorously examining the research processes, interpretations, and assumptions compared to these principles.

Thoroughness or rigor measures begin the trustworthiness of a research study. For a study to be recognized as trustworthy, researchers must establish that qualitative data analysis is carried out in a trustworthy, comprehensive, and detailed manner by using the method of recording, systemizing, and disclosure of analysis methods (Yin, 2016). A study could have trustworthiness if there is enough detail for the audience to establish

that the research process is credible. Patton (2015) noted that trustworthiness permits the inquirer to define the qualities of terms in qualitative research external to the restrictions applied in a quantitative study.

A qualitative researcher must develop the uniformity, impartiality, applicability, and value of a study's truth. Several researchers noted these features as (a) credibility, (b) transferability, (c) dependability, and (d) confirmability (Patton, 2015; Yin, 2016). The following actions were taken to meet these characteristics of trustworthiness in this study.

Credibility

The credibility of qualitative research means the internal validity or trustworthiness of the study's findings. It refers to the faithfulness and vividness of describing the phenomenon under study (Ajjawi & Higgs, 2007). It is the trustworthiness of the research findings (Denzin & Lincoln, 2000). The credibility of qualitative research entails establishing that research results are believable (Patton, 2015). Credibility was established as researchers endeavored for saturation of data. Credibility also was established based on the extreme confidence in the faithfulness of the research conclusions emanating from the agreement support of participants and analysis of multiple data sources. This phenomenological qualitative study sought to comprehend a phenomenon from the perspective of the participants.

Consequently, credibility was developed when the respondents have confidence in the study (Trochim et al., 2016). The credibility of the study was established by triangulation. Triangulation is regarded as a qualitative research strategy to test validity through the convergence of information from different sources. With only one audio-

recorded interview, the researcher cannot establish triangulation (Yin, 2016). I used two audio tapes, journal, and memos to record and take note of the participants interviews. Patton (2015) noted that for triangulation to occur, the researcher must utilize multiple sources of data or methods to establish a complete understanding of qualitative research phenomena.

Patton (2015) suggested that qualitative inquirers established triangulations in various ways such as (a) observations using data from interviews, (b) comparing participant interviews, and (c) diverse participants reviews. I established triangulation by using the two of Patton's (2015) methods of triangulation such as, comparing observations using data from interviews and diverse reviews by participants as encountered during the continuation meeting with the participants for their review of the insightful memo established about their experiences. Comparing the interviews of participants aided recognize contradictory and unreliable experience accounts, along with confirming saturation of data. Participants received a copy of the transcripts and made changes. Therefore, an endorsement was sought from an external source outside the original data to establish the study's credibility. Credibility could also be established when both the researchers' and participants' voices are palpable in the text (Lincoln & Guba, 2000).

Member checks, saturation, reflexivity, and peer review were performed to establish the credibility of this study by detailing participants' experiences via rich, in-depth descriptions established through the analysis process of whole-part-whole (Ajjawi & Higgs, 2007; Berger, 2015; Patton, 2015). Credibility was established by data

saturation in a detailed lived experience of participants via rich and thick explanations developed from the Hermeneutic cycle.

Transferability

Transferability in the qualitative study means external validity or generalizability in quantitative research. Transferability in research is recognized by providing the audience or readers with evidence that the research findings are relevant to populations and other contexts such as times, situations, settings, and so on (van Manen, 2014). Phenomenological research cannot be generalizable. It is worthy of note that a researcher may not prove that the findings of a research study will be applicable; instead, it is the readers who can decide the transferability of the findings of a study. Transferability could be established, adequately describing the context such that readers or the audience could judge for themselves the applicability of the findings of research to their contexts.

Miles et al. (2014) provided a guide to achieving transferability such as (a) describing features of the sample in detail, (b) examining a variety of samples in such a way that research findings could be adopted in other settings, (c) developing a lot of detailed and thick descriptions for the ability of the readers to discover their lived experiences that are matching, and (d) stipulating limitations of the sample (Miles et al., 2014). These features were applicable for the writing, analysis, and implementation of this study.

Dependability

Korstjens and Moser (2018) defined dependability as the stability of research findings over time (p. 121). “Dependability involves research findings evaluation by

participants, interpretation of findings, and study's recommendation in such a way that all these are supported by the data as received from participants of the study" (Korstjens & Moser, 2018, p. 121). Dependability entails a vividly transparent description of the steps of research taken from a research project's commencement to research development and finding reporting (Miles et al., 2014). Dependability is the qualitative complement to reliability in quantitative. For a study to be reliable in the quantitative study means that the research processes and the results exhibit exact replicability. Patton (2015) noted that due to different qualitative research paradigms, the term reliability is epistemologically counter-instinctual and thought-provoking. However, a research study is said to be reliable when the research procedures are consistent throughout the process (Patton, 2015). A researcher should keep research trail records throughout the qualitative study.

The strategy for establishing dependability in a qualitative study is audit trail and triangulation (Hashimov, 2015; Miles et al., 2014). Many researchers noted the audit trail as a reason for defining dependability (Hashimov, 2015; Miles et al., 2014; van Manen, 2014). The researcher left an audit trail such that another researcher can check the decision trajectory made to establish this study's dependability. In this research process, the researcher provided a whole set of notes for any form of decision that were made in the process of this study. These decisions may include meetings with participants, sampling, reflective thoughts, materials of the research, findings emergence, and data management to establish dependability.

Triangulation was used to establish the dependability of this study. Triangulation means using multiple sources of data or methods to develop a wide-ranging

comprehension of phenomena (Patton, 2015). It is a strategy to test the findings' credibility and validity from different sources by information convergence. In this study, data were collected from different petroleum producing companies and their supply chain actors to produce a better understanding of total quality management practices connected to performance. Consistency of findings was checked through diverse data collection (different participants) to ensure that any developing essential biases from applying a single observer or methods will be overcome.

Hashimov (2015) noted that research procedures encompassed (a) selection of participant, (b) collection of data, (c) analysis of data, and (d) maintenance of data truthfulness. According to Miles et al. (2014), researchers may evaluate the dependability of qualitative research by (a) emergence of the research design from research questions, (b) description of the role of the researcher to participants, (c) Lucid connection of the study to theory, (d) the research need, and data collection are matching, (e) checking of transcripts to enhance the quality of data, and (d) Capturing of the data collection and analysis with journaling and field notes. These features were consistent with this current research. All electronic and physical files will be safeguarded for audit purposes.

Confirmability

Confirmability of qualitative research entails the confidence level that the research study's findings are dependent upon narratives and words of participants instead of the biases of a potential researcher (Trochim et al., 2016). A qualitative study is confirmable when the study possesses the needed information for a co-researcher to replicate the study's context and determine if the collected data supports the research

findings (Hashimov, 2015). The procedures to establish confirmability may offer a check against the biases of research that are not recognizable.

Confirmability were established in this study by two techniques: (a) audit trail and (b) reflexivity. An audit trail was established by ensuring a detailed collection of data, analysis of data, and interpretation processes of the data was detailed. Exceptional and exciting topics were recorded during the collection of data. All thoughts concerning coding were written down, and a rationale for emerging codes together was afforded. The meaning of the themes was described.

Reflexivity could be attained in a qualitative study by adopting a positive attitude during data collection and analysis (Berger, 2015; Hashimov, 2015). Miles et al. (2014) noted that a qualitative inquirer needs to observe his position and background to notice how the topic's selection, choice of methodology, data analysis, interpretation, and conclusions are influenced. A reflexive journal was adopted and sustained. A reflexive journal is a diary for reflecting on the research process activities related to the researcher's interests and values (Berger, 2015). Also, restraining and bracketing were used to showcase the researcher's preconceptions. Personal biases were evaluated by the provision of all the materials by the researcher. A consistent checklist for collection and analysis of data events was used.

Ethical Procedures

Walden University requires researchers to maintain a high level of ethics in the doctoral study. This study requires a typical number of participants to establish transferability of total quality management practices and procurement performance in

petroleum producing companies. Researchers have listed various ethical considerations which must be met for conducting qualitative research: (a) informed consent, (b) charitable participation, (c) do not harm, (d) discretion, (e) namelessness, and (f) assessment of relevant components only (Patton, 2015).

Preceding the semistructured interview, participants completed and signed a consent form. Added in the consent form was the clause that permits the participant's withdrawal from participating in the research. The personal information of the participants and their organizations was not needed in this study. Only the data concerning participants' perceptions and lived experiences were needed relating to their total quality management practices experiences.

The data collected from participants underwent a process of coding. Interview transcripts were edited and analyzed for common themes, differences, and similarities concerning emerging themes. Incentives was not offered to the respondents. All hand-written notes and audio tapes from the interview has been stored in a fireproof file cabinet and a secure place.

Walden University's policy is that researchers must be trained to carry out research projects. As part of the groundwork for conducting this study, the National Institute of Health (NIH) Human Subjects Protection Training Module was completed. The Code of Federal Regulations (CFR) Title 45 Part 46, which administrates researchers' actions, was referenced. Despite the location of the participants, these regulations offered protection to the participants. These measures are vital for the protection of the rights and privacy of each of the research participants.

Before data collection in this study, Walden University Institutional Review Board (IRB) issued approval number. The IRB protects participants and oversees the research of students. The completed informed consent form provided the study's background information. Participants were notified that participation in this interview was voluntary.

The benefits and risks of participation in this study were listed. The measures that were taken to guarantee the privacy of the participants were highlighted. The interview guide helped sustain the participant's information regarding the participant's conduct and right of the interview. All field notes, participant interviews, flash drives, and digital recorders are locked in a fire-resistant safe and safeguarded. All data post five years of degree award will be destroyed.

Summary

A phenomenological inquiry could be carried out in numerous ways. Phenomenological approach is adopted by van Manen's (2014) hermeneutic approach to explore the lived experiences of managers in the petroleum industry concerning total quality management practices connected to procurement performance. Moustakas' design is less of interpretive and more of descriptive whereas, van Manen's is both more of interpretive and descriptive. This study was an interpretive phenomenological research and therefore, used the van Manen's (2014) method.

This chapter commenced with research method, design, and rationale which illustrated the study's intention, the researcher's role, and research questions of the study. The rest of the chapter covered methodology of the research, procedures for collection

and analysis of data, trustworthiness issues treatment methodology, and the procedure of ethics that was adopted in the study.

Recruitment of research participants was from the petroleum producing companies and her major supply chain actors of the industry. These participants have been doing business with the petroleum producing companies or were employed between 2012 and 2019, with lived experiences of management practices connected to quality (procurement performance). The researcher can concentrate on a phenomenon that is restricted, as phenomenological studies are conducted with a small sample size. This design may not be generalizable, although it may have theoretical connectivity. A robust description of the procedures has been provided for the collection and analysis of data for the sustenance of a qualitative, interpretive phenomenological study that possessed trustworthy conditions.

The form for the National Institutes of Health (NIH) protection training module of human subjects was completed as per the requirements of Walden University. This study commenced when IRB's approval was received, to enable participants' protection. Chapter 4 provides the presentation of the research findings, description of the data collection, and data analysis processes.

Chapter 4: Results

The purpose of this qualitative study was to explore the managers' perceptions or lived experiences in petroleum producing companies or supply chain actors about total quality management practices connected to procurement performance. I aimed to understand the manager's experience about total quality management practices related to procurement performance. My intent was to interpret meaning from the collected data. Semistructured interviews with 12 participants in eight organizations produced the required data for the study. The research questions and subquestions are as follows:

Overarching question: What are the lived experiences of managers in the petroleum industry or their supply chain actors in using total quality management practices related to procurement performance?

Subquestion 1: What are the experiences in using total quality management practices in improving the quality of delivered materials?

Subquestion 2: What are managers' experiences in the petroleum industry or their supply chain actors in influencing the planned change process for improved quality of procured materials?

The nature of the research questions guided the interview questions. The responses from participants were analyzed using the hermeneutic phenomenological approach of van Manen (2014). The technique for this study was interpretive, and I concentrated on the outcome of participants' lived experiences. The focal resolves of phenomenological research are to seek realism from people's stories or their feelings and experiences and to produce in-depth descriptions of the phenomenon (van Manen, 2014).

This chapter comprises an account of the pilot study, the research setting, demographics of potential participants and organization, procedures for collection and analysis of data, and the procedures followed to achieve trustworthiness.

Pilot Study

A qualitative interview does not yield valuable data if the interview questions do not produce evidence concerning the phenomenon under investigation (Patton, 2015). Patton (2015) recommended a pilot study to validate an interview guide and conduct a research study to explore the phenomenon under study. Castillo-Montoya (2016) suggested a pilot study of research to confirm study feasibility, plan trial runs, or produce a small-scale version of the survey to guide the research plan development. The pilot study provides an answer to a methodological question by using the results to guide the methodology of the large-scale investigation (Castillo-Montoya, 2016). I conducted a pilot study on the 30th of April 2021 to test some factors that connected to the primary research. In this pilot study, potential participants provided data from a semistructured interview after IRB's approval. The pilot study allowed me to validate the semistructured interview questions, checked estimated interview time, and clarify all questions.

The pilot interview for this study was conducted after IRB's issuance of an approval number (02-19-21-0397720). Patton (2015) admonished investigators to immerse themselves into the interviewees' languages to obtain detailed descriptions of their lived experiences. As per Patton's information, I recruited four potential participants who were widely knowledgeable in total quality management practices and procurement processes. The four participants in this pilot study were also part of the final study

participants. The first pilot study interviewee was an assistant procurement manager in a petroleum producing company with quality and procurement experience. He had over 8 years of experience in technical materials procurement for project construction, stock replenishment, and oilfield facility maintenance. The second pilot study participant was a project engineering manager in a petroleum producing company who designed and reviewed engineering documents for technical materials manufacturing and procurement, rechecked 3-D models of projects, and interfaced with project procurement processes. He had over 20 years of experience in project engineering designs, technical material quality management, vendor documentation registers, and process control. The third participant was a procurement manager in engineering, procurement, construction, and integration (EPCIC). He had over 9 years of experience in technical material procurement, qualification of suppliers with specialized knowledge, technical bid evaluation, and quality assurance and control processes. The fourth pilot participant was a director/chief executive officer in a supply chain company to petroleum producing companies, undertaking the supply of technical materials from the OEM to petroleum companies' project constructions and maintenance department.

Each participant in the pilot study received copies of the interview guides before the interviews were held via Microsoft Online Teams, Phone, and Zoom. The actual face-to-face meeting was not practicable due to the second wave of the coronavirus. Before the interview, these participants were asked to review the interview guide and the IRB-approved pilot study consent form. The pilot participants' reviews and interviews

assessed the clarity of the material, choice of words, and the kind of answer the participants would provide for the research questions.

The first participant suggested that the interview time range (20-45 minutes) was short and should be increased to 30 to 60 minutes because the interview protocols were meant to cover three interview questions (IQs) for one research question (RQ). That time was required to provide a rich, thick explanation of participants' lived experiences about total quality management practices connected to procurement performance (quality). The second and third participants concurred with observations of the first participant and added that no probe question should be added to IQ4 as it was explicit enough. The fourth participant suggested that IQ8 was unnecessary because IQ1 to IQ7 already elicited various and required responses from participants to answer RQs 1, 2, and 3.

The overall interview questions did not get to the fiery stage, as participants were told from the beginning that they could leave or discontinue the interview at any time. The probe questions made the interview protocol exciting, and participants displayed joyed expressions and willingness to solve or provide answers to the research questions. Each pilot participant comprehended the questions before participating in the interviews. In summary, the four pilot study participants opined that the protocol and semistructured interview would provide the rick thick responses needed for qualitative phenomenological research. The interview time range of 30 to 60 minutes, the probe questions, and the IQ8 were updated as recommended by the participants.

Research Setting

The collection of data took place through Microsoft online-team interviews, phone interviews, or Zoom interviews. Seven participants selected online-team interviews. Three participants set Zoom interviews, and two interviews occurred by phone. The interviews were conducted in a secluded place. Each respondent received a copy of the IRB-approved consent form and the interview guide before the meeting on the scheduled interview date via email. The participants sent the acknowledged consents through email in the "I consent" form before the interview.

Preceding each interview (Teams, Zoom, or phone), I tested two digital audio recorders of eight-gigabyte capacities. The Teams and Zoom calls were recorded with the digital audio recorders because of periodic call distortions from the external environment. Two participants chose the interviews through telephone because of three reasons: (a) the pandemic, (b) defective speakers and microphone in their laptop, and (c) the convenience of a telephone conversation in this regard. The other reasons for conducting the interviews through online Teams, Zoom, and phone were that most of the participants from petroleum producing companies were working in the offshore/deepwater environment. Some were engulfed in project construction and the pandemic, as the Nigerian government-imposed restrictions to avoid the spread of the coronavirus disease.

Demographics

The phenomenological study involved exploring the lived experiences or perceptions of managers or assistant managers about total quality management practices connected to procurement performance in petroleum producing companies or their supply

chain actors. The gathered demographic information from potential respondents demonstrated their experiences with total quality management practices and their experiences with technical material quality management. Demographic information revealed experiences with quality processes, procurement process, work position/title, how long organizations employed them, and their experiences in a planned change in organizations. I targeted the sample size of this research at 10 to 15 participants.

A total of 12 potential participants described their lived experiences (data) for the study. Four petroleum producing companies had one participant each from the organization. One petroleum producing company had two respondents from the organization, and six supply chain companies or actors of petroleum producing companies had one participant each from the organizations. Table 5 shows the organizations' demographics. A total of eight organizations were chosen for this study. Each organization had at least two participants. The organizations comprised of petroleum producing companies, supply chain actors, and engineering companies. Refer to Table 5.

Table 5

Organization Demographics

No.	Type of organization	Industry	Operational locations	Ownership	Operational hours (24x7)	Many locations
1	Petroleum producing	Oil and Gas	On/offshore and deepwater	Private	Y	Y
2	Petroleum producing	Oil and Gas	On/offshore and deepwater	Private	Y	Y

3	Petroleum producing	Oil and Gas	On/offshore and deepwater	Private	Y	Y
4	Petroleum producing	Oil and Gas	On/offshore and deepwater	Private	Y	Y
5	Petroleum producing	Oil and Gas	Onshore / deepwater	Private	Y	Y
6	Petroleum producing	Oil and Gas	Onshore / deepwater	Private	Y	Y
7	Engineering	Engineering, procurement, construction, and integration	Onshore	Private	N	Y
8	Engineering	Engineering and procurement	Onshore	Government	N	N
9	Supplier	Procurement services	Onshore	Private	N	N
10	Supplier	Procurement and quality	Onshore	Private	N	N
11	Supplier	Procurement	Onshore	Private	N	N
12	LPG process plant	Oil and gas	Offshore	Government	Y	Y

Table 6 shows the information about participants' demographics. A total of 12 participants were chosen for this study. The participants were named P1 to P12 with their qualifications, years of experience, and roles in supply chain. The types of planned change each participant was involved were highlighted. Refer to Table 6.

Table 6

Participant Demographics 1

Participants	Organization	Organization QMS	Qualifications	Years of experience	Role in supply chain	Involved in planned change before	Type of planned change

P1	Petroleum producing	ISO 9001	MSc.	8	asst proc. mgr.	Y	STPC
P2	Petroleum producing	ISO 9001, 14,0001	PhD.	20	eng. mgr.	Y	STPC
P3	Engineering	ISO 9001	PGD, MSc	9	proc. mgr.	Y	STPC
P4	Supplier	ISO 9001:2015	PGD, MSc	12	proc. dir.	Y	STPC
P5	Supplier	ISO 9001: 2008	MBA, MSc, BSc	25	industry mgr.	Y	STPC
P6	Petroleum producing	ISO 9001: 2015; 140001	BSc, MSc	13	asst proc. mgr.	Y	SPC
P7	Petroleum producing	ISO 9001: 2015	BSc, MSc	10	shipping engr.	Y	Lean
P8	LPG process plant	ISO 9001	BSc, MSc	20	plant mgr.	N	None
P9	Engineering	ISO 9001	BEng.	10	proc. mgr.	Y	STPC
P10	Petroleum producing	ISO 9001	BSc, MSc, ICA certified	17	quality mgr.	Y	Remedial
P11	Supplier	ISO 9001	BSc	>5	proc. mgr.	Y	STPC
P12	Petroleum producing	ISO 9001:2015	BEng.	15	valve specialist / engr.	Y	SPTC

Note. STPC – strategic transformational planned change; SPC – structural planned change

Table 7 shows the information about participants' demographics with a definition of their job levels, the interview methods, and their respective organizations. A total of eight organizations were chosen for the study. Each organization had at least two participants. Seven participants chose to be interviewed via Teams, three participants chose Zoom, while two participants were interviewed by telephone. The duration of the interview for each participant is shown and averaged 50 minutes. Refer to Table 7.

