

The Effect of Total Quality Management on Customer Satisfaction in the Downstream Petroleum Sector in Ghana

Michael Tetteh Ohipeni

PhD Management, Texila American University, Guyana

Abstract

Despite the introduction of Total Quality Management (TQM), there is a general observation of customer dissatisfaction surrounding service provision by the companies in the downstream petroleum sector in Ghana. This research sought to assess the impact of TQM on customer satisfaction with regards to the downstream petroleum sector in Ghana. A sample size of 360 respondents, consisting of 290 customers, 60 staffs and 10 management staffs across different companies within Accra was used for the study. The study revealed that successful implementation of TQM has a major and significant impact on customers' satisfaction. TQM relies of the principle of stakeholder participation and involvement. There was however a shortfall with this principle as it was identified that staff of companies within the industry did not adequately involve themselves in rolling out the TQM concept. The study recommends management of the company to ensure full participation of all. The study revealed that the successful implementation of TQM has a significant effect customer satisfaction. However, the principle of participation and involvement by staff in the quality management chain was found not to be encouraging as staffs have not been adequately involved in rolling out the TQM concept in their companies. The study concludes that management of the companies in the sector should ensure full participation of all employees in the implementation of TQM through effective communication mechanisms to integrate quality disciplines into the culture and quality service activities of the company.

Keywords: *Total Quality Management, Downstream petroleum sector, Customer service.*

Introduction

Total Quality Management (TQM) and customer satisfaction are crucial aspects of the petroleum sector in Ghana, as they directly impact the industry's success and competitiveness. TQM is a management approach that focuses on continuously improving the quality of products and services through the involvement of all employees and the integration of various business processes [1]. It aims to enhance customer satisfaction and loyalty by meeting or exceeding their expectation. In the petroleum sector, TQM plays a significant role in ensuring the quality of petroleum products, refining processes, and

customer service. TQM principles emphasize the implementation of robust quality control measures to ensure the consistency and reliability of petroleum products [2]. This involves rigorous testing, monitoring, and adherence to quality standards at every stage of the supply chain, from extraction to distribution. In addition to the above, TQM promotes the identification and elimination of inefficiencies, bottlenecks, and waste in petroleum operations. Furthermore, Continuous process improvement initiatives, such as Six Sigma and Lean methodologies, are employed to streamline operations, reduce costs, and enhance the overall quality of processes [3]. TQM encourages the active participation and involvement of all

Received: 12.06.2023

Accepted: 06.07.2023

Published on: 30.08.2023

Corresponding Author: mohipeni@gmail.com

employees in quality improvement efforts. This includes training programs, empowerment initiatives, and creating a culture of accountability and responsibility. By engaging employees, organizations can tap into their expertise and ideas to drive innovation and deliver better customer experiences. It can also be argued that TQM extends its focus to suppliers in the petroleum sector. Collaborating closely with suppliers and conducting thorough quality assessments ensures that the raw materials and components used in the petroleum industry meet the required standards. This helps maintain consistency in product quality and reliability. TQM incorporates safety and environmental factors into the petroleum sector's operations. This involves complying with health, safety, and environmental regulations, implementing robust safety management systems, and promoting sustainable practices to mitigate negative impacts on the environment.

Organizations the world over have realised the central role customers play in an organization and as such have taken all steps to enhance customer satisfaction. One of the best-known strategies to achieve this objective is the implementation of Total Quality Management (TQM) [4, 5]. According to [6], TQM is a customer focus and as such its implementation in the telecommunication industry which relies mostly on customer satisfaction is necessary. [7] argued that TQM encompasses a wide range of techniques and tools to ensure total customer satisfaction. This includes International Standards Organization (ISO 9000) series, pareto analysis, matrix diagrams, tree decision diagram, critical path analysis, fishbone diagram etc. [6] further identified six common TQM practices; process management, supplier quality management, customer involvement, committed leadership, cross-functional training, employee involvement. The service sector of any economy like Ghana where downstream petroleum sector plays a critical role is dependent on the interactions of employees and customers [3].

Thus, the effectiveness of the interrelationship between the TQM concept and human resource management is critical and fundamental to the implementation of the TQM concept by oil marketing companies (OMCs) in Ghana. This implies that TQM is applicable not only in the manufacturing industry but in the service sector as well. Customers in the service industry are becoming more sensitive to service quality and service delivery than in manufacturing since customers in the service industry are always in constant contact with front-line service personnel and customer service representatives, which is not the case with factory workers [9].

Historically, there is a lot of literature on the petroleum industry which typically has been fragmented in nature and most explicitly focuses mainly on new topics and in narrative nature without consolidating the previous works to direct future works [10]. Over the years the new empirical research without synergies and systematic review have resulted in disjointed and contradictory research outcomes. These outcomes have not contributed more to research improvement and policy in the petroleum industry over the years hence the motivation of this research is to use total quality management framework to analyse the downstream petroleum sector with an innovative and transparent methodology [11] through an empirical study.