Table 7

Participant Demographics 2

Participants	Organization	Interview method	Job level	Interview duration (minutes)
P1	Petroleum producing	Teams	asst. procurement manager	49.36
P2	Petroleum producing	Teams	project engineering manager	57.37
P3	EPCI	Teams	procurement manager	37.33
P4	Supplier	Teams	executive director proc.	47.22

P5	Supplier	Zoom	industry country manager	53.37
P6	Petroleum producing	Teams	asst. procurement manager	51.18
P7	Petroleum producing	Teams	shipping engineer	61.31
P8	LPG Process Plant	Zoom	plant engineering manager	36.34
P9	Engineering (EP)	Phone	procurement manager	32.57
P10	Petroleum producing	Phone	quality manager	58.03
P11	Supplier	Zoom	procurement manager	56.00
P12	Petroleum producing	Teams	valve specialist/TADM	60.06

Data Collection

The principal method of data collection was through the protocol of a semistructured interview. There were various sites for the data collection, which included the following: seven face-to-face online Teams' interviews (58%), three face-to-face Zoom interviews (25%), and two telephone interviews (17%). There were no face-to-face interviews in the office due to the Covid-19 pandemic. In this study, I carried out member checks through phone calls and emails. The summary of this study's findings was sent to the participants through email for review and confirmation of the authenticity of their respective feedback from the interview. Data or results were returned to participants to check for accuracy and resonance with their experiences. Few clarifications were verified via phone calls, and credibility was ascertained. Each potential participant had a unique identifier.

Participants in this study were denoted by a unique number such as P1, P2, P3, … to P12. P1, P2, P3, P4, P6, P7, and P12 were interviewed using Microsoft Online Teams, and P5, P8, and P11 were interviewed via Zoom. P9 and P10 were interviewed using the

telephone. The participants indicated the time and date for individual interviews (Teams, Zoom, and phone). The duration of the interviews was from 30 minutes to 65 minutes. The interviews were conducted via Microsoft Online Teams, which varied between 38 minutes to 62 minutes, whereas the interviews done through phones varied between 33 minutes to 58 minutes. All the interviews conducted through Teams, Zoom, and telephone were recorded using two Sony audio recorders. The member check was performed by sending emails to participants to crosscheck their feedback and phone calls, which were registered using two Sony audio recorders. The study results were returned to participants via emails to check for accuracy and resonance with participants' experiences. I also had phone calls with participants to ensure the correctness of their feedback from the interview to aid in achieving this study's credibility.

All the potential participants selected the time and date for the discussion. Some interviews took place at night, and some took place during lunch periods because some participants were involved in project construction activities and crude oil production operations offshore. I proposed to use Microsoft Online Teams for the interviews because physical face-to-face was practically impossible due to Coronavirus pandemic. P1, P2, P3, P4, P6, P7, and P12 preferred to use MS Teams for the interviews. P5, P8, and P11 preferred Zoom. P9 and P10 preferred phone calls because of malfunctioning computer systems. The Team call was conducted using audio and video features from my office to their respective offices and homes.

The study participants acknowledged the interview and demographic questions before the semi-structured interview. P1 to P12 completed the demographic information

and sent it to me through email before the interview. Upon completion of the demographic questions, the primary interview commenced. Fieldnotes were used during the face-to-face interviews (Teams and Zooms) to describe the setting and participant experiences. The researcher used the field note to categorize or identify the topics to be followed or clarified during the interview sections. Set up of the interview was as per the date and time I agreed with the participants. Sending the interview questions beforehand to the participants enabled them to ponder the materials properly. This study intended to collect data regarding the lived experiences of people about the phenomenon under study. The interview questions provided in advance to the interviewees abridged the quantity of time the potential interviewee would have required to recall their lived experiences about total quality management practices connected to procurement performance (quality performance) in their organizations.

Before and after each interview, the digital audio recorder recorded my thoughts concerning the interview. All pre- and post-interviews had the same conventional questions in the bracketing meetings to establish a dependable basis or framework for the valuation of my preconceptions and related reactions. Refer to Appendix D (p. 300) for phases of member checking and conventional bracketing questions for the interview.

Data collection commenced upon reception of the approval and permission from the IRB of Walden University on February 19, 2021. The collection of data for this study took between three to four weeks. I achieved participants recruitment by sending emails to exact persons through LinkedIn, Facebook, and snowballing (referrals). About 30 participants received recruitment emails, including from LinkedIn, and only 12 potential

participants participated. Besides, not all online recruitment requests were efficacious. One person responded from LinkedIn, no person responded from Facebook recruitment mail, and three people were recruited by snowballing (referral). P2 agreed to participate. P9 was referred and agreed to participate. P5 and P8 were referrals, and both agreed to participate. A professional associate from the Nigeria Society of Engineers (MNSE) recommended P1. The remaining participants volunteered to experience when they received an email from me. Table 8 shows the information about the mode of recruitment of participants. 12 participants were contacted through direct email and 8 accepted to participate. 5 participants were contacted via Facebook and all declined. One participant volunteered to be interview out of 8 invitees from LinkedIn. 3 participants out of 5 volunteered through snowballing method of recruitment. A total of 30 participants were contacted to participate but 12 were interviewed. Refer to table 8 below for the mode of participant recruitment.

Table 8

Participant Recruitment Mode

Method	Contacted	Accepted	Did not respond
Direct email	12	8	4
Facebook email	5	0	5
LinkedIn mail	8	1	7
Snowball	5	3	2
Total	30	12	18

The 12 participants were named as P1 to 12 to prevent any form of identification of participants in the study. These coded names (P1 to P12) were encompassed in each participant's interview files. Audio files were downloaded from the main Sony digital audio recorder after each interview and saved on the computer with the file name: INTERVIEW P1, INTERVIEW P2, etc. NVivo software 12 was used to auto-transcribe all the interview recordings of the participants (P1 to P12). I reviewed and edited all the transcribed interviews in NVivo. The editing was the bulk of the work done on the file for smooth qualitative analysis of the data collected from participants. During the editing, I removed controversial sounds such as mmh, uhh, laughs, etc., for the readability of the transcribed files. There were uncompleted or broken sentences that were completed by re-listening to the recorder. Some comments were in brackets denoting holds, sounds, or long pauses, which were removed during editing.

After several days (three weeks) of editing work, I exported the finalized transcription to a Microsoft word document with speaker code-name, time, and line numbers. For the effortlessness of data analysis in NVivo, I organized the transcript materials into a reasonable grouping for answering research questions RQ1, RQ2, and RQ3 and for ease of coding and analysis. I performed a hermeneutic circle analysis (whole-part-whole) of the transcript. I created the data from each participant into an interpretive description. I completed a member check based on recapitulated experience.

Each participant received a call to schedule the time and date for member checking. Pre- and post-bracketing were accomplished following the same process for member checking. I used two Sony digital audio recorders to record the telephone calls of

each member check. Two audio recorders recorded both the data recording and member check. One recorder was the primary digital recorder, and the second recorder was the backup. Both recorders were always placed in front of the computer speakers to capture the audio. The online Teams and Zoom audio- and video-recorded the participants' interviews. There were occasional distortions in the interview due to external calls, disturbances, or internet connection breakdowns.

Data Analysis

The hermeneutic principle of van Manen (2014), i.e., whole-part-whole cyclic model aided in the data analysis of the phenomenological study. The inquirer uses text reading and interpreting skills to understand the participants' words or how participants have experienced the phenomenon under investigation (Anosike et al., 2016; Gill, 2014). The hermeneutic analysis aids the researcher in the in-depth interpretation and understanding of the meaning of the phenomenon, implying "a movement between parts (data) and whole (developing an understanding of the phenomenon under study)" (Ajjawi & Higgs, 2007, p. 622). Six distinct analysis was carried out on the study data.

Firstly, the whole-part-whole model (Manen's hermeneutic principle) was used to advance the recapitulation of the participant experience. Secondly, descriptive codes were developed from the transcript's first reading to categorize central descriptive codes. Thirdly, NVivo's function of word cloud aided in classifying recurring appeared words in the data. Fourthly, instead of themes' creation using the descriptive codes, the transcripts were coded using interpretive phenomenological analysis (IPA) of van Manen 2014. This coding choice of the transcripts is in line with the phenomenological method of van

Manen (2014). The elements were identified in each coded section such that any relational part had references to a participant. I performed the breakdown of the relational aspects by the respondent, study's research question, and word frequency by following hermeneutic circle (whole-part-whole Idea) (Ajjawi & Higgs, 2007; van Manen, 2014).

Lived Experience Summary of Participant from Hermeneutic Circle Analysis

Data collection for this phenomenological study was via an interview protocol and various reviews to the summary experience of participants. The interpretive phenomenology is intended to obtain the participant's lived experience through analysis of the transcripts. I compiled three clean copies of each of the transcripts. I reviewed the transcripts in three rounds to develop lived experience summary of each participant. Transcript reading round one was accomplished without note-making. The essence of transcript reading round one was comprehending and making sense of the conversation from the participant's lived experience.

The first round of reading progressed with repeated reading of the interview transcript and identifying expressions and information that appeared vital to the pronounced experience. Descriptive codes were allotted to the specified or highlighted information on the interview transcript. Although van Manen's (2014) phenomenology is more interpretive and less explanatory, Manen is not a supporter of coding. Researchers viewed the phenomenological method of Manen as a tie between interpretive and descriptive phenomenology (Anosike et al., 2016; Gill, 2014). Ajjawi and Higgs (2007) recommended that inquirers could apply to code if they chose to. Therefore, I included the hand-written codes in NVivo and connected them to the interview transcript softcopy.

Upon completing the round one analysis, the individual interview transcript briefly described the participants' lived experiences as highlighted information and interpreted. These codes were then exported from NVivo software into a Microsoft Excel spreadsheet. The codes were sorted from highest frequency of occurrence to lowest frequency of occurrence and were referred to as reference information.

The second text reading was made where I selectively looked at the transcript texts. I highlighted line numbers to categorize the information that reflected the first-round codes. Then, the information interpretations and codes were assigned to the segment. This analysis developed an understanding of the information that was described. All hand-written accounts were assembled into an MS Word document that encapsulated the performance and harmonized the line and page numbers.

The third text reading was done to review the technical language participants used. During the third-round reading, I reflected upon each transcript's sentence. Comprehension and understanding of what the hand-written material alleged concerning the experiences of the participant were made. I applied a restraining for the exploration of my thoughts to the information material. My hand-written explanations were gathered into a Microsoft word document that encapsulated the interpretation harmonized to the line and page numbers. I used the descriptive codes, the code's understanding, and my comprehension of the participant's experiences as portrayed via the participant's language to summarize the participant's lived experience.

All participants reviewed the summary of the experience for member checking. All the member checks were written in the third person language. No participant (P1 to P12) requested any changes to the summaries of their experiences.

Descriptive Codes

I organized my data in NVivo and formed codes to connect the IQ to the three RQ for ease of comparisons across participant's responses. Miles et al. (2014) suggested that coding is a methodology of data analysis. I used Miles' suggestion to analyze the interviews into portions. IQs 1, 2, and 3 were coded in NVivo to link RQ1, IQs 4, 5, and 6 were coded in NVivo to link RQ2, and IQ 7 was coded in NVivo to link RQ3. IQ8 was a general question for all RQs 1, 2, and 3.

These codes with their source transcript were transferred to a Microsoft Excel file for analysis. The descriptive codes permitted me to set similar interview materials for further data analysis. The descriptive codes were established iteratively from the bottom descriptive codes. The codes found from participant words, interview content paraphrases, and content interpretations were added to the bottom of the descriptive codes. NVivo provided codes list by matrix and frequency as they appeared.

In organizing the interview files into IQs to link the RQs, I ran an AUTO CODE in NVivo. The auto code was achieved to categorize the RQ1 into management practices that improved performance, RQ2 into Continuous quality improvement in delivered technical materials, and RQ3 into strategically planned change for improved processes. NVivo created themes from the respective IQs meant to link RQs. The auto-coded themes from individual RQs' IQs files yielded diverse descriptive codes.

Word Cloud

NVivo software possesses a means of producing word clouds from the texts in it. This software has a tool known as a query for obtaining word frequency. This tool can determine the frequency of words between three to 1000 words. The device can be set to any desired number of words frequency. In this analysis, the word display was assigned to a maximum of 200 and a minimum length of three most frequent. I removed the words from the interview questions and other sounds such as uhh, ehm, etc., to ensure only the words of the participants could be assessed.

The more enormous word clouds in each of the 12 transcripts didn't offer much material concerning the word choices of the participants. In the word clouds, some words occurred once. I developed and analyzed word clouds of three words, six words, nine words, 12 words, and 15 words. I selected the cloud sizes as per the significant number of words that originated in the information source. Tables 9 is comprised of 26 most applied words in the 12 transcripts related to interview questions (IQs) 1, 2, 3 feedback for RQ1. The most important word, *quality*, bonds into the identity of participant's expressions of the need for standards. By emphasizing quality, the participant can drive or refer to a continuous improvement of product's quality (or quality management) related to project's technical material performance as highlighted in the participant's feedback for RQs. Refer to Table 9.

Table 9

Word Cloud Counts for Participant Feedback on IQs 1,2,3 for RQ1

Word	Length	Count	Weighted Percentage (%)
quality	7	513	4.11
technical	9	236	1.89
management	10	200	1.60
practices	9	150	1.20
procurement	11	113	0.91
supplier	8	108	0.87
process	7	103	0.83
behavior	8	80	0.64
qaqc	4	74	0.59
manufacturer	12	71	0.57
inspection	10	59	0.47
assurance	9	51	0.41
specification	13	42	0.34
planning	8	39	0.31
training	8	31	0.25
adherence	9	30	0.24
continuous	10	30	0.24
people	6	27	0.22
test	4	27	0.22
engineering	11	26	0.21
standards	9	20	0.16
requirements	12	19	0.15
benchmarking	12	18	0.14
education	9	18	0.14
collaboration	13	12	0.10
communication	13	12	0.10

Table 10 encompasses the 26 most applied words in the 12 transcripts related to interview questions (IQs) 4, 5, 6 feedback for RQ2. The most important words (quality, technical, and MTC), entails *quality in the use of technical material test certificate (MTC),* denotes participants' important expressions of the need for avoidance of wrong certificates and forms their judgement related to the feedback for RQ2. By highlighting quality and MTC, the participants can drive or refer to a continuous improvement of technical materials quality related to performance as highlighted in the participant's feedback for RQ2. Refer to table 10 below.

Table 10

Word Cloud Counts for Participant Feedback on IQs 4,5,6 for RQ2

Word	Length	Count	Weighted Percentage (%)
quality	7	226	2.72
technical	9	163	1.96
mtc	3	99	1.19
process	7	55	0.66
procurement	11	47	0.56
specification	13	41	0.49
management	10	39	0.47
certificate	11	32	0.38
processes	9	27	0.32
witnessed	9	27	0.32
inspection	10	26	0.31
supplier	8	26	0.31
rejection	9	25	0.30
practices	9	24	0.29
review	6	24	0.29
rejected	8	21	0.25
damage	6	19	0.23
personnel	9	18	0.22
check	5	17	0.20
nonconformity	13	17	0.20
engineering	11	15	0.18
rex	3	15	0.18
ncr	3	13	0.16
transportation	14	12	0.14
training	8	11	0.13
procedure	9	10	0.12

Table 11 encompasses the 26 most applied words in the 12 transcripts related to IQ 7 feedback for RQ3. The most important words (change, quality, and process), entail planned change in *quality of processes related to technical materials procurement.* These key words used denote participants' important expressions of the need for change involvement and continuous quality improvement in processes, and forms their judgement related to the feedback for RQ3. By highlighting change, quality, and processes, the participants can drive or refer to a continuous improvement of processes related to performance as highlighted in the participant's feedback for RQ3. Refer to table 11 below.

Table 11

Word Cloud Counts for Participants Feedback on IQs 7 for RQ3

Word	Length	Count	Weighted percentage (%)
change	6	151	3.23
quality	7	111	2.37
process	7	100	2.14
planned	7	85	1.82
procurement	11	63	1.35
management	10	51	1.09
organization	12	50	1.07
engineering	11	38	0.81
organizational	14	37	0.79
improved	8	31	0.66
strategic	9	23	0.49
successful	10	22	0.47
feedback	8	19	0.41
processes	9	18	0.38
managers	8	14	0.30
planning	8	14	0.30
transformational	16	14	0.30
commitment	10	10	0.21
team	4	10	0.21
forum	5	8	0.17
leadership	10	8	0.17
communication	13	7	0.15
education	9	7	0.15
streamline	10	7	0.15
tqm	3	6	0.13
structure	9	5	0.11

Data Transcription Process

Transcription in NVivo created a text-based version of the original audio-recorded participants' interviews. Transcription is important for qualitative research because it (a) puts qualitative data and information into a text-based format, (b) makes data easier to analyze and share, and (c) allows researchers to become more immersed into the data they collect (Green & Schellenberg, 2018). Data transcription was achieved with NVivo software. All the participants' interviews were recorded with two Sony audio recorders, Teams, and Zoom. Each participant's audio interview was transferred to a "transcription feature" in NVivo and the software automatically transcribed the audio files into text-based version. Transcription time differed for each participant. Transcribed materials encompassed information such as name of interviewer, interviewee, time, feedback, and length of pages. I edited all transcribed data in NVivo by listening to recordings and typing the missed spoken content verbatim into the transcript via Microsoft words. I exported the transcribed and edited information into Microsoft word document and saved in the computer for further analysis.

Table 12 shows information about the transcription process of participants' interviews. It shows that participants' interviews lasted between 30 to 60 minutes. Each transcribed content had between 10 to 17 pages and encompasses the interviewer, interviewee, duration, and number of pages. P2, P6, and P12 had the same number of transcribed content pages, whereas P10 and P11 had 16 and pages respectively. The transcribed content of P9 is 10 pages since duration of interview was 32 minutes. Refer to table 12 below.

Table 12

Transcription Process of Participants' Interviews

Participants	Organization	Interview method	Interview duration (Minutes)	Pages generated after transcription
P1	Petroleum producing	Teams	49.36	12
P2	Petroleum producing	Teams	57.37	13
P3	EPCI	Teams	37.33	11
P4	Supplier	Teams	47.22	12
P5	Supplier	Zoom	53.37	14
P6	Petroleum producing	Teams	51.18	13
P7	Petroleum producing	Teams	61.31	15
P8	LPG Process Plant	Zoom	36.34	11
P9	Engineering (EP)	Phone	32.57	10
P10	Petroleum producing	Phone	58.03	16
P11	Supplier	Zoom	56.00	17
P12	Petroleum producing	Teams	60.06	13

Management Practices Code (IQs 1, 2, 3 Linked to RQ1)

Participants shared diverse experiences of various total management practices that apply to their organizations related to procurement performance. I organized data into segments that answered individual research questions. I coded management practices that influenced quality performance. The 12 transcripts were examined. Each lived experience related to management practices for the participant was coded to answer or provide information related to management practices described to procurement performance. For RQ1, I coded participants' responses in the transcripts into improved performance, quality assurance and control (QAQC), causes of quality issues (CQI) in technical materials, and

influence of buyer behavior (BB), supplier behavior (SB), and technical administrator behavior (TAB) on quality performance.

Continuous Quality Improvement (CQI) Code (IQs 4, 5, 6 Linked to RQ2)

All 12 transcripts from participants were coded in NVivo as per lived experiences of people related to the continuous improvement of delivered technical materials. Participants' perceptions were organized and coded in NVivo software. P1 to P12's experiences in using total quality management practices in improving the quality of delivered technical materials were coded. For RQ2, I coded participants' responses in the transcripts into the quality improvement of technical materials (QITM) on performance, Value of material test certificates (VMTC), technical material rejection resolution process (TMRRP). These were continual improvement feedback as lived by P1 – P12.

Strategic Planned Change Process Code (IQ 7 Linked to RQ3)

IQ7 linked to RQ3 was related to planned change strategy as experienced by participants. Participants' lived experiences from petroleum producing companies or supply chain actors to the petroleum producing companies have been applied to the planned change process. Participant's experiences could positively influence performance in terms of the quality of technical materials for project construction, oilfield facility maintenance, stock replenishment, and production operations. I organized the IQ7 to link RQ3 in NVivo. The respective participants' responses related to planned organizational change were organized and coded into the manager's experience to influence planned change, TQM practices and planned change process, strategic planning for successful intentional change, and planned change in diverse areas.

Contrary Case

This research study is a phenomenological study centered on participants' lived experiences or perceptions about total quality management practices connected to procurement performance. It is not a case study. P1 – P12 answered all the interview questions that were asked. No participant declined the IQs. Before reviewing the transcript, a lot of time was devoted to editing the transcript to ensure quality data coding and analysis. With NVivo, I coded the transcripts to classify cases where participants' statements were not in agreement with the insinuations of some individual participants. One case was the participant's statement that she has never witnessed technical material rejection and listed most quality-related technical materials issues.

Evidence of Trustworthiness

Credibility

Member checking was performed during the interview to explain the interview questions and to allow participants make corrections on any misconceptions related to their lived experiences. This deed is in line with the direction of Trochim et al. (2016) that the respondents have confidence in the study or that participants accept the investigation results. The credibility of the study could be established by triangulation (Yin, 2016).

Patton (2015) conversed numerous ways to establish a qualitative study's triangulation. For triangulation to occur, Patton (2015) noted that the researcher must utilize multiple data sources or methods to develop a complete understanding of qualitative research phenomena. P1, P2, and P6 were from the same petroleum producing

company. P7, P10, and P12 were from another petroleum producing company. Having come from one organization, these three participants presented the prospect for triangulation of their lived experiences about total quality management practices related to procurement performance.

Furthermore, I compared the accounts of three participants P4, P5, and P11, from supply chain organizations (supply chain actors to petroleum producing companies) against one another. Lastly, Patton (2015) recommended the use of multiple data sources for effective triangulation. Therefore, the interviews for P1 – P12 were compared against each other to establish triangulation for the study.

As highlighted in the previous chapter, the interviews held via permitted face-to-face comparisons in alliance with achieving credibility were highlighted during the last chapter. The observations with the data of interviews for P1, P2, P3, P4, P6, P7, and P12 (via Teams) and P5, P8, and P11 (via Zoom) occurred. The enormous experiences of these participants provided a rich, thick explanation of the phenomenon under study. These participants' accounts support the study's credibility and align with Van Manen's detailed, thick descriptions criteria (2014). This study demonstrates an internal validity obligation.

Transferability

Participants' lived experiences in this study provided a detailed thick rich description of the influence of total quality management practices connected to performance in technical materials. Phenomenological investigations are not always generalizable. However, readers may match the rich, thick explanations to their lived

experiences. Patton (2015) noted that a person who reads might discover that perceptions are transferable to the environment of the person who is reading the phenomenological study. A researcher may not prove that the findings of a research study will be applicable; instead, it is the readers that can decide the transferability of the results of this study. Transferability could be established by adequately describing the context such that readers or the audience could judge for themselves the applicability of the findings of research to their contexts (Patton, 2015).

Miles et al. (2014) provided a guide to achieving transferability such as (a) describing features of the sample in detail, (b) examining a variety of samples in such a way that research findings could be adopted in other settings, (c) developing a lot of detailed and thick descriptions for the ability of the readers to discover their lived experiences that are matching, and (d) stipulating limitations of the sample (Miles et al., 2014). These features were applicable for the analysis and implementation of this study. The 12 companies in this study epitomize petroleum producing companies (PPC), engineering, procurement construction and integration (EPCI), SCAs, engineering and procurement (EP), and Liquified petroleum gas (LPG) process plants. All their activities are related to onshore and offshore project construction and oilfield facility maintenance operations. The supply chain actors' organizations are owned privately, and some organizations are owned by the government (LPG plant and EP).

Dependability

A qualitative study is dependable when another researcher can determine the consistency of the research process or if the study has a consistent research process.

Patton (2015) recommended that investigators research with the research procedures consistent throughout the process. This study ensured that the set of techniques used to develop this research were consistent throughout the process for ease of review of research design, indications, and analysis by other researchers. The methods of data collection and analysis have been robustly described and are consistent in this study.

I used an audit trail to establish dependability. Therefore, another researcher could check the decision trajectory made to demonstrate this study's trustworthiness. I provided a whole set of notes to make all forms of decisions (meetings with participants, sampling, reflective thoughts, materials of the research, findings emergence, and data management) made in the study process.

I used triangulation to establish the dependability of this study by using multiple sources of data (various organizations and participants – P1 – P12) and developed a wide-ranging comprehension of total quality management practices and procurement performance. This study collected data from different petroleum producing companies and their supply chain actors to better understand total quality management practices connected to performance. The consistency of findings was checked through diverse data collection via P1 to P12 to ensure that any developing essential biases from applying a single observer or methods are overcome.

Miles et al. (2014) enumerated several requirements to attaining the dependability of qualitative studies. This study was in line with a few of the requirements. Firstly, there was the emergence of the research design from research questions. Secondly, I described the role of the researcher to participants. Thirdly, I lucidly connected the study to theory.

Fourthly, the research need, and data collection are matching. Finally, I checked transcripts for enhancement of the quality of data. I captured the data collection and analysis with journaling and field notes. I used the field notes and journaling to take note of disparities and variations that happened.

The audience would quickly discover a lucid process for this study from collecting data via data analysis. During the interview, Microsoft word was used to compile reflections regarding the materials. Participants' materials (hand-written and printed) were organized in a folder, as well as marked-up transcripts, pre-and post-interviews, journaling, and field notes.

I tracked and reported variations and disparities of code use, assignments, and meaning with NVivo qualitative data analysis software. The integrity of data was maintained for the development and consistency of this study's set of procedures for study dependability. The data format is audio files, transcripts, NVivo programmed files, and paper files. All the field notes, external flash disks, digital recorders, and papers have been locked in a fire-proof safe. Other measures were to password-protect flash drives and documents related to this study and protect the computer used for this study with a Norton anti-virus, which is upgraded regularly for data security and integrity over time. Data will be disposed after five years as recommended by the law.

Confirmability

I trailed the strategy of confirmation as proposed in chapter 3. Per recent procedures and approved by IRB, this study's data will be detained in a file for five years before its destruction post five years. A qualitative study is confirmable when the study

possesses the needed information for a co-researcher to replicate the study's context and determine if the collected data supports the research findings (Miles et al., 2014). Patton (2015) directed that inquirers should apply data audits to classify probable bias cases. Miles et al. (2014) suggested qualitative inquirers should ensure (a) comprehensive procedures and methods, (b) suitable research procedure for data gathering, handling, analysis, and presentation, (c) connect conclusions with collected data, (d) classify potential biases, and their effect on the study, (e) contemplate other probable deductions, and (f) hold study materials for probable data re-analysis as may be obligatory by the institution review board. This study's procedures and design aligned with these suggestions and procedures to recognize research bias. I captured my pre-conceptions with the use of bracketing and restraining. A qualitative checklist was established to guarantee consistent conduction of the collection and analysis of data. This study is more interpretive and followed the guidance of Van Manen's (2014) phenomenology. Bracketing was used to provide answers to pre-and post-interviews and questions for pre-and post-member checking to provide my perceptions, feelings, beliefs, and thoughts.

Study Results

Total quality management practices are implemented by every organization, including the petroleum producing companies in Nigeria, for improved processes, business re-engineering tendency, and periodic planned change for continual performance improvement. Petroleum industries constitute 95% of Nigerian revenues and do not require extended production downtime due to quality-related issues in procured technical materials for project construction and oilfield facilities maintenance. Appendix C (p. 299)

embraces a description of various quality-related issues by participants in procured materials for a petroleum producing company over five years. Organizations must implement quality management systems (QMS) and processes to continuously improve the systems and mitigate the continual rise in quality issues.

Twelve participants from eight companies participated in the qualitative study. P1 to P12 had a word-for-word transcription of their interviews. The transcribed interviews comprised pauses, interrupted calls, sounds from backgrounds, and controversial sounds. The stages of data analysis were via the summary of participants' experiences. The steps were organized into each RQ with the hermeneutic circle and codes per van Manen's (2014) interpretive phenomenological analysis (IPA). I organized, coded, and analyzed each research question into (a) Management Practices Code (IQs 1, 2, 3 linked to RQ1), (b) Continuous Quality Improvement Code (IQs 4, 5, 6 linked to RQ2), and (c) Strategic Planned Change Process Code (IQ 7 linked to RQ3) to explore the reflection of van Manen's (2014) IPA per participants experiences. Participants' perceptions or lived experiences related to each RQs were explored as contained within each code segment. The analysis of the P1 to P12s' responses for each RQs (overarching research question, sub-question 1, and sub-question 2) gave the idea under van Manen's (2014) IPA.

Lived experiences involve telling stories about one's perceptions, feelings, and thoughts about a phenomenon as lived. Participants' lived experiences via their individual stories constitute the answers to the RQs because the feedback is connected to the phenomenon under study (Moran, 2018; Van Manen, 2014).

RQ1 was as follows: What are the lived experiences of managers in the petroleum industry or supply chain actors to petroleum industry in using total quality management practices related to procurement performance (IQs 1,2,3)? If despite the existence of these total quality management practices in the organization and quality problems persist, different participants have applied some of the management practices to improve quality of procured technical materials. Respondent discussed their respective lived experiences in using total quality management practices to influence procurement performances.

Theme 1: Management Practices for Improved Performance

TQM practices have improved processes and performance in different organizations. Procurement managers such as P3, P9, and P11 described their experiences about the TQM practices that have improved performance in their respective companies when quality failed. P3 mentioned two management practices that continually improved procurement performance in EPCI organization in the procurement of technical materials. P3 said,

> We applied basically two of the quality management practices which are the supplier relationship management and adherence to specifications and standards. For supplier relationship management, so where we're getting the suppliers should be known. So, in discussions with the suppliers to be aware of all our policies. we as a company have zero tolerance for poor quality. We're also discussing with them trying to understand the reasons for the supplier's behavior and educating the supplier on the right ways to go. For adherence to specification and standards, we issue nonconformance report

(NCR) to vendors who fail in quality, and we make sure we archive this information to act, especially in a case where it seems vendor issued an NCR again.

P9 from EP organization said that "adherence to specification, continuous training of employees, and process management have contributed to continuous improvement of quality in my organization". P9 continued that "over the past years, I observed that a lot of the people involved in supply chain operation have omitted one or more parameters in the required specification from clients and eventually had quality issues such as part-number mismatch, size problem or nonconformance". Organizations strictly adhered to specifications and improved technical material quality. Employees have been trained on the technology about e-sourcing platform, procurement skills, and some engineering techniques, especially the use of material requisition document and improved quality. Another procurement manager, P11, a SCA to petroleum producing company (PPC), advised that "so far, we have applied quality inspection, assurance and control practices (QAQC), adherence to specification and standard procedures (ASSP), leadership commitment to quality (LCQ), and knowledge management (KM) to improve technical materials quality performance". Datasheets were provided to be adhered to in terms of specification, ensuring technical materials are fit for use in project construction. Knowledge of the product from market intelligence reduced quality-related issues. Leadership involvement in engineering document appraisals and review contributed to improved technical materials and avoided rejection by clients.

Assistant procurement managers P1 and P6 from petroleum producing companies revealed the management practices that contributed to improved performance in their

respective organization. P1 said “ok, process management was applied, to practically define project needs, launch consultations, kick-off meetings, and clarifications for the absolute understanding of key actors like the buyer, supplier, and manufacturers”. P1 continued that “we also, applied quality inspection, assurance and control to ensure that manufactured materials were in line with company general specification (GS) and project requirements, and employee training and education developed staff skills to effectively reduce quality-related issues”. Third-party inspector, supplier, technical administrator (TADM), and OEM’s involvement in inspections and QAQC, evaluated what has been manufactured based on certain criteria to confirm that this project material met the requirements. There was need to train employees in the procurement process steps to enhance their autonomy and stability. Another assistant procurement manager P6 added to P1’s TQM practices that “strategic quality planning and management practice were revisited despite the existence of TQM practices in order to improve the quality of procured technical materials in my organization” P6 said,

> And the next is the strategic quality planning and management and then quality inspections, assurance and control practices were applied in inspection of the technical materials prior to delivery of materials. In the process, the buyer continuously liaised with the supplier in terms of description of the materials, and any deviation from datasheets, project requirements, and general specifications such that the manufacturer produced technical materials with no quality-related issues sufficed.

Responding to the management practices that improved quality performance despite existence of TQM implementation in organizations, Chief executive officers (CEO) such as

P4 and P5 stated their opinions. P4 mentioned that “strategic planning and management and leadership commitment were two important practices applied after any failure of quality, to improve technical material’s quality”. Leadership must be involved to strategize on the best approach to improve processes after quality failures. Proper planning must be put in place and monitored for an improved process and good quality technical materials. P5 suggested that benchmarking management and QMS were important management practices that averted issues in technical materials. P5 said,

“I think let me just mention the most important three practices we have always adopted, if quality issues in technical materials persist. Process management is one of them, benchmarking is another one, and quality management system.”

P5 stated the need to benchmark processes with other supply chain actors such as international oil companies (IOC), suppliers, and manufacturers based on the technical descriptions and commercial offers for the said materials. P5 expressed that benchmarking was used to confirm if this technical material has been supplied previously, and if yes, then, they compared the drawings, datasheets, specifications and so forth with previous purchase which had no quality-related issues. By so doing, quality-related issues did not suffice. In addition, it is very important in quality practice to have a management system in place in every organization. P5 adopted QMS, which embraced quality inspection, assurance, and control of technical materials to confirm that technical items were manufactured as per correct specification and project requirement. In fact, prior to contract execution for procurement of technical materials, the inspection test and plan (ITP) must be developed,

reviewed, and agreed upon before proceeding the production of the technical materials for improved quality performance (P5).

Engineering and quality managers (P2, P8, P10 and P12), had their diverse perspectives on the lived experiences in using total quality practices to influence procurement performance engineering-wise. I observed that engineering and technical personnel are important players in technical material supply chain process. Without engineers, quality, or technical personnel, there won't be any procurement functions, and in turn no project construction and no effective oilfield facility maintenance.

From their lived experience about TQM practices that improved procurement performance, P2 revealed four important management practices that improved performance and how: customer focus, benchmarking, supplier relationship, and quality inspection, assurance, and control. P2 discussed that these TQM practices helped their organization in achieving good productivity and procurement of technical materials without quality-related problems such as drawing issue or datasheet problems. As an engineering manager, P2 further declared that "quality practices have been applied to continuously improve the quality of service and technical materials for construction of platforms as well as wellheads for oil and gas production operations". For the exploration of how these management practices improved performance, P2 said,

> In total quality management in my organization, customer focus is number one practice anyone must have in the mind to be able to satisfy the customer needs. And in customer satisfaction, there must be competitiveness in costs, quality, and lead-time. The technical materials must be within budget, right quality by following, reviewing,

> and approving all the processes involved in continuously achieving the right materials, and ensuring you maintain the delivery lead-time. Setting these standards in mind and respecting the request of the customer aligned all key supply chain actors in project engineering and procurement deliverables.

Engineers continuously needed to design engineering documentation and material requisition document which are fit for use in project technical materials procurement. P8 agreed with P1 that employee training and education, adherence to specification and standards and proper QAQC were key management practices that improved procurement performance. Despite implementation of management practices in organization, personnel must ensure that specifications and standards are adhered to. For every equipment and item to be procured, P8 applied quality assurance, inspection, and control to ensure mitigated quality-related issues in technical materials.

Continuing the discussion for improved quality of technical materials for project construction and oilfield facilities maintenance P8 said,

> Ok, let me tell you, first, employee training and education, if an employee is properly trained on his role with respect to authority, with respect to ensuring that, that trade or his position with the current development technically, he will be able to ascertain or able to produce a quality specification that will meet project or company requirement and international codes and standard. Second point is that using adherence to specification and standard. Having been properly trained for that position, take for instance in mechanical engineering, a rotating equipment engineer, when he tends to specify or procure a pump, he needs to ensure that he adheres to specification and

> codes and standards and this specification and standard are related to company specification, project specification, international code and standard, and all that. When all these are put in place properly, with proper training and education, quality issue in procurement will be reduced drastically. Then third point is quality inspection, assurance, and control (QAQC). A proper QAQC in place will reduce to a baring minimum if not eliminated.

P10, a quality manager expressed his perspective on how quality-related issues were improved in his organization. He noted that personnel gave attention to details during the procurement process. Despite implementation of TQM in their organization, quality-related issues had occurred. P10 brought a different perspective, a bit different from the approaches by P1, P2, P3, P4…P12. P10 said,

> The first thing we do, we do a root cause analysis. When we do a root cause analysis, we will be able to, because if there is an issue, if we follow judiciously all the processes. Ok, let me finish. When we do a root cause analysis, then we'll be able to find out where the problem came from. Ok, then we see where the problem, then will now be able to improve. Like I said from the beginning, we have different processes ok, when we are doing quality planning. If we are doing quality planning, we look at all the activities or processes that will flow to get the products, quality products.

P10 emphasized a root cause analysis of quality issues first prior to improving the process. All organization has management practices that guide their operations but P10 stressed on the need for proper planning from the beginning of the process and if quality-related problem occurred, root cause analysis would be performed to pinpoint any quality gap. P10

suggested that “If there is no gap, it means there is adequate planning, there won’t be any quality issue. So, when you have an issue, you will do root cause analysis, which you can do by brainstorming or you can use another tool to find out where the root cause of the problem is. It is only when you find the root cause, then you can now improve the process”. After brainstorming and proper planning, procurement performance such as reduced costs, good delivery lead time, and quality were achieved.

To P12 (valve specialist), the proper initiation, customer focus, and training of employees were practices used by technical administrator (TADM) to ensure a good procurement performance in terms of quality. P12 and P5 consulted and practiced use of QMS such as ISO 9001 and ISO 9001:2015, which is the quality management that has to do with safety of materials and equipment to improve performance. P12 concurred with P2 that customer focus was important during the initiation of the technical material acquisition process. P12 said,

> The first one that we normally review, I have recommended several reviews, the customer focus, which we have reviewed severally. And we are still improving on it. Customer focus in the sense that, well, before you engage the customer, you should know exactly what you are looking for that is the focus we are looking at. So that at the basic engineering we should have concluded like, in valves we should have a datasheet already checked. And customer focus also like what I do with EMERSON, I try to get their sizing documents and I try to compare it with our requirement to see if we are going to have the same results when we eventually present our datasheet. Then

number two, we try to prevent mistakes and try to lower costs. I think these are the points that apply majorly to me.

Perceived Causes of Continual Rise in Quality-Related Issues and Mitigation

Several participants communicated about the causes of continual rise in quality-related issues in organizations and their resolutions, despite existence of TQM practices and approval of QAQC. P1 to P12 believed in QAQC as showcasing the parameters of the technical materials being procured for projects, being in line with requirement supposedly. QAQC is an important part of the engineering and procurement process that confirmed that technical materials are fit-for-use. The question is that if QAQC is performed and approved by third-party inspectors, TADM, and OEM quality personnel, can quality-related issues be averted in procured technical materials?

Engineering and Quality managers (P2, P8, P10 and P12) categorically stated that prior to progressing the procurement of technical materials for oilfield facility maintenance, an inspection test and plan (ITP) must be developed, reviewed, and agreed upon with the OEM since this ITP would be referenced throughout the manufacturing process in general and QAQC processes to reduce or prevent quality-related issues. The question here is what if ITP was approved and yet quality-related issue sufficed in procured technical materials? To this end, shipping engineer (P7) and Valve engineer (P12) agreed on ITP but could still have quality issue despite validated ITP. P7 advised that quality-related issues have occurred on technical materials during equipment packing process, in-land transit operations, shipping process, and transportation. P12 confirmed that “sometimes we have issues like we

have some materials delivered and there are little deformities, due to Cranage, you know, loading, offloading, shipping, and all that".

Assistant procurement manager P1 explained that "lack of attention given to procurement process management, employee training and education, quality inspection, assurance and control, have led to quality related issues in procured technical materials for project construction and facility maintenance". Another procurement manager P6, added that quality-related issues occurred due to gaps in related quality knowledge, PM, employee training and education, quality planning, and supplier relationship management. P2 unveiled causes of quality problems as lived. P2 said,

> So, let's summarize. What can increase the cost of quality of an equipment? I would say first, the optimized design specification of this equipment. This is number one. Number two, lack of process benchmark, number three, QAQC not followed strictly, and number four, no quality relationship with vendors could significantly impact quality and the material cost.