One of the most relied tools in the 21st century that organizations have implemented to improve the efficiency and effectiveness of their operations is Total Quality Management [12, 13]. The implementation of total quality management has been recognised to give companies competitive advantage since the 1980s [14]. Total quality management has been implemented in both manufacturing and service organizations because of its effect on organizational and project success [13, 15]. Previous studies on total quality management practices and organizational success have examined the phenomenon mostly within the context of other service industries and manufacturing organizations with little in the

petroleum sector [13]. Moreover, studies of total quality management have been more skewed towards developed and western economies with little in developing countries despite the enormous benefit the concept offers to businesses in all parts of the world [4, 16].

In terms of the effect of total quality management practices on organizational performance a number of studies have reported a positive impact of total quality management on organizational success and performance [16-20]. On the other hand, some studies have also reported a negative association between total quality management and organizational performance [17, 21]. It must be emphasized that there is little or no evidence of studies on total quality management within the Ghanaian context that links it to customer service. Most of the studies conducted in the Ghana context have focused on implementation and its challenges for total quality management in various sectors in Ghana [2, 12, 14]. To the best of my knowledge the current study is among the few if not the first to examine the effect total quality management practices has on the petroleum sector performance in Ghana. This study addresses these discrepancies in literature by examining the effect of TQM on customer satisfaction in the downstream petroleum industry in Ghana.

The study makes significant contributions to literature, policy and practice. In the area of literature, the study is among the few studies on the application of total quality management framework to analyze an industry like the petroleum sector and as such it contributes to literature in that respect. Also, the study is among the limited studies that will analyse the performance of the downstream petroleum sector using the total quality management framework in Ghana. The results of the study will help companies in the downstream petroleum sector to understand components of total quality management that drive performance in their organizations as well as customer satisfaction. The study results will also help industry players understand critical components

of the operations that drive performance and customer satisfaction.

Empirical Review- Components of TQM

Customer Focus

There have been numerous empirical studies conducted on the customer focus component of Total Quality Management (TQM). Here are some key findings from the literature:

Customer focus is positively related to customer satisfaction: A study by [4], found that customer focus positively influenced customer satisfaction in the hotel industry. Similarly, another study by [22], found that customer focus had a positive effect on customer satisfaction in the banking sector. Customer focus is positively related to business performance: A study by [23] found that customer focus had a positive effect on business performance in the manufacturing sector. Another study by [12] found that customer focus had a positive effect on financial performance in the banking sector. Customer focus is positively related to employee satisfaction: A study by [6] found that customer focus had a positive effect on employee satisfaction in the hotel industry. Similarly, another study by [21] found that customer focus had a positive effect on employee satisfaction in the banking sector. Employee empowerment is a key driver of customer focus: A study by [18] found that employee empowerment was a key driver of customer focus in the service industry. Similarly, another study by [7] found that employee empowerment had a positive effect on customer focus in the banking sector. Customer focus is positively related to innovation: A study by [24] found that customer focus had a positive effect on innovation in the manufacturing sector. Similarly, another study by [3] found that customer focus had a positive effect on innovation in the service sector.

Overall, the empirical evidence suggests that customer focus is a critical component of TQM and is positively related to customer satisfaction, business performance, employee satisfaction, innovation, and employee empowerment.

Organizations that prioritize customer focus and implement TQM practices that enhance customer focus are likely to experience significant benefits in terms of customer satisfaction, business performance, and employee satisfaction.

Continuous Improvement

Continuous improvement is a critical component of Total Quality Management (TQM), and there have been several empirical studies conducted on its effectiveness. Here are some key findings from the literature:

Continuous improvement is positively related to business performance: A study by [25] found that continuous improvement practices had a positive effect on business performance in the manufacturing industry. Similarly, a study by [22] found that continuous improvement practices had a positive effect on business performance in the service industry. Employee participation is critical to the success of continuous improvement: A study by [26] found that employee participation was critical to the success of continuous improvement practices in the manufacturing industry. Similarly, a study by [27] found that employee participation was a key factor in the success of continuous improvement practices in the service industry. Continuous improvement is positively related to customer satisfaction: A study by [21] found that continuous improvement practices had a positive effect on customer satisfaction in the hotel industry. Similarly, a study by [28] found that continuous improvement practices had a positive effect on customer satisfaction in the retail industry. Effective measurement and evaluation of continuous improvement practices is critical: A study by [12], found that effective measurement and evaluation of continuous improvement practices was critical to their success in the manufacturing industry. Similarly, a study by [15] found that effective measurement and evaluation of continuous improvement practices was critical to their success in the service industry. Continuous improvement

practices can lead to improved employee satisfaction: A study by [12] found that continuous improvement practices had a positive effect on employee satisfaction in the manufacturing industry. Similarly, a study by [29] found that continuous improvement practices had a positive effect on employee satisfaction in the service industry.

Overall, the empirical evidence suggests that continuous improvement is a critical component of TQM and is positively related to business performance, customer satisfaction, and employee satisfaction. Organizations that prioritize continuous improvement and implement TQM practices that enhance continuous improvement are likely to experience significant benefits in terms of business performance, customer satisfaction, and employee satisfaction.