P8 from engineering viewpoint opined that "ok, you and I know that even though we have all the practices in place, and training upon training, upon training and preaching of quality management system and practices, they are few or some employees that are still not able to embrace the TQM practices and will not obey the rules". P8 repeated that lack of employee training and education, lack of adherence to specification and standards, lack of QAQC, as well as lack of knowledge management have caused quality issues to reoccur repeatedly. For P10, lack of proper check of the system (based on quality gurus' Act-do-and-check

philosophies), overlook of certain actions, and waived inspections of technical material after manufacturing have caused quality-related issues. P10 concluded,

> So, that's why we see despite, we have this system, but you are still having a product that has a quality issue because of no action, is not well implemented, and there is no check or checking in some areas and there is no checking in some other areas.

P3 revealed other factors that caused quality related problems in procured technical materials for production operations, project construction, and oilfield facility maintenance as lived. P3 described that some causes of increase in quality related issues is when one lacks attention to detail, negligence of procedures, and vendor's intention to make undue profit. Attention to details is expected during evaluations or during inspections to mitigate the quality related issues. P3 concluded,

> Negligence on the part of even the procurement personnel, like the buyers, when your negligence on the procurement processes that the organization has put in place or lack of knowledge of even in selecting suitable suppliers or qualified suppliers or even sharing the right quality and technical information to the suppliers, are some of the things that can increase quality-related issues. Then on the part of vendors and even OEMs, that's what I was talking about, the intention to make undue profit, when a vendor is issued a purchase order (PO) with a particular amount for a particular quality of the material.

P4 and P5 (executive directors) advised that not paying attention to details lead to quality-related issues. For instance, in the development of statements of requirements and the scope of work for the technical materials, buyers, engineers, quality personnel, and

technical responsible personnel shall collaborate continuously until technical materials are delivered. Lack of collaboration, effective communication, attention to details among key supply chain actors (TADM, procurement professional, and OEMs) in the procurement process of a technical materials for stock replenishments have caused increased quality-related issues such as wrong drawing, omitted parameters in datasheet, part-numbers mismatch, and delayed delivery as lived. Especially, P4 stated that "gaps in strategic quality planning and management, and no leadership involvement in the engineering design review and documentations in my organization had caused quality problems in the process".

Behavioral Influences on Increased Quality-Related Issues

Individual behaviors were foreseen to have contributed to continued increase of quality-related problems in procured technical materials for project construction. All participants agreed to the question that said: in supply chain, do you think that TADM's behavior, buyer's behavior, and supplier's behavior could have contributed to the increased quality problems in the procured technical material? P12 said yes and that the OEM's behavior should be added to the three behaviors to make it four, since the OEM could not confirm and implement deviations applicable to the technical material production from client. Normally, when there are deviations from the material requisition, it must be tested in the 3-D Model of the project to confirm technical item is fit for use to avoid size and weight impacts on the oil and gas production platform under construction.

P1 to P12 said, yes that these key supply chain actors' behaviors contributed to the continual rise in quality-related issues in procured technical materials. The technical

administrator may have not completely described the material well or no effective communication between the buyer and the technical personnel. The buyer may have not asked all the required questions to the technical duet and may have not relayed complete technical parameters to the manufacturer. Deviations from normal size or drawing would contribute to quality problems. So, supplier behavior may be negative, implying that supplier did not pay attention to details. Sometimes, suppliers will want to get more profit and as a result will not communicate all information to the manufacturer. There may not be detailed information to the manufacturer.

Therefore, continuous collaboration among the supply chain actors must be practiced and thereby, avoiding any wrong practices that could hamper quality in processes. P11 observed that among the three actors, that the TADM's behavior could drastically impact the decisions of the buyer, supplier, and OEM. Table 13 summarizes the lived experiences of participants in management practices, causes and resolves of quality-related problems in technical materials for project construction, stock replenishment, oilfield facility maintenance, and oil and gas production in the onshore, offshore, and Deepwater operations.

Table 13

Summary Experiences of Participants in TQM Practices, Causes, and Resolves of Quality-Related Problems in Technical Materials (RQ1-IQs123)

TQM practices in organizations	Participants	Causes of quality-related issues despite TQM practices	Did buyer, supplier and TADM contribute to quality-issues?	Summary experience in using TQM practices	Viewpoint about QAQC	Resolve of quality problem after QAQC	Summary of management practices that improved performance at failed quality
1. Customer focus (CF) 2. Supplier relationship management (SRM) 3. Leadership commitment to quality (LCQ) 4. Knowledge management (KM) 5. Adherence to specification & standard procedures (ASSP) 6. Quality inspection, assurance & control (QAQC) 7. Process management (PM) 8. Employee training & education (ETE) 9. Benchmarking management (BM)	P1	Lack of attention to details. Lack of ETE. No QAQC.	Yes	Attention to details by SCA. Comprehensive description of materials. Improved quality. Improved processes.	Believed in QAQC	Reviewed all QAQC. Developed NCR with corrective actions. Blacklisted supplier. Replaced items via ASSP. Recheck quality process. Recheck quality procedure.	PM QAQC
	P2	Current overall market. Non-optimized engineering. Improper QAQC. Lack of benchmark. Lack of SRM. Vendor's intention to make profit.	Yes	Strict follow-up of specs and standards. Delivery of materials w/o quality issues. Ensured effective facility commissioning and startup.	Believed in QAQC	Recheck QAQC. Recheck what has not been respected. Review engineering documentation. Review competency of technical engineers. Replaced technical materials. Material rejection.	CF BM SRM QAQC
	P3	Lack of attention to details. Negligence. Vendor's intention to make profit. Lack of knowledge	Yes	Strict follow up of supplier performance. Proper technical evaluation. Proper procurement process. Continual employee training.	Believed in QAQC	Educated supplier. Issued NCR. Remedial actions by OEM. Another sub supplier replaced material.	SRM ASSP

TQM practices in organizations	Participants	Causes of quality-related issues despite TQM practices	Did buyer, supplier and TADM contribute to quality-issues?	Summary experience in using TQM practices	Viewpoint about QAQC	Resolve of quality problem after QAQC	Summary of Management practices that improved performance at failed quality
10. Strategic planning and management (SPM) 11. Production planning (PrM) 12. Quality management system (QMS)	P4	Lack of attention to details. Lack of collaboration. Lack of SRM. Lack of LCQ Wrong drawing	Yes	Cost avoidance. Cost savings. Cost of quality avoidance. Avoid rework. Improved delivery lead time. Improved procurement performance. Improved collaboration among SCA.	Believed in QAQC	Raised NCR. Developed corrective actions. Corrected processes. Performed another QAQC. Replaced material.	SRM LCQ
	P5	Gap in TQM practices. Not managed PM. None ASSP. No 3rd party QAQC. Lack of BM. Lack of collaboration. Lack of communication.	Yes	Continuous improvement of processes. Provision of ITP from beginning. Effective management of quality performance. Process benchmarking.	Believed in QAQC	Re-performed QAQC.	PM BM QMS
	P6	Gap in KM. Lack of PM. Lack of ETE. Lack of SPM. Lack SRM. No proper material description.	Yes	Continuous process improvement. Effective production operations. Reduced downtime in production. Improved safety culture. Reduced shortfalls. Attention to details. Reduced reworks.	Believed in QAQC	Properly re-checked QAQC processes with third party inspector, engineers, and quality people.	PM QAQC SPM

TQM practices in organizations	Participants	Causes of quality-related issues despite TQM practices	Did buyer, supplier and TADM contribute to quality-issues?	Summary experience in using TQM practices	Viewpoint about QAQC	Resolve of quality problem after QAQC	Summary of management practices that improved performance at failed quality
	P7	Periodic changes on specifications. Mismatch in dimensions. Delay in PO placement. Issue of MTC, Storage facility issues. Improper packing and handling during transportation.	Yes	Timeliness. Within budget Right quality materials. Early consideration of QAQC.	Believed in QAQC	Ensured proper handing and protection after successful QAQC.	QAQC People involvement Continuous improvement Proper handling
	P8	Employee not embracing TQM practices. Lack of obeying the rules. Lack of ETE. Lack of ASSP. Lack QAQC. Lack of KM.	Yes	Presentation of good design. Effective material technical description. Putting things in the right perspective. Proper communication and approvals.	Believed in QAQC	Have not experience any quality issue after QAQC.	ETE ASSP QAQC
	P9	Lack of ASSP. Lack of ETE Lack of PM.	Yes	Continuous adherence to TQM practices. Proper follow-up of vendor engineering documentation. Proper collaboration by key SCA. Addition of values to manufacturing process.	Believed in QAQC	Revisited the procurement process. Aligned the key SCA. Material replaced.	ASSP ETE PM

TQM practices in organizations	Participants	Causes of quality-related issues despite TQM practices	Did buyer, supplier and TADM contribute to quality-issues?	Summary experience in using TQM practices	Viewpoint about QAQC	Resolve of quality problem after QAQC	Summary of management practices that improved performance at failed quality
	P10	Inadequacy of proper system checks. Overlooked process checks. Waived QAQC. Lack of SRM. Lack of attention to details	Yes	Proper planning. Proper scheduling. Working within the intervals. Being proactive. Develop ITP and follow up. Avoid reworks.	Believed in QAQC	Reviewed all designs approved by approved by design specialist prior manufacturing.	Root cause analysis Attention to details SRM
	P11	No heed to ASSP.Lack of quality technical specification.Improper QAQC.Reduced LCQ.Lack of KM	Yes	Improve procurement performance.Ensured that quality is to standard.Enhance knowledge of products.	Believed in QAQC	TADM reviewed technical specifications.Reviewed QAQC processes used.Relaunched RFQ.	QAQC ASSP LCQ KM
	P12	Issue from basic engineering. No ASSP. Mismatch dimension. Lack of knowledge of the rules. Improper technical initiation. Lack of communication. Lack of collaboration. No proper QMS. Lack of continuous ETE. Lack of process scrutiny. Lack of timely response to TQs. No response to deviations	Yes	Easy brainstorming. Proper initiation, planning, and scheduling. Quality engagement. Improve and control of processes. Efficient QMS. Avoid rush procurement and manufacturing.	Believed in QAQC	Went back to factory where QAQC was done. Rechecked QAQC steps. Checked packaging. Checked QMS for transport. Developed NCR. developed corrective action. Replace materials.	Proper initiation CF ETE QMS

Notes. QAQC – quality assurance and control, ETE – employee training and education, ASSP – adherence to standard specifications and procedures, CF – customer focus, QMS

– quality management system, SRM – supplier relationship management, LC – leadership commitment, KM – knowledge management, PM – process management, and BM – bench marking.

Table 14 highlights top 20 words participants used to describe quality management practices for improved technical materials. Specifications, manufacturers, and requirements are words that occurred the most, implying that adherence to specifications and standards are requirements for TADM, suppliers, and manufacturers to fabricate quality products for project constructions and oil field maintenance operations. Refer to table 14 below.

Table 14

Top 20 Words Participants Used to Describe Quality Management Practices Terms

TQM practices	Total	% of total
specifications	27	5%
administrator	13	4%
manufacturers	25	4%
collaboration	13	4%
communication	13	4%
organization	12	4%
relationship	12	4%
requirements	23	4%
benchmarking	12	4%
procurement	11	4%
performance	11	4%
contributed	11	4%
information	11	4%
engineering	11	4%
experiences	11	4%

improvement	11	4%
maintenance	11	4%
management	10	3%
inspection	10	3%
continuous	10	3%
applicable	10	3%
production	10	3%
understand	10	3%

Subquestion 1 (RQ2) was as follows: What are the experiences in using total quality management practices in improving the quality of delivered materials? (IQs 4,5,6)?

This RQ2 aims to explore participants' lived experiences in continuous quality improvement (CQI) processes related to the quality of delivered technical materials. This RQ2 looked at procured technical materials, quality-related issues, and resolution steps connected to TQM practices to continuously improve quality. The RQ2 explored different participants' views about material test certificates (MTCs) of technical materials and their values, and technical material rejection resolution for continuous quality improvement of delivered technical materials to evade downtime in processes and shortfall in productivity. And constant quality improvement to capture participants ' lived experiences or perceptions. Expressions about the return of experience (REX) by participants as lived summed up the answers to RQ2.

Theme 2: Continuous Quality Improvement (CQI) in Delivered Technical Materials

Procured technical materials increased in quality-related issues over five years, and in turn, increased costs in technical services and procurement overhead by 45% (Total E&P, 2017). Participants' lived experiences in total quality management practices suggested the need for CQI of delivered technical materials. Several participants talked about different ways to improve quality continuously. Procurement managers (P3, P9, and P11), assistant procurement managers (P1 and P6), engineering managers (P2 and P8), TADM (P12), Quality Manager (P10), directors (P4 and P5), and shipping engineer (7) lent their credence on quality improvement of delivered technical materials.

P3 discussed adherence to specifications and standards and issuance of nonconformance reports (NCR) to vendors for quality improvement of delivered technical materials. The distribution of an NCR has in industry-standard become very important, not just to discredit a vendor but also to understand the importance of quality. P9 said that in their EP organization, "vendor engineering, engineering design, and documentation were performed and followed to ensure procured technical materials were in line with project requirement." The engineering team issued vendor engineering documents on time, and all revisions were communicated to vendors to update the manufacturing process. P9 provided SharePoint, continuous vendor training, and adherence to specifications for CQI in delivered materials for clarity of purpose. P9 said,

> All suppliers and manufacturers were taught about the SharePoint system for proper review and return of engineering and procurement documents for timely review and approval by the client to avoid a late manufacturing schedule and late material

> delivery. We initiated continuous training to all vendors for effective adaptation to the process. We ensured vendors adhere to specifications for continual quality improvement in the manufacturing process.

In the same vein, P11 disclosed that a proper inspection was performed to ensure no dimension problem, no broken parts, and no wrong part number for continuous quality improvement in delivered technical materials. Assistant procurement managers (P1 and P6) lent their credence to the CQI of provided technical materials. P1 specified the use of proper PM, training, and QAQC as life experiences in TQM practices to improve the quality of material delivered for maintenance operations. P1 said,

> So, I followed these procedures as stipulated in the procurement process management to ensure continual employee training and education to exhibit procurement know-how constantly to avoid nonconformities. Quality inspection with third parties, company QAQC, and manufacturer representatives yielded technical items with no quality-related issues. So, the synergy between the quality inspector, the getting it right from the first time, the inspection is done, all this working together, we had success in receiving materials with no quality-related issues.

The second procurement manager, P6, opined that "strictly adhering to the procedure in PM, constant training to employees, exhibiting strategic quality planning and management, and relaying the appropriate material descriptions to suppliers and manufacturers have improved procurement quality processes."

To the engineers (P2 and P8), TADM (P12), Quality Manager (P10), quality-related issues can never be exterminated; instead, they could be mitigated. Continuous process improvement would avert technical problems in delivered materials. To continually improve technical materials, P2 performed a re-organization of the engineering team to establish and have engineers that can give attention to details and timely review engineering documents for technical materials to be procured for the project. P2 said,

> Total quality management processes have improved my team so much that each person watched each other's back. Engineering deliverables have been attained to avoid delays in the fabrication of technical materials. We should carefully check the quality and check all these deliverables to ensure that these deliverables align with the specification before we approve or give the go-ahead to the vendor to start manufacturing. So, this QAQC check is very crucial.

P8 expressed the same lived experiences per management practices with P2 but added that knowledge of the product being procured, and leadership involvement were essential in the engineering designs for CQI of delivered technical materials. To the assistant procurement managers, P1 and P6, the quality of produced items was improved via emphasis on the synergy between the quality inspector, the getting it right from the first time, and the inspection is done to receive materials with no quality-related material issues. P4 suggested a systematic approach and participation of key SCA in the actual planning and execution of the process improvement for improved quality. P4 talked about the value of collaboration. "I had collaborated with the engineers, quality personnel,

shipping officers, and professionals in procurement during technical material procurement for improved quality of delivered materials."

P5 recommended applying PM, benchmarking, and quality management systems as having contributed to a reduction in production shortfalls, increased productivity, and reduced cost in procurement overhead and technical services. P5 said further that TQM practices related to quality performance had made the organization avoid rework, avoid repeat purchase, reduced cost of quality, reduce waste, and improved products. To P12, improved quality of technical materials depends on proper initiation of the procurement process. P12 believed in properly defining, improving, and controlling procurement processes to achieve a CQI in delivered technical materials. P10, in his view, stipulated that not everyone is aware of the quality practices; therefore, awareness of the QMS is the best approach to CQI in delivered technical materials for project construction and facility maintenance. From a shipping perspective, P7 said if there are no discrepancies in the processes, then he ensured that transporting these technical materials was carried out as per shipping procedures.

Experiences, Views, and Values of Material Test Certificates (MTCs) Related to CQI as Lived

Several participants defined the MTCs as an essential document that must be reviewed and approved before accepting technical materials for shipment. Engineers, TADMs, and Quality managers (P2 and P8), P12, and P10, respectively, review and approve all MTCs before technical items procurement for project construction. P2 said,

> A material test certificate (MTC) is essential because you can procure a fake product if you don't check. You should carefully review the material test certificate to confirm chemical, mechanical, and physical properties to ensure that what you are procuring is in line with what you are expecting and the service you are going to use the material for. If you buy technical materials, sometimes, you are looking for a duplex material with a lot of tensile strength, and you don't want to have a corroded item. You don't want to have corrosion or internal erosions, and then you must pay attention to the material test certificate… All the MTCs are very important, especially for piping, valves, structural steel, instruments, and mechanical equipment.

P8, P12, and P10 agreed with P2. P1, P2, P3, P4, P5, P6, P7, and P11 agreed with P2 and depended on the outcome of the MTC from engineers, quality people, and TADM to perform the procurement process of technical materials. Therefore, without approved MTC, technical materials will not be fit for use. To achieve a CQI in delivered technical materials, MTCs must be reviewed and approved by engineers or technical personnel (P1 to P12).

In terms of value, P2 expressed that MTC created comprehension of materials' mechanical properties used and was concurred by P8, P12, and P10. P1 and P6 referred to it as enabling assessment of the integrity of the system. For P3, P9, and P11, MTCs have been to verify materials applied during the fabrication and manufacturing of technical materials. Meanwhile, executive directors P4 and P5 opined that every possible area of

concern was identified MTCs. All participants stipulated that review, approval, and use of the MTCs enhanced quality of the product.

MTCs can be doctored or fabricated by suppliers to obtain a buying favor from clients. The technical duets should review the MTC critically before acceptance in the procurement process.

Technical Material Rejection Resolution for CQI

Several participants expressed that they have witnessed material rejections during the delivery of technical materials for project construction and facility maintenance except for P8. P8 said, "Over my years of experience, I've not witnessed material rejection." As engineer or technical personnel, he developed an ITP from the beginning of each process, and that worked for him, but to a few others, quality-related issues sufficed. P2 had witnessed materials rejection where technical materials arrived at a contractor site and were rejected. To solve it, P2 said, "We replaced it but faced lead-time issues …for a fully rejected material, we used a well-known and approved vendor who knows our specifications and avoided the risk of failure…quality supplier relationship was used". P10 resolved material rejection by performing a further analysis and fit for purpose inspection. In further deciding material rejection, P10 said,

> We can do an analysis and find what is fit for the purpose. Then we will accept it as is in as much as it has not met requirement which we usually do, by deviation approval, because for the product, we can raise a nonconformance. And now, if we are to accept it as is, then we present a nonconformance and now approve a concession or a waiver to the requirement because we know that the product is fit

> for purpose. Then, the second one is that it has not met the requirements, and it cannot be used; then, it would be rejected outrightly and quarantined. It could not be used. Then, the next one is that there is damage or an issue, but this damage can be repaired, and the material can be used. Then we repair. And after that, we use the materials.

P12 resolved material rejection by "further investigation and filling the nonconformity report…I investigated, 95 percent of the nonconformity result are misunderstanding". Most of the time, P12 investigated rejected technical items. It was discovered that once upon a time, there was a change in the system, it was not reflected, and technical materials are rejected because of that change. P12 observed that the project site or production site has their problem, in the sense that they looked at the material in the picture and concluded that there is a nonconformance outrightly because of a color change. P12 advised that the material certificates must be checked and resolved with OEM.

Procurement managers (P3, P9, and P11), assistant procurement managers (P1 and P6), executive directors (P4 and P5), and shipping engineer (7) resolved material rejection through the same process by raising an NCR and given to the vendor who supplied the technical materials to provide remedial actions. Although, the NCRs to resolve quality issues came from the engineers, quality people, and TADMs. P3 added that he got the vendor with the next best prize, who was technically acceptable to deliver the materials, i.e., adopted a standby alternative. P3 advised, “So, that's why it is often advisable to have

bidding processes rather than sole vendors so that based on bidding procedures, you can have other vendors that can match with the best bidder in case one vendor fails."