Total Employee Involvement

Total Employee Involvement (TEI) is a crucial component of Total Quality Management (TQM), and several empirical studies have examined its effectiveness. Here are some key findings from the literature:

TEI is positively related to employee performance: A study by [5] found that TEI had a positive effect on employee performance in the service industry. Similarly, a study by [14] found that TEI had a positive effect on employee performance in the manufacturing industry. TEI is positively related to business performance: A study by [30], found that TEI had a positive effect on business performance in the service industry. Similarly, a study by [7] found that TEI had a positive effect on business performance in the manufacturing industry. Effective communication is critical to the success of TEI: A study by [3] found that effective communication was critical to the success of TEI practices in the service industry. Similarly, a study by [9] found that effective communication was a key factor in the success of TEI practices in the manufacturing industry. TEI can lead to improved employee satisfaction: A study by [20]

found that TEI had a positive effect on employee satisfaction in the manufacturing industry. Similarly, a study by [11] found that TEI had a positive effect on employee satisfaction in the service industry. TEI can lead to improved innovation: A study by [3] found that TEI had a positive effect on innovation in the manufacturing industry. Similarly, a study by [8] found that TEI had a positive effect on innovation in the service industry.

Overall, the empirical evidence suggests that TEI is a critical component of TQM and is positively related to employee performance, business performance, employee satisfaction, and innovation. Effective communication is a key factor in the success of TEI practices, and organizations that prioritize TEI and implement TQM practices that enhance TEI are likely to experience significant benefits in terms of employee and business performance.

Leadership Commitment

Leadership Commitment is a key component of Total Quality Management (TQM), and several empirical studies have examined its effectiveness. Here are some key findings from the literature:

Leadership Commitment is positively related to organizational performance: A study by [26] found that leadership commitment had a positive effect on organizational performance in the manufacturing industry. Similarly, a study by [31] found that leadership commitment had a positive effect on organizational performance in the service industry. Leadership Commitment is positively related to employee satisfaction: A study by [11] found that leadership commitment had a positive effect on employee satisfaction in the manufacturing industry. Similarly, a study by [6] found that leadership commitment had a positive effect on employee satisfaction in the service industry. Effective communication is critical to the success of Leadership Commitment: A study by [1], found that effective communication was critical to the success of leadership commitment practices in

the manufacturing industry. Similarly, a study by [13], found that effective communication was a key factor in the success of leadership commitment practices in the service industry. Leadership Commitment can lead to improved customer satisfaction: A study by [32] found that leadership commitment had a positive effect on customer satisfaction in the service industry. Similarly, a study by [16] found that leadership commitment had a positive effect on customer satisfaction in the manufacturing industry. Leadership Commitment can lead to improved innovation: A study by [12] found that leadership commitment had a positive effect on innovation in the manufacturing industry. Similarly, a study by [33] found that leadership commitment had a positive effect on innovation in the service industry.

Overall, the empirical evidence suggests that Leadership Commitment is a critical component of TQM and is positively related to organizational performance, employee satisfaction, customer satisfaction, and innovation. Effective communication is a key factor in the success of Leadership Commitment practices, and organizations that prioritize Leadership Commitment and implement TQM practices that enhance Leadership Commitment are likely to experience significant benefits in terms of organizational and employee performance, customer satisfaction, and innovation.

Process Management

Process Management is a key component of Total Quality Management (TQM), and several empirical studies have examined its effectiveness. Here are some key findings from the literature:

Process Management is positively related to operational performance: A study by [8] found that process management had a positive effect on operational performance in the manufacturing industry. Similarly, a study by [1] found that process management had a positive effect on operational performance in the service industry.

Process Management is positively related to customer satisfaction: A study by [33] found that process management had a positive effect on customer satisfaction in the manufacturing industry. Similarly, a study by [28] found that process management had a positive effect on customer satisfaction in the service industry. Effective communication is critical to the success of Process Management: A study by [16] found that effective communication was critical to the success of process management practices in the manufacturing industry. Similarly, a study by [5] found that effective communication was a key factor in the success of process management practices in the service industry. Process Management can lead to improved innovation: A study by [22] found that process management had a positive effect on innovation in the manufacturing industry. Similarly, a study by [14] found that process management had a positive effect on innovation in the service industry. Process Management can lead to improved quality: A study by [18] found that process management had a positive effect on quality in the service industry. Similarly, a study by [20], found that process management had a positive effect on quality in the manufacturing industry.

Overall, the empirical evidence suggests that Process Management is a critical component of TQM and is positively related to operational performance, customer satisfaction, innovation, and quality. Effective communication is a key factor in the success of Process Management practices, and organizations that prioritize Process Management and implement TQM practices that enhance Process Management are likely to experience significant benefits in terms of operational and customer performance, innovation, and quality.

Supplier Management

Supplier Management is a key component of Total Quality Management (TQM), and several empirical studies have examined its

effectiveness. Here are some key findings from the literature:

Supplier Management is positively related to product quality: A study by [2] found that supplier management had a positive effect on product quality in the manufacturing industry. Similarly, a study by [12] found that supplier management had a positive effect on product quality in the service industry. Effective communication is critical to the success of Supplier Management: A study by [14] found that effective communication was critical to the success of supplier management practices in the manufacturing industry. Similarly, a study by [16] found that effective communication was a key factor in the success of supplier management practices in the service industry. Supplier Management can lead to improved supplier performance: A study by [33] found that supplier management had a positive effect on supplier performance in the manufacturing industry. Similarly, a study by [17] found that supplier management had a positive effect on supplier performance in the service industry. Supplier Management can lead to improved customer satisfaction: A study by [33] found that supplier management had a positive effect on customer satisfaction in the manufacturing industry. Similarly, a study by [28] found that supplier management had a positive effect on customer satisfaction in the service industry. Supplier Management can lead to improved organizational performance: A study by [2] found that supplier management had a positive effect on organizational performance in the manufacturing industry. Similarly, a study by [18] found that supplier management had a positive effect on organizational performance in the service industry.

Overall, the empirical evidence suggests that Supplier Management is a critical component of TQM and is positively related to product quality, supplier performance, customer satisfaction, and organizational performance. Effective communication is a key factor in the success of Supplier Management practices, and

organizations that prioritize Supplier Management and implement TQM practices that enhance Supplier Management are likely to experience significant benefits in terms of product quality, supplier performance, customer satisfaction, and organizational performance.

Measurement and Analysis

Measurement and Analysis is a key component of Total Quality Management (TQM), and several empirical studies have examined its effectiveness. Here are some key findings from the literature:

Measurement and Analysis is positively related to organizational performance: A study by [22], found that measurement and analysis had a positive effect on organizational performance in the manufacturing industry. Similarly, a study by [2] found that measurement and analysis had a positive effect on organizational performance in the service industry. Effective data analysis is critical to the success of Measurement and Analysis: A study by [32] found that effective data analysis was critical to the success of measurement and analysis practices in the manufacturing industry. Similarly, a study by [33], found that effective data analysis was a key factor in the success of measurement and analysis practices in the service industry. Measurement and Analysis can lead to improved decision-making: A study by [12] found that measurement and analysis had a positive effect on decision-making in the manufacturing industry. Similarly, a study by [28] found that measurement and analysis had a positive effect on decision-making in the service industry. Measurement and Analysis can lead to improved quality: A study by [17] found that measurement and analysis had a positive effect on quality in the manufacturing industry. Similarly, a study by [32] found that measurement and analysis had a positive effect on quality in the service industry. Measurement and Analysis can lead to improved customer satisfaction: A study by [15] found that measurement and analysis had a positive effect

on customer satisfaction in the manufacturing industry. Similarly, a study by [18] found that measurement and analysis had a positive effect on customer satisfaction in the service industry.

Overall, the empirical evidence suggests that Measurement and Analysis is a critical component of TQM and is positively related to organizational performance, decision-making, quality, and customer satisfaction. Effective data analysis is a key factor in the success of Measurement and Analysis practices, and organizations that prioritize Measurement and Analysis and implement TQM practices that enhance Measurement and Analysis are likely to experience significant benefits in terms of organizational performance, decision-making, quality, and customer satisfaction.

Organizational Performance

Organizational performance can be defined as the extent to which an organization achieves its goals and objectives. Measuring organizational performance is important for several reasons, including assessing the effectiveness of organizational strategies, identifying areas for improvement, and making informed decisions about resource allocation.

There are several approaches to measuring organizational performance, including:

Financial performance measures: Financial performance measures include metrics such as revenue, profit, return on investment, and market share. These measures provide insight into the financial health of an organization and are often used to evaluate the success of business strategies. Customer satisfaction measures: Customer satisfaction measures include metrics such as customer surveys, net promoter score (NPS), and customer retention rates. These measures provide insight into the quality of the products and services provided by the organization and the overall satisfaction of its customers. Employee satisfaction measures: Employee satisfaction measures include metrics such as employee surveys, turnover rates, and absenteeism rates. These measures provide

insight into the organizational culture, employee engagement, and overall job satisfaction of the workforce. Process measures: Process measures include metrics such as cycle time, defect rate, and productivity. These measures provide insight into the efficiency and effectiveness of the processes used by the organization to produce its products and services. Social responsibility measures: Social responsibility measures include metrics such as community involvement, sustainability practices, and ethical behavior. These measures provide insight into the organization's commitment to corporate social responsibility and its impact on the broader community and environment.

When measuring organizational performance, it is important to consider multiple measures to gain a comprehensive understanding of the organization's success. Furthermore, it is important to measure organizational performance over time to identify trends and patterns and to determine whether organizational performance is improving or declining. In the context of this study organizational performance as measured using a combination of a number of factors to provide a more comprehensive view of how TQM affect firm performance in the downstream oil and gas sector in Ghana. In the petroleum industry, TQM can be applied to a range of activities, including exploration, production, refining, transportation, and distribution. There is evidence to suggest that TQM can have a positive impact on firm performance in the petroleum industry. For example, a study by [1] found that TQM practices were positively associated with organizational performance in the oil and gas industry in the Middle East.

Similarly, another study by [12] found that TQM practices were positively related to firm performance in the Nigerian oil and gas industry. The study identified several TQM practices that were particularly important for improving performance, including customer focus, employee involvement, continuous improvement, and process management.

However, it is important to note that the impact of TQM on firm performance can depend on a range of factors, including the specific TQM practices implemented, the organizational culture, and the competitive environment. Additionally, the petroleum industry is subject to a range of external factors, such as fluctuations in oil prices and regulatory changes, which can also affect firm performance. Overall, while there is evidence to suggest that TQM can have a positive impact on firm performance in the petroleum industry, it is important to consider the specific context and factors that may influence the effectiveness of TQM practices.