P9 added that the engineering document was reviewed to pinpoint the cause of quality issues and resolve the rejection, and the material was replaced. P11 supplied some gaskets to a petroleum producing company, and the gaskets were rejected due to the wrong size. In resolving the material rejection, P11 said,

> So, in resolving it, we were able to inform the buyer that this was rejected due to the wrong size. Ok, can you provide us the actual size and class of the gasket that you want? So, that helped us through that information, enabling us to supply the correct item because those things were not specified at the time of the inquiry.

P1 and P6 resolved material rejection related to a gate valve by compelling the supplier to replace the valve at no extra cost. Due to deviation or unfair practice by the supplier in terms of changed approved manufacturing place, suppler was blocked in the client's system. This kind of practice caused a delay in the project and delivery schedule (quality-related problem). P1 added that MTCs were re-traced and reviewed by TADM, employees re-trained, specifications examined to ensure compliance, and followed procedures inherent in the procurement practices to resolve rejected technical materials replacement.

Return on Experiences (REX) to Reflect CQI

Several participants shared their REX to buttress their lived experiences about continuous quality improvement practices related to procurement performance. It

indicated the problem, causes, resolution process, and constant improvement (mitigation). P1, P6, and P7 shared the same REX,

> Well, this is a very recent incident relating to quality issues in material delivered. We had some electrical cables that a cable manufacturer supplied. During delivery to the contractors, we found some physical damage on the case, conductors, and insulators, based on the inspection. We found that the damage was caused by abrasions caused by the pressure exerted by another drum of cable. These cables were in drums, and the outer part of these wooden drums was not fully protected, thereby colliding with one another. So, during transit, there was physical damage to some of the cables. So, NCR was issued with remedial actions. So, additional corrective actions were taken to prevent future reoccurrence. Some of the corrective actions taken were to ensure that all drums of cables should be covered flange to flange before being loaded for shipments. A sample of that kind of fastening was showed. And a review of the manufacturer's cable package procedure ensures all drums of cables are covered with flange to flange before being transported to the client's site. So, the nonconformance report was closed out, and the vendor now learned that in the future, for such deliveries, the packaging procedure should conform with the recommendation on the NCR that was issued.

P3 shared an REX,

> Your question is good. For the material test certificates, so I'll give an example, I'll provide a case study. We had a vendor who provided a sample MTC. During the

bidding phase, many vendors cannot offer MTC for materials, especially if these materials are going to be produced. So, most times, they go ahead to provide sample MTCs. So, this vendor provided a sample MTC during evaluation. And of course, it was technically accepted, and the PO was issued. He delivered the materials, but the quality department was able to check and realize that the MTC provided with the materials was fake. So, it was fabricated. So, it was immediately identified, and the vendor was sacked and blocked in our system.

P9 shared an REX,

Of course, I have witnessed material rejection. There was a request that was made for a water pump, the pump was brought to the site, and it was observed that the pump had a different power rating. The power rating on the pump was not in line with the power rating on the datasheet. During delivery, the pump was rejected by the client. It took weeks and months to replace the pump. The engineering document was reviewed. NCR was raised by the client and sent to the vendor for corrective action. Late delivery of replaced pump impacted the project, causing increased man-hours and cost of quality.

P11 shared an REX,

Ok, take a case study. We got a request to deliver some gaskets, and we provided them, and it was rejected since we didn't have the right size required. So, in resolving it, we were able to inform the buyer that this was rejected due to the wrong size. Ok, can you provide us the actual size and class of the gasket that you want? So, that helped us through that information and allowed us to supply the

correct item because those things were not specified at the time of the inquiry. They just gave a little information about the gasket. So, the class was not identified, and at the time of delivery, it was rejected. And at last, we were able to get the correct information and delivered suitable technical materials.

P2, P10, and P12 (engineers, TADM, and quality) shared their respective REX. P2 shared an REX:

Ok, let's take a chemical package, for example. We procured a chemical injection package. We found some nonconformance due to the fabrication speed and the covid-19 period where the inspection and factory acceptance test (FAT) was done remotely. So, it was not done with the vendor's physical presence. So, there is a lot of things you cannot see during the remote inspections. In this condition, you cannot observe any malfunction of parts. So, we discovered some damaged components when this packaged arrived on site. We raised the NCR and shared it with the vendors, and we invited the vendors to provide a mitigation measure. The vendor offered missing and damaged items at no cost.

P8 did not share any REX during the interview but promised to share one if he remembers anyone. P10 shared an REX,

We had an issue with some pipes. And the pipes' issues were because of inadequate communication. The requirements were not adequately communicated to the supplier, and because the need was not adequately communicated to the supplier, the design was not adequately reviewed. So, the vendor supplied a pipe that has a thickness that is below the required specified thickness. But, after

> analysis and evaluation, we decided to give a waiver and accept the pipelines as it is.

P10, in conjunction with project management, waived the delta in thickness, but P10 warned that waiving a process or things like this could be detrimental to project construction over time.

P12 shared a REX,

> We had received technical materials at one time like that, a stainless-steel valve instead of carbon steel as many as 40 pieces. So, to manage that was a war for me because I don't know how that happened. So, we rejected it, but a time came, somebody sent an email that the quantity was too much and there's nothing we can do. And it was delivered free carrier (FCA) by a manufacturer directly to us. So, we had to create that material and keep it for any other use, and I had sent back a request for the exact one we needed. But when I investigated, I discovered that there were some mistakes in the material creation. The personnel that created the material just resized, and there was no material number. So, the manufacturer did not even bother to ask, and he produced anything he had to make.

Executive directors, P4 and P5 shared a REX each. P4 shared an REX,

> RFQ was sent, we quoted, and a purchase order was sent to us. At the time of RFQ, an existing drawing was given to us, asking us to quote based on the manufacturer's initial delivery and existing drawing. Of course, we were not involved in the initial PO and delivery. According to the initial sketch, the manufacturer seeing the drawing, quoted us according to what was supplied to the

initial client. At the time of the inspection, they used general specification GS EP PVV 147 to perform the inspection. The third-party inspectors of their clients rejected the valve since it is not PVV compliant. The manufacturer said that he manufactured the valve according to the drawing given to him. So, I found out later that the original supplier of this same material was not compliant. Still, the client asked us to quote with that wrong drawing without realizing that the initial delivery was not compliant. Now they expected this second delivery to pass GS EP PVV 147 when the drawing that was sent was not even compliant. So, it became an issue. Presently we are about to solve the problem because DV-Marine was involved in this inspection. So, the client asked us to get GS EP PVV 147 inspection report. If the valve passes PVV Marine inspection reports, then there will be accepted. That is the process we are going through presently.

P5 shared an REX,

We tried to do a job for a petroleum producing company in Nigeria, and there was a certification of a pedestal crane. Sparrows in the USA manufactured that crane. My company had a technical center, and the Nigeria Technical Center was domiciled in South Africa. So, it became difficult to work with the US directly. So, because there was an inspection test plan and everything, and our personnel were supposed to be there to monitor the production process. We had an issue having these personnel in as at when communicated. It became a problem because if our personnel are not there to take parameters and readings, there is no way we can do a proper assurance on what has been done. So, what happened on how we

> mitigated that was to bypass the Nigerian technical center, which is in South Africa, and moved directly for the approval because ours was a multinational company. It became easier to get authorization to work with the US now. And that's the first time the US and Nigeria are working directly on a project in that company. We needed to make sure there were no quality-related issues at the end of the day because one thing is if you're supposed to send an inspector. If the inspector did not go for a day, you bring the hand of a clock back. Then it becomes an issue altogether because what has been processed in a day can never be redone since we're supposed to see what is being performed.

The diverse REX from several participants denoted that quality-related issues comprised physical damage (P1, P6, P7), fake MTC (P3), wrong power rating (P9), wrong size (P11), nonconformance (P2), wrong thickness in pipes (P10), inappropriate material (P12), wrong drawing, late delivery (P4) and so forth. Mitigation for quality-related issues in procured technical materials from this REX was the provision of NCR with remedial actions, reorder and vendor blockage, reorder with relevant information and class, waiver, use of third-party inspector for FAT and QAQC, and so forth. Table 15 summarizes CQI in delivered technical materials as lived by participants (witnessed quality-related issues from REX, causes of quality-related problems, Mitigation measures (improved quality) as lived).

Table 15

Participant CQI Efforts in Delivered Technical Materials as Lived Experiences

Participants	Witnessed quality-related issues from REX	Causes of quality-related issues as lived	Mitigation measures (CQI)	CQI from TQM practices *(five highest occurrence)*
P1	Physical damage on cases, insulators, and conductors.	Lack of attention to details. Lack of ETE. No QAQC. Abrasions. Lack of protection	Attention to details by SCA. Comprehensive description of materials.	**ITP** **QAQC** **PM** **SRM** **ASSP** **ETE**
P2	Nonconformance. Damaged components in chemical injection package. Broken sight glass. Loss pressure gauges.	Current overall market. Non-optimized engineering. Improper QAQC. Lack of benchmark. Lack of SRM. Vendor's intention to make profit.	Strict follow-up of specs and standards. Quality SOR and SOW. Quality basic engineering	
P3	Fabricated MTC of technical materials. Wrong size. Wrong dimension.	Lack of attention to details. Negligence. Vendor's intention to make profit. Lack of knowledge Fake MTC (fabricated)	Strict follow up of supplier performance. Proper technical evaluation. Proper procurement process. Continual employee training.	

Participants	Witnessed quality-related issues from REX	Causes of quality-related issues as lived	Mitigation measures (CQI)
P4	Wrong drawing of valves was specified. Nonconformance. Late delivery.	Lack of attention to details. Lack of collaboration. Lack of SRM. Lack of LCQ Wrong drawing	Continuous liaison with technical duet. Focus on QTC. Procurement performance management. Proper collaboration among SCA.
P5	Presence of 3rd party inspector mitigated wrong parameter readings.	Gap in TQM practices. Not managed PM. None ASSP. No 3rd party QAQC. Lack of BM. Lack of collaboration. Lack of communication.	Continuous improvement of processes. Provision of ITP from beginning. Effective management of quality performance. Process benchmarking.
P6	Physical damage on cases, insulators, and conductors.	Gap in KM. Lack of PM. Lack of ETE. Lack of SPM. Lack SRM. No proper material description.	Provision and follow up of ITP from beginning. Attention to details.

Participants	Witnessed quality-related issues from REX	Causes of quality-related issues as lived	Mitigation measures (CQI)
P7	Physical damage on cases, insulators, and conductors.	Periodic changes on specifications. Mismatch in dimensions. Delay in PO placement. Issue of MTC, Storage facility issues. Improper packing and handling during transportation.	Development, approval, and follow-up of ITP. Early consideration of QAQC.
P8	No REX shared	Employee not embracing TQM practices. Lack of obeying the rules. Lack of ETE. Lack of ASSP. Lack QAQC. Lack of KM.	Quality engineering design. Effective material technical description. Proper communication and approvals.
P9	Wrong power rating in datasheet of pump.	Lack of ASSP. Lack of ETE Lack of PM.	Continuous adherence to TQM practices. Proper follow-up of vendor engineering documentation. Proper collaboration by key SCA.
P10	Wrong design of pipe. Wrong thickness.	Inadequacy of proper system checks. Overlooked process checks. Waived QAQC. Lack of SRM. Lack of attention to details	Proper planning. Proper scheduling. Being proactive. Develop ITP and follow up. Avoid reworks.

Participants	Witnessed quality-related issues from REX	Causes of quality-related issues as lived	Mitigation measures (CQI)
P11	Wrong size of gasketsWrong class.Wrong material	No heed to ASSP.Lack of quality technical specification.Improper QAQC.Reduced LCQ.Lack of KM	Adherence to specification and standards.Enhance knowledge of products.
P12	Wrong material. Wrong quantities. Size mismatch Dimension mismatch	Issue from basic engineering. No ASSP. Lack of knowledge of the rules. Improper technical initiation. Lack of communication. Lack of collaboration. No proper QMS. Lack of continuous ETE. Lack of process scrutiny. Lack of timely response to TQs. No response to deviations	Proper initiation, planning, and scheduling. Quality engagement. Proper control of processes. Efficient QMS. Avoid rush procurement and manufacturing.

Notes. QAQC – quality assurance and control, ETE – employee training and education, ASSP – adherence to standard specifications and procedures, CF – customer focus, QMS – quality management system, SRM – supplier relationship management, LC – leadership commitment, KM – knowledge management, PM – process management, and BM – bench marking.

Table 16 highlights the top 20 words participants used to indicate continuous quality improvement of procured technical materials. Participants used adherence to specification as a requirement for CQI. Refer to table 16 below.

Table 16

Top 20 Words Participants Used to Describe Causes of Quality Issues and Continuous Quality Improvement

Word	Total	% Total
specifications	27	5%
transportation	14	5%
nonconformity	13	4%
manufacturing	25	4%
certification	13	4%
certificates	23	4%
organization	12	4%
confirmation	12	4%
construction	12	4%
requirements	23	4%
manufactured	12	4%
procurement	11	4%
engineering	11	4%
maintenance	11	4%
improvement	11	4%
management	10	3%
inspection	10	3%
properties	10	3%
attributed	10	3%
mechanical	10	3%
continuous	10	3%
maintained	10	3%

Subquestion 2 (RQ3) as follows: What are managers' experiences in the petroleum industry or supply chain actors in influencing the planned change process for improved quality of procured technical materials (IQ 7)?

RQ3 aimed to explore participants' lived experiences in planned organizational change related to the quality of delivered technical materials. This RQ3 explored people's perceptions of their involvement in a planned organizational change in different areas such as engineering, procurement, construction, maintenance, and projects. The outcome of this study could influence organizational change to improve the quality of technical materials continually. Planned change experiences as lived by people is a trajectory to fine-tune procurement processes and evade continuous rise in quality-related issues of technical materials. The planned strategic change was coded in NVivo to capture positive or negative experiences of people about quality management practices related to planned change, strategic planning put in place to ensure successful planned change, and areas of successful organizational change to reduce quality-related issues in procured technical materials.

Theme 3: Strategic Organizational Planned Change Process as Lived

Procurement managers (P3, P9, and P11) have been involved in planned organizational change. Several participants highlighted a different kinds of planned organization changes as lived. P3 explained the rehabilitation of the bidder selection process and market intelligence process in their organization to improve operations. P3 said,

> They were checking vendors that have delivered in the past, checking vendors that have failed to offer in the past, and check vendors that have had a bad experience for their clients. So, a lot of checks were done on vendor selection.

This planned change by P3 revealed vendors that have failed and delivered bad quality technical materials in the past and vendors that have performed in the past for their involvement in a significant change in the procurement process. The outcome of this check prompted the planned change in an integral part of the organization, significantly when P3 streamlined or maybe did business re-engineering to see how all these aspects, such as supplier performance feedback, could be positive or negative improved quality performance. The ongoing relationship with optimistic suppliers mitigated quality issues in procurement. P3 described that the planned change was to sensitize and educate the professional colleagues on the importance of going through these significant steps in selecting vendors for a particular bid to reduce quality-related issues.

Before performing a planned change, P9 observed a loophole in the engineering documentation process. P9 looked at it critically to see that there were lapses even among the key employees carrying out material requisition or documentation reviews. P9 stated that he overhauled the vendor engineering documentation team to be on their toes for effective operation regarding the technical details required to manufacture materials. The planned change was achieved through practical employee training, supervision, and leadership involvement. P9 was involved in strategic transformational panned change in an aspect of the engineering (vendor engineering). P9 ensured that all technical

information given was accurate information for effective clarification of the buyers, technical personnel, and supplier for continuous quality performance improvement.

To P11, there must be a causative agent to activate organization planned change. P11 observed a lack of communication and collaboration among supply chain actors (TADM, buyers, and suppliers). She was involved in a strategic transformational planned change in their organization for continuous quality improvement. She significantly changed the processes of work and the culture of the procurement organization. Effective collaboration and communication were the key messages of P11 among supply chain actors to effectively improve the quality of technical materials. At the end of the planned change, P11 said that “in other words, the buyer should liaise with the end-user effectively, and the end-user should give feedback. So, the buyer should be able to provide input to the client who is supplying items.”

Assistant Procurement managers (P1 and P6) shared their views about planned organizational changes. P1 said,

> In the procurement department, planned organizational change on detecting irregularities such as quality-related issues, downtime in production, and increased cost in procurement performance, designed organizational change was necessary. All staff were shuffled and trained in the procurement department.

To P1, irregularities in the procurement function necessitated a planned change in the organizations. Shuffling of employees was performed, close collaboration and communication, and different supply chain actors having to stay in one large office to ease technical clarifications and kick-off meetings as needed. P1 said, "I developed a

formidable team where you don't need to start to run into a far distance to get some clarification. When everybody's in one office, it makes that job to be done faster".

Another strategy in planned change by P1 was for more collaboration and discussions. During planned change, feedback from top management was disseminated, and performance was improved. P1 described how planned change was realized: cost reduction initiatives, continuous quality improvement seminars, and other return on experiences (REX) shared among teams.

P6 shared the influence of TQM practices on the planned change process as lived. P6 applied management practices in the supplier performance department, an integral part of the procurement process. The cause of the scheduled change was that, structurally, the supplier performance was not given attention anymore. There was no means of communicating back or having a forum with registered suppliers. P6 created a platform to continuously collaborate and discuss the best way to review supplier's performance in terms of cost, lead time, and quality of technical materials. Management commitment was practicable to performing the planned change. All employees were trained in the change process for new and improved skills with suppliers. P6 reviewed the process of procurement quality and performance of suppliers. In concluding, P6 said, “My positive experiences in process management, employee training, education, strategic quality planning and management, and supplier relationship helped me change and organize the structure of the supplier performance division.”

P2 had been involved in planned organizational change in the engineering department. In preparing for change by P2, identification of change causes was

pinpointed, such as in routine engineering activities. Some engineers' competencies were in doubt, and some engineers were too slow to deliver on time with specifications. P2 carried out a strategic transformational planned change in the organization's work and culture related to the engineering department. For engineers with doubts in their competency, P6 sacked and replaced them. For engineers with a slow pace with the delivery of specifications, P6 pushed them to work faster to improve the engineering performance and quality of procured technical materials. For a successful planned change, P2 said,

> And we also must assist them through employee training to evolve all the tools we have to avoid problems during the procurement process, during the scope of work development of this equipment. So, we have this procedure that when our first engineer prepared the first scope of work, we have the lead engineer or we need the engineering manager, people who will at least review the document, ensure that everything is captured in line with the requirement, in line with operating conditions, the operating envelope, in line with the 3D-models to ensure that everything is captured, before we start the procurement process.

P8 influenced planned change process improvement from the engineering stage of technical materials. The planned change was initiated and performed in P8's organization due to issues of using the wrong personnel to review or prepare the documentation required for procurement, such as the material requisition, deliverables, datasheet, and specifications. P8 advised that "if these documents are not properly prepared, reviewed or developed, it cascades down to giving you a quality control problem." The teamwork

system was emphasized. P8 re-organized the engineering team by ensuring a good collaboration with procurement, appropriate training, adherence to a good engineering documentation process, and performance of technical bid evaluation. A teamwork system enabled the proper manufacturing of technical materials without quality control issues. P8 said,

> When there is strong teamwork, what do you expect? You expect a free flow of information. Whether there are changes, whether there is an update, it will be quickly and freely communicated to the procurement department by the engineering team and onward to the supplier and the manufacturer. So, where there is this teamwork among these stakeholders, you don't expect this quality-related issue to come up.

P8 stipulated that on the planned change in the engineering department, the engineering team must have a constant engagement with the procurement team for a free flow of information from beginning to end of delivery of technical materials for project construction and oilfield facility maintenance operations.

Technical administrator P12 discussed his lived experience about total quality management practices related to planned organizational change in their organization. P12 observed co-technical duets performing management of change without informing the organization, co-technical administrators, procurement personnel, and suppliers. This kind of activity has caused quality issues in technical materials due to no proper management of changes in materials in terms of OEM, part numbers, etc. P12 organized his team by emphasizing top management involvement, leadership involvement, and practical training

to build an active and collaborative team system that would continue to initiate proper procurement processes at the statement of requirement (SOR) stage. A constant investigation was essential to the success of planned organizational change because the causes of the inherent issues were fished out and resolved. For effective intentional change to have occurred in their organization, redesign of the system was necessitated. P12 said, “So, for me, if, for example, the materials you can change are basic. It is difficult to change, like today I was supposed to change the control system manufacturer. It isn't straightforward because I must design what I want.”