TQM and Service Quality and Customer Satisfaction in the Petroleum Sector in Ghana

Total Quality Management (TQM) is a management approach that seeks to improve the quality of products and services by involving all employees in the organization in the continuous improvement of processes. In the downstream petroleum sector in Ghana, TQM can be applied to a range of activities, including fuel retailing, lubricant sales, and LPG distribution. Service quality is an important aspect of TQM and refers to the degree to which a service meets or exceeds customer expectations. In the downstream petroleum sector, service quality can be measured through factors such as reliability, responsiveness, assurance, empathy, and tangibles (such as the physical appearance of service stations).

Research on TQM and service quality in the downstream petroleum sector in Ghana is limited, but there is evidence to suggest that TQM practices can have a positive impact on service quality. For example, a study by [1] found that TQM practices were positively associated with service quality in the construction sector in Ghana.

The study identified several TQM practices that were particularly important for improving service quality, including leadership commitment, customer focus, employee

involvement, continuous improvement, and supplier management. These practices can help to ensure that customer needs and expectations are understood and met, and that processes are continually improved to enhance service quality. However, it is important to note that the impact of TQM on service quality can depend on a range of factors, including the specific TQM practices implemented, the organizational culture, and the competitive environment. Additionally, the downstream petroleum sector in Ghana is subject to a range of external factors, such as fluctuations in fuel prices and regulatory changes, which can also affect service quality.

Overall, while there is limited research on TQM and service quality in the downstream petroleum sector in Ghana, there is evidence to suggest that TQM practices can have a positive impact on service quality. It is important for organizations to implement TQM practices that are tailored to their specific needs and context, and to continually evaluate and improve their service quality.

Total Quality Management (TQM) is a management approach that focuses on continuous improvement of processes, products, and services to enhance customer satisfaction and create value for stakeholders. Customer satisfaction is a key component of TQM, and it is achieved by meeting or exceeding customer expectations through the delivery of high-quality products and services. TQM involves a comprehensive approach to quality management, which includes the integration of quality into all aspects of the organization, from leadership and strategy to operations and customer service. The goal is to create a culture of quality that emphasizes continuous improvement and customer satisfaction. Creating value for customers is also a key aspect of TQM. Value creation involves understanding and meeting the needs and wants of customers through the delivery of high-quality products and services that provide benefits that exceed their costs. TQM emphasizes the importance of understanding customer needs and expectations

and using that understanding to continuously improve products and services to meet those needs.

In summary, TQM is a customer-focused approach to quality management that aims to enhance customer satisfaction and create value for stakeholders through continuous improvement of products and services. By implementing TQM principles, organizations can improve their competitive position, increase customer loyalty, and achieve long-term success.

Research Methods

The study took advantage of the strength of both quantitative and qualitative research approaches. Both at the company's and individual levels, questionnaires and interview guides were used in order to derive a rich source of data for the study. Also, the survey design was employed as it gives the opportunity to determine attributes of the population in which to derive the sample. Also is the fact that it poses an economic advantage and also the flexibility it presents for data collection. This design is adopted since it presents an avenue to reduce errors in the research study as it involves a systematic and well organised approach to data presentation aimed at arriving at accurate conclusions.

The unit of analysis for the study included individual customers who are using the company's products and also patronize the company's business premises during the study, staff of the companies at the Quality Control department, and managers in charge of quality control in the companies.

Random and purposive sampling methods were adopted in sampling the respondents. Simple random sampling approach was used to arrive at the customer sample size while the purposive sampling method was used to sample both management and staff of the companies. It is important to note that the sampling of the customers was done at all operating hours of the day. This was to prevent the sample from being

skewed to a particular section of the day. Additionally, the application of the simple random sampling method in the sampling of the

customers ensured that each customer had the same chance of being part of the sample.

Table 1. Distribution of Sample

Respondents	Number
Management	10
Staff	60
Customers	290
Total	360

Source: Researcher Construct, 2023

On the other hand, quantitative data from customers and staffs of the companies were derived using questionnaire approach. As compared to other research tools, the questionnaire was the preferred choice as it presents a valuable opportunity to enable the collection of a wide range of information from a substantial number of respondents. In this instance where a large number of respondents ranging from customers, management and staff, the use of questionnaire to arrive at collection of useful information for the study was justifiable.

Both questionnaire and interview guide were structured into sections in the manner that each section could cater for one of the objectives. This is to ensure that the survey tool contained all needed information that would answer all the research questions and objectives. Separate questionnaires were designed for customers and staff. The questionnaires tackled the demographic characteristics of the respondents with key variables including age, gender, and educational background. Variables such as years of working experience and years of subscription were elicited for both questionnaires for staff and customers respectively. This information is key in determining respondents' relationship with research questions and objectives of the study.

The second section of both questionnaires focused on the extent to which TQM has been implemented in the Companies. Specifically, the questionnaire on the staff will explore the dimensions of TQM which have been successfully implemented in the company in

enhancing the quality of service and product including top management commitment, customer focus, training and development, teamwork, continuous improvement, employees' involvement and quality of products and services. Also, the questionnaire will explore which of the basic principles of total quality management is very important to the company (Satisfying the customer, satisfying the supplier and continuous improvement in services and products) and organizational performance. On the other hand, the questionnaire for customers will explore the extent to which TQM has been implemented in the companies by using the five key dimensions of quality in total quality management including Tangibles, Reliability, Responsiveness, Assurance, and Empathy (including access, communication, understanding the customer) were used. These variables were measured on a five- point likert scale where 1 represented a response of "Strongly agree" and 5 a response of "Strongly Disagree". A five-point scale was used as against the traditional five-point scale due to the tendency for individuals to select responses in the centre of the scale if an odd number response scale was used.