All employees within P12's team were trained in the engineering and procurement processes for a seamless process and mitigated quality problems.

According to P10,

> The experiences I had with planned organizational change has to do with changing the structure because of some quality issues, changing the way the personnel are, restructuring the organization in such a way that the company, the customer personnel, and the supplier personnel work together, work together in the process to get good product, maybe like the customer personnel, seeing the quality issues that arise at the end.

P10 participated in a planned remedial change, where structurally, the quality know-how of personnel was revamped to streamline issues inherent in quality trajectory. To P10, the quality of products was a concern. In the planned change process, P10 changed the structure so that both the supplier and the customer worked together by introducing a

resident inspector to work with the supplier to ensure that there is no quality gap in the supply chain.

Directors (P4 and P5) and shipping engineers (P7) had some experiences with quality management and planned change processes. P4 observed that most employees were no longer aligned with the goals of the company business. As a result, P4 applied leadership commitment and employee participation to strive for change by all individuals. As a strategy, P4 determined the impacted area or processes and provided a plan for effective communication. P4 adopted training to positively influence strategic transformational planned change among procurement staff in the organization. P4 advised that "the change was made because there was a structure for support by top management." P5 applied TQM practices in planned organizational change to improve quality processes, especially procurement quality. One critical thing said by P5 was the willingness of the people to accept the change, meaning that people must be ready for a change to occur. P5 said,

> I carried out a strategic transformational planned change in my organization to adopt a working quality management system that oversees the quality inspection division, quality assurance division, and quality control and monitoring division. Management commitment was practicable to achieve this strategic transformational change since the resource support emanated from them. Employee training and education, strategic planning and management, and knowledge management to pinpoint the loophole were brought into play to achieve the planned change process.

The lived experiences of the directors were vast and insightful. P5 practically ensured people's involvement by creating an atmosphere or forum for continuous discussion and feedback on quality management. QMS in P5's organization streamlined quality processes by providing that quality review of relevant datasheets, general specifications, and project documents were practically done by quality engineers, technical engineers, leaderships, and top management. P7 made a different approach to planned organizational change by adopting a lean approach to change born out of observations of feedback from people.

According to P7, there was a need to rethink the process and how to achieve their field operations efficiently. P7 observed that some areas in the production plant were involved in repetition in activities. Clustering of field operators had caused downtime in production due to a delayed approach to resolving shutdowns. P7 brought the issue of rethinking through the manning processes, involved top management, involved leadership of the field operation, and eventually concluded the distribution of personnel around the production field. At any point in time, any mishap in the plant is remedied. P7 had the planned change opportunity to fine-tune the plan, improved productivity, reduced shortfalls, and optimized the manning of processes. Table 17 summarized participants strategic planned change processes as lived, related to total quality management practices.

Table 17

Participants Strategic Planned Change Processes as Lived

Participants	Type of Planned Change	Division	Causes	Process	TQM practices employed	Outcome
P1	Strategic transformational	Procurement	Quality-related issues. Downtime in production. Increased procurement overhead.	Re-trained employees. Shuffled employees. Formation of formidable team. Created room for collaboration and discussions.	LQC ETE People involvement ASSP	Ease of technical clarification during procurement process. Improved performance. Cost reduction. Cost avoidance.
P2	Strategic transformational	Engineering team	Declined competence of engineers. Some engineers are too slow to deliver on time with specifications.	Replaced nonperforming engineers in projects. Trained engineers for effectiveness. Continuous review. Provision of ITP.	LQC ETE People involvement ASSP	Improved engineering performance. Improved quality of delivered technical materials. Improve SOR & SOW.
P3	Strategic transformational	Supplier performance	Protracted wrong vendor selection. Quality-related issues. Need for business re-engineering.	Checked vendors in the system who have delivered correctly in the past. Checked vendors with bad experience. Created forum for discussion and feedback	Employee involvement. ETE. LQC	Mitigated quality issues. Streamlined processes. Sensitized colleagues. Better bid process.
P4	Strategic transformational	Contract engineering. Procurement. Human resources	Reduced competence of staff. Reduced procurement skills. Increased overhead costs. Loopholes in material deliveries.	Aligned with the goals of the organization. Provided strategy for communication and feedback system. Trained employees.	LQC Employee participation. Willingness for change by individuals. ETE.	Improved procurement skills. Improved capacity development. Mitigated quality of technical materials.

Participants	Type of Planned Change	Division	Causes	Process	TQM practices employed	Outcome
P5	Strategic transformational	Quality division	Gap in QMS and TQM practices. Lack of collaboration. Lack of communication.	Created atmosphere or forum for discussion and feedback on quality management	ETE. LQC Adopted working QMS. Practicable management commitment. SPM KM.	Streamlined quality processes. Quality review of datasheets, GS, and project documents. Effective QAQC. Improved technical evaluation. Improved technical clarification
P6	Structural	Supplier performance (SP)	Structurally, SP was not given attention anymore. No feedback system. No proper material description. Dipped performance.	Created a system for continuous discussion and feedback. Created an acceptance climate. Developed agency for continual improvement. Created a culture in alliance with organizational culture.	Management commitment. ETE. PM. SPM	Continuously improved quality of technical material. Reduced cost, Lead-time. Improved SP. Continuous collaboration and communication at all levels.

Participants	Type of Planned Change	Division	Causes	Process	TQM practices employed	Outcome
P7	Lean process	Field operation	During oil and gas production offshore, man-hour cluster in one location.	Created an open technical forum for regular discussions and feedback. Spread man-hour was spread across all decks for easy access to emergencies.	LQC. ETE. PP. Employee involvement.	Reduced shortfall. Improved productivity. Improved maintenance. Improved revenue generation. Near steady-state production operations. Better material management
P8	Strategic transformational	Engineering team	Employee not embracing TQM practices. Lack of obeying the rules. Increased quality-related issues in delivered materials. Not given attention to details.	Created forum for quality engineering design. Trained engineers Created an open technical forum for regular discussions and feedback	LQC. ETE. PP. Employee involvement.	Improved quality engineering design. Improved SOR and SOW. Improved technical material descriptions. Improved collaboration among TADM, buyer, supplier, and OEM.
P9	Strategic transformational	Vendor engineering and documentation	Vendor documentation issues. SharePoint issues. Quality-related issues	Continuous adherence to TQM practices. Proper follow-up of vendor engineering documentation. Formed network for collaboration and communication by key SCA.	ASSP. ETE.	Good basic engineering. Quality datasheet. Quality specification. Quality technical evaluation. Improved QAQC process. Improved supplier relation
P10	Remedial	Quality team	Inadequacy of proper system checks. Overlooked process checks. Waived QAQC. Lack of SRM. Lack of attention to details	Developed a forum for Proper planning scheduling. Created a system for continuous discussion and feedback among technical people.	ASSP. ETE. LQC.	Improved planning. Continuous quality improvement. Improved quality culture. Improved QAQC process. Improved collaboration among key SCA.

Participants	Type of Planned Change	Division	Causes	Process	TQM practices employed	Outcome
P11	Strategic transformational	Procurement team	No heed to ASSP. Lack of quality technical specification. Lapses in QAQC. No knowledge of the product being procured	Created a system for continuous discussion and feedback among technical people. Created network for Continuous collaboration	ASSP. ETE. LQC.	Improved quality of the product. Improved cost and Leadtime. Improved QAQC. Improve procurement skills.
P12	Strategic transformational	Engineering & Procurement	Wrong basic engineering. Lack of knowledge of the rules. Lack of communication. Lack of collaboration. No proper QMS. Lack of timely response to TQs. Slow response to deviations	Developed training of technical engineers. Created network of engineers for planning, and scheduling. Developed a forum for continuous collaboration and feedback system.	ASSP. ETE. LQC. PP	Enhanced skills for engineers. Improved procurement skills. Improved technical document. Continuous quality improvement.

Notes. QAQC – quality assurance and control, ETE – employee training and education, ASSP – adherence to standard specifications and procedures, CF – customer focus, QMS – quality management system, SRM – supplier relationship management, LC – leadership commitment, KM – knowledge management, PM – process management, and BM – bench marking.

Table 18 highlights top 20 words participants used to describe strategic planned change process. Most participants were involved in transformational planned change in the organizations.

Table 18

Top 20 Words Participants Used to Describe Strategic Planned Change Process

Word	Total	% Total
transformational	16	4%
organizational	14	4%
clarifications	14	4%
communication	13	3%
documentation	13	3%
specification	13	3%
organization	12	3%
continuously	12	3%
manufacturer	12	3%
procurement	11	3%
engineering	11	3%
experiences	11	3%
performance	11	3%
influencing	11	3%
involvement	11	3%
improvement	11	3%
information	11	3%
maintenance	11	3%
willingness	11	3%
management	10	3%
successful	10	3%
continuous	10	3%
department	10	3%
influenced	10	3%
commitment	10	3%
understand	10	3%

experience	10	3%
leadership	10	3%
streamline	10	3%
discussion	10	3%
operations	10	3%
particular	10	3%
activities	10	3%
evaluation	10	3%
Training	9	2%

Summary

Twelve personnel from eight companies in various industrial and supply chain organizations with varying magnitudes and government-owned replicas took part in the study. Eight interview questions discovered the lived experiences of participants connected to the research questions of the study. The importance of total quality management practices in organizations as lived by people connected to quality was explored. The most substantial people's experiences covered management practices that improved technical materials, perceived causes of ongoing quality-related issues, continuous improvement of specialized materials, and strategically planned change process in different organizations. People's involvement in this study yielded significant perceptions or experiences about total quality management practices related to procurement performance. The diverse lived experiences from people were procurement managers, assistant procurement managers, quality managers, TADM, CEOs, shipping, and engineering managers.

Participants described their experiences about TQM practices connected to technical materials for project construction and oilfield facility maintenance. Participants narrated their experiences regarding quality-related issues, causes, and mitigation measures. Quality-related matters cannot be averted but mitigated based on continuous quality improvement processes and strategies. Experiences of people have been used to influence planned organization changes in different organizations. Participants deployed words such as adherence to specifications, inspection, continuous improvement, continuous collaboration, continuous communication, or benchmarking to describe management practices that improved performance when there were quality-related issues and despite the existence of total quality management practices in the organizations.

Words such as inspection test and plan (ITP), quality assurance and quality control (QAQC), PM, supplier relationship management (SRM), adherence to specifications and standard procedures (ASSP), or employee training and education (ETE) were used to describe mitigation measures of quality-related issues and continuous quality improvement in delivered technical materials. In addition, participants used REX to describe perceived causes of quality issues, their mitigative measures, avoidance of quality problems, or continuous quality improvement processes. Per REX, participants described quality-related issues as wrong drawing, part number mismatch, nonconformance, late delivery, size mismatch, dimension issue, wrong thickness, inappropriate material, or wrong power rating. These quality problems caused planned organizational change in different participants' organizations and were mitigated or resolved.

Most of the participants had performed strategic transformational planned changes where an integral part of the organization such as engineering, procurement, quality, or human resources was re-organized for a continuous improvement of processes and reduction of quality-related issues. Participants used words such as ease of technical description of materials, improved performance, cost reduction, cost avoidance, mitigated quality issues, better bid processes, improved procurement skills, quality review of datasheets, quality general specification (GS), good material test certificate (MTC), and quality project documents as a positive outcome of planned organizational changes. Participants described triggers of planned change as downtime in production, quality issues, need for business re-engineering, reduced staff competence, increased technical and procurement overheads, or gaps in QMS and TQM practices.

This chapter included a conversation of the pilot study to advance the interview etiquette, analytical questions, duration, and invitation letter. The study was performed through Teams and Zooms (face-to-face) and via telephone calls. The materials for the interview were transcribed and edited in NVivo software. The data analysis was performed using a hermeneutic circle (whole-part-whole). This circle entailed a holistic review of the transcribed and edited materials, as a part's collection, and as a whole (i.e., whole-part-whole). Descriptive codes were used to analyze the transcript materials. The transcripts were recoded per IPA of van Manen's (2014) and into TQM practices for improved quality, causes of quality-related issues and mitigation measures, CQI of delivered materials, and strategically planned change processes. Chapter 5 contains the study findings, recommendations, and conclusions.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this study was to explore managers' perceptions or lived experiences in petroleum producing companies about total quality management practices connected to procurement performance. I aimed to understand what managers' lived experiences about total quality management practices are related to procurement performance. The intent was to interpret meaning from the collected data. Managers' lived experiences regarding total quality management practices are an opportunity to articulate and develop more awareness of themselves.

P1 to P12 detected the need for planned organization due to persistent late delivery (P7), nonconformance in delivered technical materials (P4), slow response to production activities (P7), persistence of wrong engineering data at basic engineering stages (P2), low suppliers’ performance (P5), and planned and executed changes in an integral part of their organizations (strategic transformational planned change). The need for change by different participants (P1 to P12) in their respective organizations were defined and communicated at all management levels. All employees and top management reviewed and accepted the need for change. Leadership involvement, training, reengineering, continuous collaboration, and the teamwork system led to successful changes in their organizations. In this study, I used the perceptions of managers and their supply chain actors for a planned organizational change for perceived mitigation of the causes of continued quality-related issues in the procurement system. These lived experiences could lead to management's planned change for continuous improvement of the procurement performance as per quality and the process.

Twelve participants from eight companies (petroleum producing companies, government parastatals, EPCIs, SCAs, and engineering and procurement companies) apportioned their experiences with total quality management practices connected to quality performance. Comprehending the experiences of participants in organizations with efficacious total quality management implementation may aid managers to magnificently detect the causes of continual rise in quality-related issues (Dahlgaard et al., 2018) and implement continuous quality improvement measures or the resolution of technical material quality problems (Muvunyi & Mulyungi, 2018) from REX and planned changes.

Participants described their lived experiences from a semistructured interview procedure with seven interview guides (questions). In this qualitative study, participants' perceptions exposed their experiences with TQM practices and procurement performance (quality). Van Manen's (2014) IPA guided the analysis of the transcripts. As per the findings, participants' experiences were driven by (a) management practices, (b) CQI of delivered technical materials, and (c) strategic planned change processes. These three fundamental elements were related to the three research questions.

Interpretation of Findings

Organizations record procurement performances such as costs, lead-time, and quality during project construction and oilfield facility maintenance. This record sometimes included the reception of technical materials with quality-related issues, which negatively impacted procurement overheads and technical services costs. Persistent quality problems triggered organizational planned changes in transformational, structural,

remedial, or unplanned changes for improved facility maintenance, engineering designs, procurement skills, productivity, and profitability.

Technical material quality was improved in different participants' organizations because of quality basic engineering, attention to detail, continuous collaboration among supply chain actors, and feedback systems. The application of total quality management practices related to procurement was practical. With continuous quality improvement processes, a transformation of an integral part of organizations affects the culture and structure of participant's organizations (Yu et al., 2020).

Strategic transformational changes in organizations from persistent technical material quality issues to improved situations occurs because of people involvement and application of total quality management in planned changes. Employees formed organizations, and the participants ' lived experiences about the phenomenon under study constituted planned change, improved productivity, and quality maintenance cultures.

Twelve participants from eight companies in various industrial and supply chain organizations, varying in magnitudes, and government-owned models took part in the study. Muvunyi and Mulyungi (2018) found that total quality management practices adoption influenced technical material manufacturing. Muzayen and Alkhalil (2018) explored the impact of total quality management on organizational performance (quality of processes) for project construction. Both authors suggested that TQM practices could affect the final products from manufacturing processes and improve organizational performance. This study result supported their literature because P1 to P12 confirmed

that PM and ETE were practiced in their organizations to increase skills and experience of the process for a continuous improvement.

Proper management of final products could reduce technical material defects during manufacturing, shipping, or handling processes. P7 noted that quality-related issues can also occur after manufacturing of materials and then advised strict ASSP in material management. Carstea et al. (2014) found that quality and material management resources directly affected the quality of final products and organizational performance. This study results added value to the findings of Chepkech (2014) who found that top management commitment, customer focus, and employee involvement improved organizational performance. Procurement performance may not be improved if ITP is not prepared, reviewed, and approved by SCAs prior to fabrication of technical materials. Involving management and employees would improve ITP to ensure proper QAQC with participation of third part inspectors. This study results also support Macharia and Mwangangi (2016) who found that TQM practices influenced procurement performance in Kenya. However, as suggested by Macharia and Mwangangi to include any elements that could improve quality in future study, I noted that lack of proper initiation and planning by TADMs triggers quality-related problems. Therefore, proper initiation and planning at SOR level could be added as TQM practices for process improvement.

The companies in this study (petroleum producing, supply chain actors, EP, EPCI, and government-owned LPG plants) practiced TQM at every level of the organization to improve technical materials for project constructions and oilfield facility maintenance.

I found that TQM practices improved the quality of technical materials in different organizations (RQ1). Lack of attention to total quality management practices caused quality-related issues in different magnitudes per organization. At the beginning of each procurement of technical materials for projects or oilfield maintenance, inspection, and test plan (ITP) was the first document that participants highlighted that must be developed, reviewed, and approved by TADM, supplier, and OEM before initiating the procurement process of materials. If not provided, quality-related issues would occur. These findings support Muvunyi and Mulyungi's (2018) suggestion that TQM must be adopted by every organization and strictly followed to influence procurement process and avert quality problems in projects.

ITP contains parameters such as the plans for management of quality assurance and control of technical materials, information on the project requirement, evidence of documentation, relevant parties' responsibilities, and methodology overview related to technical material procurement. ITP was followed by the procurement manager, assistant procurement manager, quality manager, and engineering manager during vendor engineering activities and manufacturing process of technical equipment as lived by participants. In some cases, participants did not have quality problems but had some other issues.

All participants highlighted different TQM practices that continuously improve quality. Participants noted that lack of these TQM practices caused quality-related issues in their organizations. Participants' feedback on the TQM practices were synergized as (a) ITP, (b) QAQC (c) PM, (d) SRM, (e) ASSP, and (f) ETE to have positively influenced

technical material quality. These findings support the works of Macharia and Mwangangi (2016) and Muvunyi and Mulyungi (2018). This study supported that PM influences procurement performance as confirmed in their literature. In this study, I added ITP as TQM practice that must be developed, reviewed, and approved by organizations prior to manufacturing of equipment. This finding added value to the body of knowledge.

The absence of these synergized practices caused total quality-related problems. Despite TQM implementation and ITP in participants' organizations processes and quality-related issues that persist, the synergized TQM practices were strictly applied at different instances to improve quality in technical materials.

QAQC ensured that the approaches adopted to measure and assure technical material quality and that the process of ensuring materials and services meet customer expectations were achieved. For QAQC to be revisited after the quality failure, a third-party inspector witnessed the QAQC processes as arranged by the OEM and TADM.

Participants highlighted PM as a total quality management practice that improved procured technical materials for projects. PM is highlighted because 75% of participants confirmed that PM had improved their quality processes in their respective organizations. This finding supports the arguments of Muvunyi and Mulyungi (2018) on the timeliness of quality product manufacturing due to the impact of PM. PM is used to manufacture a machined part, by ensuring everything is being fabricated at the best time, there is efficiency in cost cutting, and there is improvement of productivity without forfeiting quality (Muvunyi & Mulyungi, 2018). Participants highlighted PM as including the procurement process (P1, P6, P3, P9, P11), engineering design process (P2, P10), quality

management process (P10), and shipping process (P7). Management of the procurement process entails a proper definition of the need for technical materials at the SOR stage. The full description provided by the TADM can properly inform the procurement personnel, supplier, and the OEM of the appropriate information (datasheet, GS, project requirement) for manufacturing purposes to avoid quality-related issues. PM entails scheduling the need, confirming the feasibility of the procurement, and setting up a procurement strategy, whether the procurement would be single sourcing, competitive bidding, or assigned single sourcing, whichever is applicable. PM entails supplier selection (P3), ensuring that the launching of consultation is done to appropriate vendors who have a good history of technical material delivery (P3) and have done practical market intelligence. This finding supports Carstea et al.'s (2014) insinuation of proper selection of suppliers (as per for PM) for an apple-to-apple technical procurement. PM spans through clarification, negotiation, award, PO execution, reception of technical materials, payment of supplier, supplier performance evaluation, and REX.

When quality failed in the organization, participants reviewed the PM. They ensured strict adherence was followed. Managers' involvement was applied in PM to ensure proper process planning, organization, guiding/directing, and controlling for the effective accomplishment of the set goals for improved technical quality.