With regards to responsiveness, questions focused on the time-of-service delivery, prompt service and staff willingness to assist customers. Questions like staff behaviour, instil confidence in customers, safety in dealing with their customers, courtesy of staff and whether the staff have the knowledge in dealing with customers or not constituted the assurance aspect. Questions

on empathy concerned individual attention, operating time of the Company, distance to the branch offices, staff interest in customers and whether staff understand specific needs of the customers or not.

The third section of both questionnaires focused on the extent to which TQM influence customer satisfaction and organizational performance.

The fourth section of the questionnaire for staff focused on the challenges faced by the companies in the practice of TQM. The key barriers to the successful implementation of total quality management as identified in the literature were explored in this section. Specifically, these barriers included cultural and employee barrier, infrastructure barrier, lack of planning for quality, lack of customer focus and leadership for quality, lack of motivation and skills, lack of knowledge and management on quality management of customers, lack of management commitment and leadership to quality management, lack of understanding of quality and total quality management and inadequate resources for total quality management.

Both questionnaires ended by soliciting suggestions from both staff and customers on the appropriate recommendations that can be put forward to improve staff total quality management practices in an effort to improve customer satisfaction in the Companies and firm performance.

Field data collected underwent a cleaning process before analysis at the data entry stage. Data was inspected and cleaned to correct all error ridden data. Version 27 of the Statistical Product and Service Solutions (SPSS) was used to analyse the data. Percentages and frequencies were used to present the resultant information. Therefore, both inferences and descriptive statistical analysis were used in responding to the research questions.

The inferential statistics used are the Pearson Correlation, the Chi-square test of independence and the Multiple Regression analysis. Whereas the impact of the dimensions of TQM on

customer satisfaction was examined using the Multiple regression analysis to explore the questionnaires, that of the demographic patterns of the respondents was examined using the chi-square test of independence. In order to understand the regression analysis, the variables “product and service quality” and “general satisfaction level of the customers about product and service” were used as independent and dependent variables respectively. Inferential statistical analyses were performed at a 95 percent confidence interval.

The regression analysis was used at a five (5) percent significance level to test the hypothesis that the execution of TQM insignificantly impacted on downstream petroleum companies’ customers’ satisfaction level. Thus, the null hypothesis is rejected if the significance value of the test-statistics (p-value) arrived at is less than 0.05. In other words, if the tested alpha value is less than 0.05 then the null hypothesis is ignored.

Hypothesis

Below are the constructed hypotheses to complement the research objectives:

H₀: The implementation of TQM practices insignificantly impacts on the service satisfaction of customers of downstream petroleum companies.

H₁: The implementation of TQM practices significantly impacts on the service satisfaction of customers of downstream petroleum companies.

Results and Discussion

The Demographic Descriptions of Respondents

The analysis and discussion of the demographic characteristics of the total 360 respondents who participated in the study are presented in this section. The respondents constituted 290 customers, 10 management members and 60 staff across various branches of oil marketing companies within the Greater Accra Region. Gender, age and educational backgrounds constitute the variables analysed in

examining the demographic characteristics of the respondents. Number of working experiences for staff was also examined.

Table 2. Represents results of the gender distribution of the respondents.

Table 2. Gender Distribution of Respondents

Gender	Customers		Staff	
	f	%	f	%
Male	166	57.2	29	48.3
Female	124	42.8	31	51.7
Total	290	100.0	60	100.0

Source: Field work, 2023

As seen from the table above, male respondents from the customer category (57.2%) dominated the female category (42.8%). On the other hand, female (51.7) slightly dominated the male (48.3%) staff category of the respondents. From the statistics for the gender distribution in the staff category across the various oil marketing companies, it is a clear indication that there is probable more staff at the customer service departments of the companies (with the quite marginal variation of 3.85%) as under normal circumstances, employers prefer women to fill vacancies at customer service departments owing to women's general appealing and welcoming nature. The choice of women over men can also be attributed to the fact that customer service career has been generally branded as women-oriented career. To this effect, there is high probability of employers

recruiting more women than men under this category. Analysis of age distribution of respondents was also done. It was observed that majority of the customers constituting as high as 66.9% of the total respondents are under the youthful bracket of 20-39. This was followed by age bracket of 40-49 representing 24.3% of the total respondents. As low as 8.8% of the customers are under the age bracket 50-69. On the other hand, out of the total respondents for staff, 51.8% fall under the age brackets of 30-39. An age bracket 40-49 constitutes 29.6% whereas 18.5% of the total staff respondents fall under the brackets 50-59. It is observed that unlike the customer category that has representation within the retirement bracket that of the staff has none. Figure 1 below gives a bar chart representation of the age distribution for customers and staff of the total respondents.

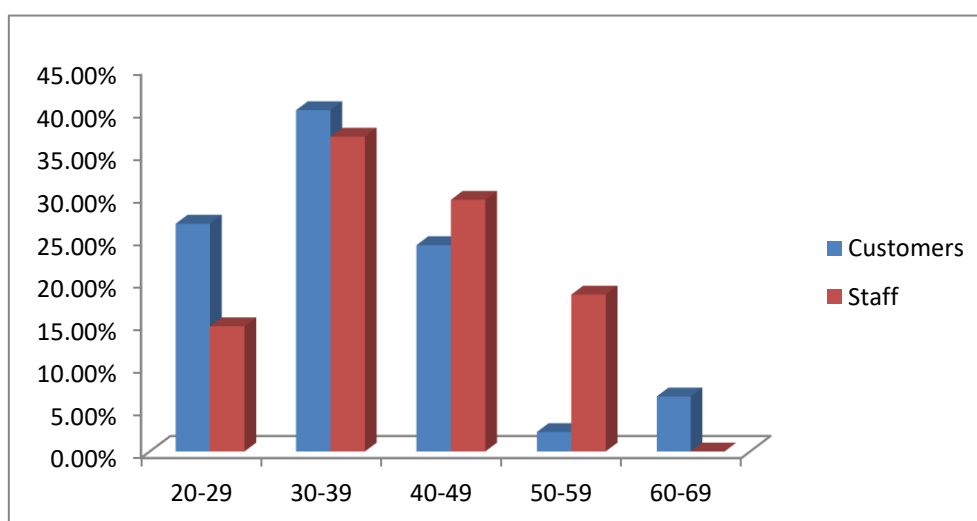


Figure 1. Age Distribution of the Respondents

Source: Fieldwork, 2023

It can be deduced that generally a large number of the respondents of both customers and staff are within the youthful bracket and therefore are young, energetic, and productive and therefore could contribute a greater part to the development of the company and largely to the economic wellbeing of the economy. The indication that a number of the customers are aged, it is prudent to ensure that total quality management is successfully implemented to also cater for the needs of the aged.

Analysing the educational background of the respondents, it was observed that quite a significant number of the staff had attained at

least a university degree. These constitute as high as 91.7%. there was no Senior High School or below leaver as all the remaining 8.3% had attained an HND. Only 20.4% of the customers on the other hand had attained a university degree while 36.4% had an HND. A largest proportion of 43.2% of the total respondents had up to Senior High School Certificate. Even though a substantial number representing 56.8% had at least HND, the number constituting Senior High School and below is quite significant. Figure 2 show the graphical representation of the educational backgrounds of the customers and staff respondents.

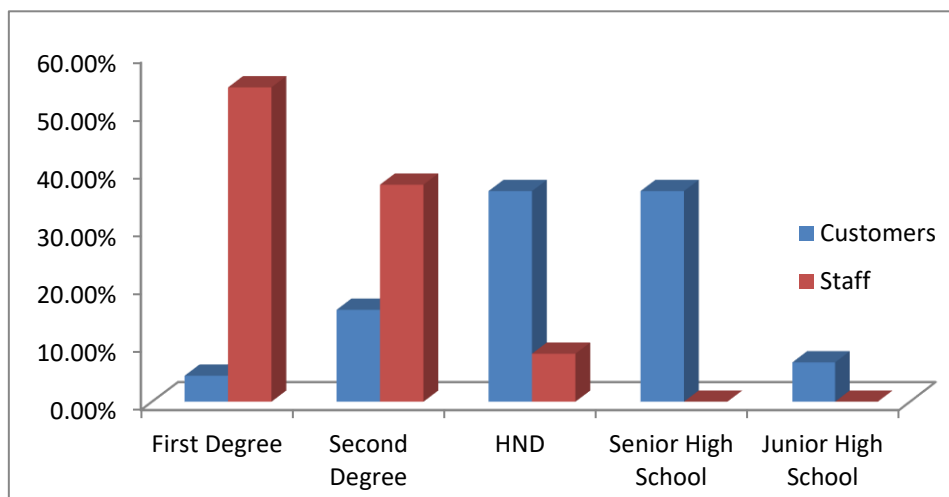


Figure 2. Educational Backgrounds of the Respondents

Source: Fieldwork, 2023

It can be deduced that even though not surprising, there was way high number of respondents of staff with higher educational background as compared to the customers. This can be attributed to the professional nature of the telecommunication work and in particular the customer service career for which candidates with higher educational background such as first

degree is prioritised. Successfully implementing TQM is much dependent on staff professionalism and working experience. Therefore, number of years for which staffs have worked with the company was accessed and analysed. Table 3 below gives a summary overview.

Table 3. Period of Working with the Company

Period (Years)	Frequency	Percent
0-2	9	15.0
3-5	36	60.0
6-8	12	20.0
9-11	3	5.0
Total	60	100.0

Source: Fieldwork, 2023

As indicated on the table, as high as 60% of the staff have worked with the various companies for within 3-5 years whereas as low as about 5% have 9-11 years working experience with the company. A critical review of the data showed that as high as 75% of the staff have had at most 5 years working experience with their companies. This shows that majority of the staff have had an adequate working experience and are in a good position to better evaluate the TQM practices and its impact on the company's customer satisfaction.