SRM was highlighted by participants as total quality management practice that improved the quality of technical materials for projects and oilfield facility maintenance. This finding extends the knowledge in the reviewed TQM practices' literature (Carstea et al., 2014; Chepkech, 2014; Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018)

that influenced procurement performance by addition of the SRM element to have improved quality in organizations. SRM is a methodical approach to evaluate contributions of suppliers to organization's business. Free flow of ideas and feedback between suppliers and organizations improved customer services and cost of quality, according to P2, P4, P6, and P10.

SRM entailed that the technical administrator or engineers had a quality collaboration with suppliers and manufacturers if quality issues arose during material delivery and despite robust ITP/TQM implementation in the organizations. P2, P4, P6, and P10 maintained good supplier relationship for suppliers to have shipped products or parts as promised to avoid delayed delivery or wrong materials for project construction. When wrong items were delivered by supplier, due to good relationship, suppliers made quick repairs or replacement of technical materials. Consequently, P2 said,

> I had also applied supplier relationship management to achieve material quality with improved quality. The way companies or engineering teams relate with the supplier will determine how the supplier will assist you in the engineering and procurement process. A technical supplier could communicate deviations to the company and requires the company to review and come back with the answer to technical queries if the supplier relationship is good. Good supplier relationships can also fast-track the process to avoid extended delivery lead-time, which is a quality issue. The supplier has also helped me significantly in the procurement process, especially during installation, commissioning, and oil and gas operations. "Participants acknowledged that with a good relationship with suppliers, quality

issues in technical materials were resolved. Supplier replaced faulty technical materials because of quality relationship with P2 and P11 and avoided the lead-time problem.

Participants highlighted ASSP as one of the total quality management practices that improved technical material quality problems in projects. Material procurement is different from service procurement. Such specifications are used to procure technical materials to ensure an "apple for apple" procured technical material, aligning with project requirements, general company specifications, and international standards. The finding confirms the outcome of adherence to specification and standard procedures in the quality management process in procurement and management of material resources by Carstea et al. (2014). Carstea et al. (2014) stated that for technical material procurement for projects and stock replenishment to be effective, SCAs (including buyers, suppliers, TADMs, and OEMs) must adhere to specifications, standards, and procedures. Deviance from ASSP caused quality-related problem. Adherence to specifications emphasized from basic engineering stage of projects contributes to effective material management.

At the basic engineering stage, documents such as material requisition, ITP, datasheets, drawings, the scope of manufacturing and supply, project requirements, and other quality-related documents are provided, reviewed, and approved by engineering regarding company general specification international API standard and code of ethics. Participants ensured that strict adherence to specification and standard practices as a must in management practices are practiced to continuously improve the quality of technical materials for production operations onshore and offshore. Deviations from ASSP

management practice caused a repeat of procurement, nonconformance, late delivery, rework, and increased cost in technical services and procurement overhead.

Participants highlighted that ETE is one of the total quality management practices that continuously improved quality-related issues in procured technical materials. Lack of it caused problems such as reduced productivity, no knowledge of the process, nonconformity, wrong technical datasheet, and so forth. The finding confirms the work of Muvunyi and Mulyungi (2018) on influence of the total quality management adoption on procurement performance of a manufacturing sector. Muvunyi and Mulyungi found that training improved the competence and skills of employees. However, the literature did not emphasize the train-the-trainer principle as highlighted by participants for continuous improvement of processes.

Participants insisted on proper training of employees and training-the-trainer for effective and efficient handling, development, and application of engineering, quality, and procurement tools for technical materials procurement for oilfield facility maintenance operations. According to P8, on

> Employee training and education, if an employee is adequately trained on his role concerning authority, for ensuring that, that particular trade or his position with the current development technically, he will be able to ascertain or able to produce a quality specification that will meet project or company requirement and international codes and standard.

Training and education of employees were used to improve engineering, quality, and procurement skills and ensured quality collaboration amongst the supply chain

actors. Macharia and Mwangangi (2016) explored the influence of total quality management practices on Kenya's procurement performance. Product quality, customer focus, training, and PM are total quality management principles that influenced the procurement performance of a telecommunication company in Kenya. The finding of this study confirms the work of Macharia and Mwangangi that training contributed to cost reduction, cost of quality, timely delivery, and customer satisfaction.

Training unveiled the skills of material requisition document development, technical initiation, and proper strategic planning and management related to engineering design and documentation for an effective procurement process (P12). Training of employees improved troubleshooting ability of the causes of the continued rise in quality-related issues in procured technical materials. The use of the e-sourcing platform for practical procurement function and 3-D model of project facility by engineers and technical administrators were improved by employee training and education concerning the processes (P3, P9, P11).

P1 and P6 used employee training and education to enhance the quality of technical materials despite TQM implementation in their organizations. P2 discussed that continuous employee training and education helped their organization achieve technological know-how, good productivity, and procurement of technical materials without quality-related problems such as drawing issues, datasheet problems, requisition, and part-number mismatch issues.

Participants emphasized that organizations must provide continuous training of their employees to boost competencies in basic engineering design, technical initiation,

procurement strategy development, contract executions, and shipping process of procured materials for projects to void quality-related problems.

Participants' experiences with total quality management practices connected to procurement performance can never be overemphasized. Summaries of experiences of total quality practices associated with performance as lived by participants included (a) improved attention to details by SCA, (b) comprehensive description of technical materials, improved quality, improved processes, strict follow-up of specs and standards, and adequate facility commissioning and start-up, (c) strict follow-up of supplier performance, proper technical evaluation, proper procurement process, and continual employee training. (d) cost avoidance, savings, improved cost of quality, and rework avoidance, improved collaboration among SCA, (e) continuous improvement of processes, provision of approved ITP from the beginning, effective quality management performance, and (f) effective production operations, reduced downtime in production, improved safety culture, and reduced shortfalls in production.

Participants highlighted that total quality management experiences have caused (a) timeliness in manufacturing processes, within budget processes, suitable quality materials, early QAQC, (b) good engineering designs, putting things in the right perspective, proper communication and approvals, (c) continuous adherence to TQM practices, proper follow-up of vendor engineering documentation, the addition of values to manufacturing processes, proper planning and scheduling (d) enhanced knowledge of products, and easy brainstorming, proper technical initiation, avoidance of rush procurement and manufacturing. These findings extended knowledge to the literature

(Chepkech (2014), Macharia and Mwangangi (2016) and Muvunyi and Mulyungi (2018) on the processes to be adopted to further improve the quality of delivered materials, aside TQM practices.

Participants further highlighted other possible causes of quality-related issues in procured technical materials for project construction despite the implementation of total quality management. These other causes included lack of attention to detail (P1, P3, P4, P10), which is the hasty conduction of engineering reviews without proper review and approvals in the engineering, quality, and procurement functions. P2 expressed that the current overall market, non-optimized engineering, lack of benchmark, and vendor's intention to make undue profits caused quality-related problems. Vendors could reduce their costs to be selected for contract execution and then deviate from the standard procedure for profit-making purposes. P3 is equally aligned with P2 because the vendor's intention to make profits led to quality-issue inherent in delivered technical materials. P3 further informed that negligence and lack of knowledge negatively influenced procurement performance in organizations. When material requisition that contained the scope of engineering and supply were launched to suppliers or vendors, deviations occurred in the requisition document.

Negligence in resolving technical variations among the procurement teams, engineering team, supplier, and manufacturer caused delivery of technical materials with quality-related issues. Lack of knowledge of the process caused problems too. Therefore, understanding the different methods must be boosted among supply chain actors for continuous quality improvement.

Other participants highlighted causes of quality-related issues as lived, such as (a) lack of collaboration, lack of leadership commitment in quality, and use of wrong drawing (P4), (b) non-third-party QAQC and lack of collaboration (P5), (c) no proper material descriptions by TADM (P6), (d) periodic changes on specifications, mismatch in dimensions, delay in PO placement, non-issuance of MTC, storage facility issues and improper packing/handling during technical material transportation (P7), (e) employee not embracing TQM practices and lack of obeying the rules (P8), (f) inadequacy of proper system checks, overlooked process checks, and waived QAQC, and (g) issue from basic engineering, improper technical initiation, lack of communication and collaboration, no proper QMS, lack of process scrutiny, and lack of timely response to technical queries (P12).

I found from this study that the supply chain actor's (buyer, technical administrator, and supplier)'s behavior contributed to quality-related issues in procured technical materials. P12 added that the manufacturer's behavior should be included among the supply chain actors contributing to quality problems in technical materials for project construction and oilfield facility maintenance.

Participants affirmed that negative behaviorism in the engineering design process, procurement process, and shipping process negatively influenced quality performance. Bad attitudes and behaviors increased costs in the technical services and procurement overhead. TADM did not (a) have a complete description of the technical materials to be procured, (b) perform a quality technical bid evaluation, (c) respond quickly to technical queries to SCA, (d) communicate and collaborate effectively with SCAs, and (e) respond

to deviations from manufacturers to buyers and suppliers. Typically, technical deviations should be tested in the 3-D model of projects, but negligence from the TADM could not afford the test, and hence quality-related issues occurred.

Participants concurred that Procurement Professional (Buyer) 's behavior contributed to quality-related issues. The buyer did not (a) clarify all the grey areas from the technical duet, (b) relay complete technical parameters to the supplier and manufacturer, such as deviations from size, drawing, etc. (c) have full knowledge of the procurement process, and (e) give attention to details. The supplier behavior was negative and influenced the quality performance.

The supplier did not (a) pay attention to details, (b) think of the process but only the profit she wanted to make, (c) communicate all the detailed technical information required for procurement to the manufacturer, and (d) collaborate well with buyer and manufacturer. I discovered that the manufacturer's behavior was not an exception to the cause of quality-related issues. The manufacturer, upon review of the material requisition, developed some deviations and communicated to other SCAs. Although, the manufacturer was supposed to hold until he received feedback from the SCAs before the manufacturing process. The manufacturer continued producing technical materials with deviations and eventually delivered the wrong technical material for project construction or oilfield facility maintenance.

Therefore, the study result supports Galambos, Dulmus, and Wodarski (2005) on the continuous collaboration among SCAs which must be practiced avoiding any bad practices that could hamper quality in processes. The study finding showed that among

the SCAs, the TADM's behavior drastically impacted the buyer, supplier, and manufacturing decisions since TADM is the initiator and chief planner of procuring technical materials for projects and maintenance operations.

I found that continuous quality improvement (CQI) practices by participants influenced the quality performance of delivered technical materials for projects and maintenance operations (RQ2) in different organizations (petroleum producing companies). The findings indicated that CQI practices were based on (a) views and values of MTCs, (b) technical material rejection resolution practices, and (c) return on experience (REX) as lived by participants. Quality-related issues of technical materials could not be fully exterminated but involved a continuous quality improvement for mitigation purposes (P8). Attitudes of the SCAs maters in this process. Moreover, not all engineering team members obeyed rules and procedures for effective engineering designs and technical material descriptions. Therefore, a continuous quality improvement of processes was achieved by constant training and strict adherence to specifications and standard procedures (P2, P8).

The study findings showed that material test certificates (MTC) added value to the procurement processes from participants' lived experiences. Several participants showed that MTCs were essential documents that reflected the technical materials' physical, chemical, and mechanical properties to be procured (for example, pipes and structural steels). MTCs could be fabricated or doctored (fake), which led to material rejection and delay in project construction. Participants affirmed that this document must be obtained

from manufacturers, reviewed, and approved by engineers or TADMs before accepting materials for shipment to final destinations.

Engineers, TADMs, and Quality managers (P2, P8, and P10, respectively) reviewed and approved all MTCs before technical items procurement for CQI of technical materials for projects. Good MTCs achieved quality technical items, and fake MTCs caused quality-related issues, i.e., deviant materials from project requirements, general company specifications, and international standards and codes.

Several participants expressed witnessing material rejections during technical materials due to deviation from specifications, project requirements, basic engineering, gaps in TQM practices, and the applied CQI practices for remediation. Technical material rejection occurred in organizations when ITP was not adequately developed, reviewed, and approved by responsible technical personnel. Despite proper ITP, quality-related issues sufficed (P12). The resolution of rejected technical materials was a replacement with the same materials. But nonconformity report (NCR) was developed by TADM, and manufacturers highlighted remedial actions.

A follow-up of the corrective actions resolved quality-related issues in procured technical materials. The study findings showed that rejected materials due to quality-related problems were resolved by performing a further analysis and a fit-for-purpose inspection (P10). According to P12, further investigation and filing a nonconformity report remedied issues of material rejection and harnessed CQI in processes. The findings showed that these different resolution methods proffered a CQI in technical materials for projects.

I found from this study that participant's stories about their return on experience (REX) indicated the causes of quality issues (problems), resolution of cases, and CQI in technical materials related to procurement performance. According to REX from several participants, quality-related issues occurred in technical materials as physical damage on electrical cables, caused by the improper fastening of materials during transportation, and resolved by raising an NCR with remedial actions (P1, P6, P7).

Another REX indicated the vendor's submission of a pipe's MTC, only to detect a fake MTC during delivery (P3, P12). P4 requested a pump procurement. After developing and following the process from start to finish, it was discovered that the pump was deviant from the correct power rating. An NCR was raised, and the situation was corrected, although with delayed delivery lead time and extra cost in projects. Other REX included procurement of wrong gaskets due to incorrect material class (P11), nonconformance in chemical injection package, the performance of remote QAQC, and waived inspection (P2, P10, P12), and use of wrong drawing for manufacturing technical materials (P4). In each case, study finding showed that quality-related issues occurred and was corrected by raising NCR for corrective actions. From lived experiences of participants, REX depicted fine-tuning of processes, aligning with total quality management practices, and correcting same such that mistakes in subsequent project procurement and oilfield maintenance equipment would not persist.

Findings from this study showed that process outcomes such as (a) total quality-related issues, (b) continues downtime in production and increased procurement overhead costs, (c) declined competence of engineers and slow pace of engineers with

specification development, (d) protracted wrong vendor selection and need for business re-engineering, (e) reduced procurement skills and loop-holes in material deliveries, (f) gaps in QMS, no collaboration and communications, and (g) no attention to supplier performance, no feedback system, improper material descriptions and dipped performance necessitated planned changes in different participants' organizations. These mayhems triggered planned organizational change for improved quality improvement.

Other factors that necessitated planned organizational change for continuous quality improvement in technical material procurement included (a) man-hour cluster in one location during emergencies in oil and gas platforms, (b) lack of obedient to rules, (c) vendor documentation and SharePoint issues, (e) inadequate system checks, overlooked process checks, and waived inspections, (f) no heed to specification and standards, lapses in QAQC, and no knowledge of the products, and (g) wrong basic engineering, lack of communication and collaborations among SCAs, and delayed response to technical queries. The study findings showed that 67% of participants participated in strategic transformational planned change, 8% in structural change, 8% in the lean process, and 8% in planned remedial change. No participant did an unplanned change.

Planned changes from lived experiences of participants related to procurement performance were carried out. To effect planned organizational changes related to procurement performance, the study finding showed that (a) employees were retrained and shuffled, formation of a formidable team, and creation of a forum for collaboration and discussions, (b) replacement of non-performing engineers in projects, continuous review, and provision of ITPs, (c) periodic vendor system checks and creation of forums

for discussion and feedback, (d) aligned with organizational goals, provision of strategy for communication for feedback system, (e) created an acceptance climate, created an agency for continual improvement and created a culture in alliance with organizational culture, and (g) developed a network of engineers for planning and scheduling. The finding supports Galambos, Dulmus, and Wodarski (2005)'s five organizational principles of planned change by establishing a forum for discussion and feedback system for improved quality.

Based on the above triggers, participants performed a kind of process rethink and re-evaluation of the processes. They initiated a strategic transformational planned change to properly re-organize an aspect of the organization such as the supplier performance department, procurement division, engineering teams, quality team, and the shipping department for a CQI in technical products. The planned change improved procurement performance. The deliberate change process improved the organizational culture and structure for better business performance, improved productivity, maintenance culture, employee procurement skills, and procurement performance. The study finding supports Wu (2015) who focused on the influence of quality culture on total quality management and performance.

Limitations of the Study

I explored the lived experiences of managers about TQM practices connected to procurement performance (quality of technical materials) in organizations (petroleum producing companies, procurement companies, EPCI, and LPG plant) through the IPA of van Manen's (2014). The examination of the lived experiences of people developed

data about the phenomenon being studied that was analyzed and interpreted as per van Manen's hermeneutic principle (whole-part-whole model). More than a few limitations are inherent in this study, such as design methodology, topographical location of the interview, the environment of data gathering, and sample size. The study was a qualitative phenomenological interpretive research focused on van Manen's work (IPA) instead of Moustakas' descriptive approach or outcome. Van Manen's phenomenology is more interpretive, whereas Moustakas's phenomenology is more descriptive.

IPA is an approach in qualitative research that intends to produce a detailed exploration of people's lived experiences about a phenomenon (van Manen, 2014). The interpretive phenomenological study depends on the investigator to make meaning of or interpret participants' experiences (Patton, 2015). During the phases of data collection, analysis, and reporting, the inquirer must continuously endeavor to be conscious of bias. My insights and reflective journal were properly kept throughout the data collection periods to identify and treat any bias.

At least six participants were required to perform the study: 12 personnel from eight companies took part. Six participants were from two petroleum producing companies. The outstanding six respondents were the exclusive representatives of their companies. Hence, the only trajectory to access the activities of the organizations related to total quality management practices connected to quality performance. This study may not be generalizable but is transferrable because of the disparity in magnitude, industry (petroleum producing , EP, EPCI), and possession models (per LPG, Suppliers, government parastatal prototype). This study took place in Nigeria, where organizations

have implemented total quality management practices for business effectiveness. Most organizations have recorded quality-related problems in their respective processes, especially in the procurement division, and proffered possible mitigations or solutions to aid a petroleum producing company in reviewing their quality improvement processes and possibly carrying out a planned change.

Another limitation of the study was in the data collection process. I used semi-structured interviews to gather participants ' lived experiences. The locations or setting of the interview extended from telephone calls to face to face through online Teams and Zoom due to the covid-19 pandemic. With these locations, the environment could not be controlled. Probably, diverse participant's feedback could have been obtained, assuming the occurrence of the interviews was in the same milieu.

A further limitation of the study was the connectivity of the internet. There were periodic pauses of the connection to the internet, which resulted in distorted and mislaid words. There were some distortions because of sound from a background which caused occasionally delayed responses, although these sounds did not interrupt the recordings of the interview with recorders.

Recommendations

The choice of a qualitative research design for this study was a prospect to explore and comprehend in detail the meaning of TQM practices connected to procurement performance (quality of procured technical materials) from the Manager's perspectives or lived experiences. Sense can be created and managed via languages, symbols, visions, beliefs, myths, and ideologies (Patton, 2015). The 12 participants

kindly shared their experiences in using total quality management practices related to procurement performance.

Participants shared their experiences in using total quality management practices in detecting the causes of ongoing quality-related issues and proffering continuous quality improvement solutions in the quality of procured technical materials for projects and oilfield facility maintenance. The 12 participants shared their experiences in using total management practices in influencing planned organizational changes.

Concerning research designs, any investigation whatsoever concentrates on a precise phenomenon or established questions. The recommendations for future studies arose from elements such as (a) findings, (b) method, (c) populace, and (d) setting. Researchers may elect to syndicate elements from diverse cohorts to produce supplementary perceptions about total quality management practices.

Setting

This study occurred in Nigeria with petroleum producing companies (PPC), engineering and procurement companies (EPC), engineering, procurement, construction, and integration company (EPICC), refinery, and supply chain actors (SCA) to petroleum producing companies. Total quality management existed in these organizations, yet quality-related issues were present. Due to the second and third levels of the coronavirus pandemic in Nigeria, the study interviews occurred via Teams, Zooms, and phone calls with limited observations.

Manufacturers could not participate in the study due to overwhelming activities existing in their manufacturing plant from several industries' requests and would have

been a source to explore more the influence of total quality management practices related to technical material quality. Aside from managers, other employees who have spent time in organizations would have been included as participants to boost the applicability of the study.

Future studies should ensure that the survey is conducted in physical locations, manufacturers of technical materials are involved, and low-level employees are included. Future studies could inquire questions such as how does manufacturer's behavior influence quality of technical materials? What are the opinions of international procurement jobbers about total quality management practices related to procurement performance? Investigators could separate the study by more petroleum industry involvement, manufacturers, and global procurement jobbers.

Method

The study method's selection influences the study findings. Interpretive phenomenological analysis design was employed in this qualitative study. Qualitative descriptive formatting would be applied in an area where an uncomplicated description is required that concentrates on what and why an experience (Patton, 2015). Qualitative research using phenomenology provided qualitative data from lived experiences of people about a phenomenon. One merit of phenomenology is that it allows for a detailed and thick description of participants' meanings and experiences with the expansion of a result that is achievement focused. Organizational managers could apply the results of the findings within their company to continuously rekindle total quality management practices for continuous improvement of quality and the processes. An alternative

trajectory to explore total management practices connected to procurement performance is the use of case studies.

Case study research design could aid inquirers to advance in-depth, contextual, and substantial knowledge regarding a definite practical theme in organizations. Researchers could explore the meanings, features, and consequences of the case. The choice of a case design could be applied for future research on the influence of total quality practices related to procurement performance. Case studies could aid inquirers in comprehending the causes of the continual rise in quality-related issues in procured technical materials despite total quality management implementation in an organization.

Respondents described that proper initiation and strategic planning were required to avert quality-related problems in the procurement process. Respondents explained that an inspection test and plan (ITP) must be developed, reviewed, approved, and followed throughout the procurement process to mitigate quality problems. This study finding added value to the literature (Macharia and Mwangangi (2016) and Muvunyi and Mulyungi (2018)) by adding ITP and SRM to the TQM practices that could improve procurement performance (quality and the process). Macharia and Mwangangi (2016) confirmed in their study that efforts must be made to implement those total quality management practices in the area of study to improve procurement performance. A case research study design would expand the data concerning how employees would circumnavigate continuous quality improvement in procured technical materials for projects.

Respondents might enquire how do organizational employees develop inspection tests and plans and apportion or disseminate the anecdote? What is the influence of engineering resource embellishments? Investigators must study total quality management, management practices, continuous quality improvement, organizational performance, and planned change despite the selected research method.

Literature Reviewed

The literature studied or researched for this study delimited demands for further studies connected to the influence of total quality management practices on performance. Literature suggested that efforts must be made to implement those total quality management practices in the study area to improve procurement performance for effective planned change (Macharia & Mwangangi, 2016; Muvunyi & Mulyungi, 2018).

No literature used managers' lived experiences for continuous quality improvement and planned change strategy. No literature addressed persistent quality-related issues in procured technical materials. Forecasting models weren't enough to model actual reasons for technical materials quality-related problems. No literature used a phenomenological approach to address quality performance.

Therefore, this study calls for further future studies. Muvunyi and Mulyungi (2018) listed that inadequate attention to leadership, people involvement, and PM contributed to the failure in quality and must be addressed in future studies. This study explored and addressed these TQM practices sufficiently from lived experiences of people for efficient quality performance and effective planned organizational change.

TQM and Planned Change

Lack of TQM practices necessitated a strategic transformational change in organizations (procurement division). Leaderships in participants' organizations who need continual quality improvement in processes (engineering, quality, procurement, and contracts) ensured successful planned change. Planned change framework was obligatory via the creation of forums or networks for continuous communication, discussions, collaborations, and feedback system among supply chain actors (SCA) such as technical administrators, procurement professionals, suppliers, and manufacturers for effective business excellence (cost reduction in technical services and procurement overhead). Further studies are needed to research the influence of TQM practices on planned changes (remedial, transformational, structural, and unplanned).

Limitations

Rules in this study entailed obtaining real-world evidence, generalized for all procurement prospects, and total quality management practices, in accumulation to limited available phenomenological literature examining management practices in petroleum producing company's procurement performance. The study interview questions may not delimit disparities between this petroleum producing company's quality management practices and other supply chain industries. As a result, the study may not apply to all management practices related to procurement performance. Different participants have different experiences about total quality management practices, and consequently, findings limited generalizability. Future studies are recommended to

address limitations in generalizability by involving more petroleum producing organizations for the applicability of results.

Implications

This interpretive phenomenological study concentrated on an area with a bit of investigation in a petroleum producing company. Total quality management practices possessed significant financial implications on the organization's employees, managers, customers, and the organization. The results of the study provided a better comprehension of management practices from the Manager's perception of lived experience. Study participants from different organizations (petroleum producing , EPC, EPCIC, refinery, and SCAs) aided in addressing the challenges the lack of attention to total quality management practices had on procurement, engineering, quality, and process systems organizations.

Petroleum industries are significant revenue-generating segments for the Nigerian government. Study findings revealed strategies managers adopted in performing strategic transformational planned change for continuous quality improvement. Literature contributed to studies on the influence of total quality management practices on firm, business, and organizational excellence. The study result lends credence to the already lack of available phenomenological research on management practices to lessen the continuous increase in quality-related issues of procured technical materials for projects and facilities maintenance.

The Implications to Business Practices

SCAs (engineers, technical administrators, suppliers, and manufacturers) could create forums for continuous discussions, collaboration, and dissemination of feedback for business performance and constant improvement. The study result showed that managers improved in their decision-making process on the procedures in handling procurement processes that effectively mitigate quality problems in technical materials.

Detection of causes of increased quality-related issues and resolution strategy positively influenced the quality and financial performance. Participants gave attention to details in the technical initiation, planning, basic engineering, and development of material requisition and, therefore, mitigated increased costs in technical services and procurement overheads.

The study finding indicated that despite the existence of TQM in organizations, failed quality in technical materials for oilfield facility maintenance occurred and were resolved with a robust inspection, test, and plans (ITP), quality assurance and quality control (QAQC), PM, supplier relationship management (SRM), adherence to specifications and standard procedures (ASSP), and employee training and education (ETE).

The findings from this study filled a gap in total quality management practices and provided petroleum producing companies and SCAs with detailed information that could direct organizations on stock reduction initiatives (SRI), continuous quality improvement (CQI) processes, and cost reduction in the technical services. The study could lend credence to business re-engineering, improved productivity, reduced shortfalls

in production, improved quality performance, and increased oil and gas exploration and exploitation profitability.

The Implications to Theory and Methodology

This study contributed to Macharia and Mwangangi (2016) literature, Muvunyi and Mulyungi (2018), and so forth concerning total quality management practices and performance for continuous improvement in the products and service quality. According to Muvunyi and Mulyungi (2018), efforts must be made to implement those total quality management practices around the study to improve procurement performance for effective planned change. This study contributed to the body of knowledge in TQM. Previous researches were a case study (quantitative). These inquirers include but are not limited to Carstea et al. (2014), Chepkech (2014), Sadikoglu and Olcay (2015), and Wu (2015).

This study is phenomenological interpretive research that sought meanings of the lived experiences of people about TQM practices connected to procurement performance. The study contributed to the interpretive phenomenology of van Manen's (2014) hermeneutic (whole-part-whole) designs. Hence, the meanings of the participant's perception or lived experiences were sought. The phenomenological methodology was suitable to explore Manager's experiences for planned organizational change (strategic transformational, remedial, structural, or unplanned). This design aided managers of different organizations (petroleum producing , EPC, EPCICC, Refinery, or suppliers) to recall their lived experiences to influence continuous quality improvement.

The study's design presented three contributions to total quality management research. Firstly, was the contribution to van Manen's (2014) hermeneutic phenomenology. The use of van Manen's (2014) IPA by researchers to examine and analyze lived experiences of management practices is rare. Secondly, this study's findings added value to the literature on the five philosophies of planned change by Galambos, Dulmus, and Wordaski (2005) and Packard's (2013) development framework system for continuous collaboration, communication, discussion, and feedback mechanisms for continuous quality improvement.

The study finding indicated that SCA's behaviors contributed to quality-related issues in technical materials. Therefore, participants ensured a planned change by developing a continuous communication and feedback system among the procurement professional, technical administrator, and supplier (manufacturer) to continuously improve processes. Thirdly, this study added belief in applying Lincoln and Guba's (1985) model to evaluate the qualitative research's quality, reliability, and validity.

The Implications to Positive Social Change

The planned change by different participants used employee training and education, leadership involvement, PM, or strict adherence to specification and standard procedures mechanisms to improve the quality problem in their organizations. The planned change improved procurement skills, engineering skills, and quality process know-how. Attention to checking procedures, basic engineering, datasheets, and drawings influenced engineers, procurement professionals, suppliers, manufacturers, and reduced rework.

This study may improve quality and capacity development for Nigeria workers. In Nigeria, a local content plan is sought by oil and gas operations regulators and stakeholders. All international oil companies (IOCs) have been mandated to increase local capacity in the engineering, procurement, and construction of project facilities in-country or are sanctioned. As a result, the study finding reiterated that local employees must be trained and retrained for improved skills to handle such operations in the petroleum industry. Local content employees must collaborate, communicate, and discuss processes to ensure a teamwork system and be ready to face new challenges, responsibilities, innovations/creativities, and satisfying work relationships.

This study could add value to personnel experience enhancement and ensure wealth redistribution. The fundamental planned change concerning TQM practices emanated from lived experiences of Manager related to performance epitomized a satisfactory adjustment in the economic values of organizational position.

For instance, the application of in-country capacity and process alignment, for example, NETCO (Nigeria company) and DORIS engineering (expert) in basic engineering and detailed engineering, improved the quality of local workers. Besides, this study could transfer adequate procurement and engineering experience to a local company—transfer of engineering and procurement experience to local content personnel to ensure skill and wealth redistribution. The study finding showed process improvement to organizational managers in applying total quality management practices for continuous quality improvement in technical materials for projects and oilfield facilities maintenance.

Therefore, it is recommended to develop and approve early inspection tests and plan by technical people before launching technical materials procurement for projects or stock replenishment for oilfield maintenance. ITP must be followed from start to manufacturing completion. However, suppose quality-related issues persist despite the existence of TQM, in that case, planned change should be implemented to overhaul systems to continuously improve quality, such as material quality and cost benefits to the petroleum producing organizations and her SCAs.

Conclusions

I explored TQM practices that improved procurement performance in different organizations (petroleum producing , EPCI, EPC, Engineering, and refineries). The study examined manager's perceptions or lived experiences for continuous improvement of procured technical materials for projects and oilfield maintenance to improve productivity, technical services, and procurement overheads.

Managers from eight organizations presented an unreserved valuation of the causes of continual rise in quality-related issues, the mitigation factors, improvement processes, and planned change procedures in organizations for good quality products. Therefore, supply chain actors (engineers, procurement professionals, suppliers, and manufacturers) must vividly develop, review, approve, and follow-up the inspection test and plan in alliance with the project requirements, specifications, and standards at the basic engineering stage for quality technical definitions to avoid quality problems.

Synergized TQM practices (PM, ETE, ASSP, SRM, ETE, and ITP) from different participants were suitable organizational principles that transformed organizational

procurement processes for the provision of project's technical materials with good quality. Consequently, organizations and her employers gave attention to these synergized TQM practices to mitigate quality-related problems. SCAs practiced continuous discussions, collaboration, communication, and feedback system in their organizations in transforming all or integral part of the organization's processes.

In the case of persistence in quality-related issues, managers and employees have revisited and applied TQM practices such as QAQC, PM, SRM, ASSP, and ETE to resolve quality problems. To achieve strategic transformational change because of quality-related issues, managers included the leadership involvement in the change control, risk management, proper resource planning, and employee empowerment for continuous quality improvement.

Quality issues cannot be stopped abruptly but can be mitigated based on continuous improvement processes/strategies. It is not everybody that pays attention to details or obeys the rules. Instead, constant collaboration and communications among the technical personnel and manufacturers are essential to mitigate quality problems in products and services.

Continuous quality improvement should be preached at all levels of the organization to change employees' attitudes. Behavioral patterns of individuals (technical duet, procurement professional, supplier, and manufacturer) contributed to increased quality-related issues in procured technical materials.

In addition, technical duets should recognize and communicate technical issues quickly, resolve technical queries promptly, and ensure correct drawings and datasheets

are used in the manufacturing process to avoid quality-related problems and reduce costs in technical services and overheads. Managers' perceptions or lived experiences unveil that improved statement of requirement, planning, initiation, collaboration, communication, and attention to detail are critical factors that mitigate quality-related issues in procured technical materials for projects.

Managers should ensure a periodic strategic transformational planned change by creating awareness and forums for continuous discussions and feedback systems for continual process improvement, procurement performance, improved productivity, and business excellence (Galambos et al., 2005; Packard, 2013).

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Appendix A: Recruiting Letter to the Participants

Online recruitment for potential participants for a semistructured interview on Total quality management practices for improving procurement performance of petroleum producing companies (Causes and improvement of quality-related issues in procured technical materials).

There is a new study called *"Total quality management (TQM) practices for improving procurement performance of Petroleum producing Companies"* that managers and assistant managers of petroleum industries or their supply chain actors use their experiences and knowledge about total quality management practices to detect causes of continuous quality-related issues in procured technical materials, improve quality of procured technical materials for project constructions and oilfield facility maintenance, and initiate planned organization change. For this study, you are invited to describe your lived experiences about TQM practices connected to procurement performance (causes and improvement of quality-related issues) in technical materials for project construction and maintenance operations.

This interview is part of the doctoral study for Patrick Awoke, a Ph.D. student at Walden University.

About the study:

- 20-45 minutes interview via on-site or Teams, or Skype or Zoom or Phone call.

Volunteers must meet these requirements:

- 5 to 10 years' industry experience in engineering or procurement or contract or quality assurance and quality control (QAQC).

- Have worked or currently working in petroleum producing companies or engineering, procurement, construction, and integration company (EPCI) or engineering and procurement (EP) company, or supply chain actors to petroleum producing companies.

To confidentially volunteer, contact Patrick Awoke via XXX@waldenu.edu or by phone; XXX

Appendix B: Interview Guide

Interview Details:

Interviewer: ----------

Interviewee: ----------

Interviewee Code Name: ----------

Interview Date/Time: ----------

Interview Location: ----------

Send copy of signed consent

form to participant? YES/NO

Address to send consent form to participant: ----------

Preliminary Actions:

1. Explain the purpose of the interview. Provide a short background of the researcher's connection to the study.

   Calligraphy

   I wish to restate the goal and purpose of the study for few minutes. This phenomenological study is an effort to comprehend how managers use their knowledge and lived experiences of total quality management practices related to procurement performance to detect causes of continuous quality-related issues in procured technical materials, provide continuous improvement strategies, and initiate planned change in a petroleum producing company. As you already recognized, quality-related issues occurred in some delivered technical materials for projects and oilfield facilities maintenance and has caused increased costs in

technical services and procurement overhead over the past five years. Increased quality problems have also caused spurious production shutdowns, decreased productivity, and decreased revenue generation for the Nigeria government. Total quality management practices demonstrate a positive influence on procurement performance if attention is afforded to it. The study goal is to explore how managers in petroleum producing companies, or their supply chain actors develop continuous improvement strategy to mitigate this quality issues and increased costs and possibly effect a planned organizational change for a business excellence. Your perceptions, thoughts, and lived experiences expose best practices that managers in other organizations could use to detect causes and affect improved quality performance in their organizations. This study is not an assessment of total quality management practices. I am carrying out this research as part of my PhD program. I am a procurement personnel in a multinational petroleum producing company. I am a certified engineer in oil and gas production. That role has no relationship with my role as an inquirer in this study.

2. Explain the rights of participants.

   Calligraphy

   Your answer to my invitation to participate and your reply to my email indicating "I consent" indicate your formal consent for this interview. Please note that all information will be held in the strictest confidence. This interview will be digitally

recorded. I will transcribe the interview. The data collected from this interview will be viewed by me and my dissertation committee. Please note that your involvement is voluntary and you may choose not to answer a question. In addition, you have the option to stop the interview at any time. The interview should take no more than an hour to complete. Thank you for agreeing to participate. Please send me email to indicate "I consent" if not done already.

3. Confirm receipt of the "I consent" email from participant by return mail, stating: *Thank you. This interview is planned for 30 – 60 minutes. During this time, I have several questions to cover.*
4. Confirm that participant meets required profile.

Demographic Questions:

1. Have you worked in a petroleum producing company or as a major supply chain actor to petroleum producing companies (procurement, technical logistics, engineering, quality assurance and control, contract, or material master)? YES/NO
2. How long have you worked for this petroleum producing company or as a major supply chain actor to the petroleum producing companies?
3. What was your role in ensuring material reception without quality related problems (procurement performance)?
4. Have you been an employee in other organizations that have implemented total quality management related to procurement with reception of project materials without quality issues? YES/NO

5. What are your roles in the supply chain for technical materials for project constructions and oilfield facility maintenance?
6. What is/are your qualification(s)?
7. Have you been involved in organizational (procurement) planned change before?
8. What type of organizational planned changes have you been involved in before?
9. Does your organization have quality management system?
10. What type of quality management system does your organization have?
11. What is your title?

Interview Questions:

1. What are the basic total quality management practices that are applicable to your organization in improving the procurement performance? (RQ1)
    (a) If despite existence of these management practices in your organization and quality problems persists, which of the practices have you applied to improve quality (procurement performance), mention? (probe)
    (b) How do these management practices mentioned above improve quality? (probe) Briefly explain

Participant's Response:

2. What are your experiences in using management practices to improve the procurement performance? (RQ1)
    (a) What is your view about quality control and quality assurance (QAQC) of procured technical materials? If quality related problems persist after QAQC, how have you resolved it? Kindly advise (probe)

Participant's Response:

3. What could be the causes of increase in quality-related issues in the supply chain despite existence of total quality management in your organizations? (RQ1)
    (a) In supply chain, do you think that technical administrator's behavior, buyer behavior, and supplier behavior contributed to increased quality problems in procured materials? Please explain briefly (probe)

Participant's Response:

4. What are your experiences in using total quality management practices in improving quality of delivered materials? (RQ2)

Participant's Response:

5. What are your experiences about material test certificates (MTC) and general specifications related to technical material procurement? (RQ2)
    (a) After confirmation of MTC of materials as per general specification, and technical logistics still receives technical materials with quality related issues, what have you attributed to be the causes of this quality problem in the technical materials? (probe)

Participant's Response:

6. Have you witnessed material rejection during technical material delivery due to quality-related issues and how did you resolve it? (RQ2)
    (b) What processes did you adopt to resolve this quality issues? (probe)
    (c) How can quality of technical materials be maintained and ensured in the supply chain process? (probe)

(d) Kindly share any return on experience (REX) you may have had regarding quality related issues and describe the situation, include how they were resolved? (probe)

Participant's Response:

7. What are the experiences of managers in the petroleum industry or supply chain actors in influencing planned change process for improved quality of procured materials? (RQ3)
    a) How did your positive experiences regarding quality management practices influence planned change process in the organization? (probe)
    b) What strategic planning did you put in place to ensure successful planned change to improve technical materials delivery with good quality? (probe)
    c) In which area of the organizational procurement did you have a successful organizational change to reduce materials with quality issues? Please explain (probe)

Participant's Response:

8. Final Question: Is there anything that you would like to share about your experiences that I have not asked about? (RQ1), (RSQ2), (RSQ3)
    (a) Did you see sustainable results from the planned change process required to improve the organizational procurement system regarding material qualities? (Probe)

Participant's Response:

Appendix C: Quality-Related Problems by Participants

- ✓ Wrong Part numbers
- ✓ Nonconformance
- ✓ Wrong materials
- ✓ Dimension problems
- ✓ No Material test certifications
- ✓ No heed to General Specification
- ✓ late delivery
- ✓ Size problems
- ✓ Cost of quality
- ✓ Broken parts
- ✓ Wrong drawing
- ✓ Part-number mismatch
- ✓ Damaged body
- ✓ Fake MTC
- ✓ Wrong Power Rating

Appendix D: Bracketing Questions for Interview and Member Check

Table D19

Bracketing Questions for Interview

Nos	Pre-Interview Bracketing Questions	Post-Interview Bracketing Questions
1	What are my judgements about this interview?	Did the interview go the way I anticipated: Why? Why not?
2	How well do you know this person?	What resonated with me?
3	How do I feel (stressed, bored, anxious, tired...?	Did I obtain material that will produce thick rich descriptions
4	Do I believe that the information in the interview will support my values about this subject? Why?	What can I do better on my next interviews?
5	Why am I interested in talking to this person?	
6	Will this person aid me find other people to talk with?	
7	Am I really interested? Am I curious? Am I looking just for "validation"?	

Table D20

Member Check Pre- and Post-Meeting Questions

Nos	Pre-Member Checks	Post-Member Checks
1	What makes me confident that I captured the participant's experiences?	How do I feel about the participant's reaction to the interpretation?
2	What will I do if participant disagrees with me?	Did the participant request changes? Disagree with the sense?
3	How willing am I to revise the description?	What are my next steps?

Table D21

Member Check Interview Protocol and Questions

Nos	Interview Protocol and Questions for Member Checks
1	Do you feel I accurately captured your experience?
2	Do you feel I accurately interpreted your experience?
3	Do you have anything to add or change?
4	Thank you for participating in my study
5	You will receive a summary of the findings when my degree is granted.