TQM and Extent of Practice in the Various Companies

Under this section, views of staff and management were obtained towards assessing the magnitude of TQM practices within the company. Employee awareness and relevance of the concept of TQM was assessed. Also, prevailing avenues for employee training as well

as the role and responsibility to be played by staff towards a successful execution of the concept were also explored. Overall, the organisational core values served as bases for exploring the degree to which TQM has been executed while giving key priority to customer perception.

The following quality initiatives were derived during the interview section in collaboration with management who participated in the research for the implementation of TQM in the company:

1. Initiation of change management programme;
2. Software upgrades;
3. Initiation of online customer services;
4. Initiation of point of sale (POS) and,
5. Performance management practice.

The outlined quality initiatives were noted to have been introduced by management of OMCs for the implementation of TQM.

Table 4. Dimension of TQM which has been Successfully Implemented

Dimension	Weights						
	1	2	3	4	5	6	7
Top management commitment	0	6	10	25	7	10	2
Quality of products and services	0	2	10	30	8	10	5
Training and development	30	8	4	4	2	9	2
Teamwork	14	15	20	0	0	9	9
Employees' involvement	15	25	12	4	4	0	0
Continuous improvement	0	0	0	10	10	20	20
Customer focus	0	0	0	4	9	21	26

Source: Fieldwork, 2023

The Relative Importance Index (RII) tool was used to analyse the dimensions of TQM using the formula below:

$$\text{Relative importance index (RII)} = \frac{\sum w}{AN}, \text{ where}$$

'w' is the weighting given to the dimensions by

the respondents ranging from 1-7, A represents the highest weight (i.e 7) and N represents total number of staff (i.e 60).

As indicated from the table 4, higher RII value means the dimension had been successfully implemented in the company.

Table 5. Dimension of TQM Which has Been Successfully Implemented

Dimension	RII	Rank
Top management commitment	0.59	4
Quality of products and services	0.69	3
Training and development	0.36	6

Teamwork	0.53	5
Employees' involvement	0.33	7
Continuous improvement	0.83	2
Customer focus	0.88	1

Source: Fieldwork, 2023

From the table above, 'customer focus' emerged the most significant dimension of TQM as it earned the highest RII value of 0.88. This is followed by 'continuous improvement' with RII value of 0.83. 'Customer focus' being the most successfully implemented and important dimension of TQM supports [2] submission that the philosophy and assumption behind the implementation of TQM must be one geared towards the customer's interest. As also supported by [4] that in the settings of total quality implementation, quality is determined and bordered on customers' satisfaction and that the customer must be seen as the embodiment of the company's life. This implies that to ensure value for money and benefit of the company, the company must focus on customer needs as suggested by [6]. The second ranked most important principle and successfully implemented principle of TQM is an indication that for a company to be competitively advantaged it ought to ensure a sustainable improvement in its product and service delivery to customers as indicated by [7]. These juxtapose that the companies in effect must largely rely on its customers to arrive at a true meaning and understanding of quality of product and service as per customers perspective to guide its TQM implementation decisions.

On the other hand, employee's involvement and training and development were ranked seventh and sixth respectively in order of less significant principles that have been given less priority in their implementation. This does not auger well for oil marketing companies as low level of employees' participation in the TQM implementation has diverse negative implications on the company in an attempt to achieve quality. This is supported by [8] advocating that in the context of TQM the 'total' connotes involving all stakeholders, the backbone to achieving quality within a company.

TQM Practices and its Impact on Customer Satisfaction and Retention

This section explored the influence of TQM on customer satisfaction by examining the satisfaction level of the customers in relation to the quality of service rendered by staff of the companies. Assessment of whether or not staffs' capacity in rendering quality service and product had any positive effect on customers' satisfaction level. The table 6 below gives a summary overview of the analysis on customers status based on the set multiple response variable.

Table 6. Description of Current Status in Relation to Loyalty to OMC

Response	Frequency	Percentage
I do not have any intention of switching to another operator	168	57.9
I am constantly looking for opportunities to leave this OMC	68	23.4
I See little advantage in switching from my OMC	168	57.9

Source: Fieldwork, 2023

As observed from the table above, a significant 57.9% of the total customers contacted showed no intention of switching service provider(s) as they see no significant

added benefits in switching. This is an indication that TQM has been generally successfully implemented and impact manifesting.

Table 7 shows the results on the general level of satisfaction of customers in relation to the quality of service rendered by staff to customers. The table below gives a general results and

impression of customers satisfactory level in relation to quality of service and product delivered by staff of oil marketing companies.

Table 7. Satisfaction Level in Relation to the Quality of Service Rendered by Staff

Response	Frequency	Percentage
Highly satisfied	120	41.4
Somehow satisfied	145	50.0
Not satisfied	25	8.6
Total	290	100.0

Source: Fieldwork, 2023

As observed from the table above, a significant 41.4% of respondent customers argued that they were highly satisfied with services and products rendered while 50.0% argued they were moderately satisfied with product and services offered by their OMC. Detailed analysis revealed that there is variation in customer satisfaction on product and services rendered by staff according to customers gender ($\chi^2 = 6.220$, $df = 2$, $p = 0.0445$). More males (65.4%) were somehow satisfied with the quality of product and services offered while 55.0% of female respondents argued that they were highly satisfied. This implies that female customers are more likely to be content with quality of service and product offered by the company through the implementation of TQM as compared to the male counterparts. Therefore, service quality should be offered equally regardless of gender.

However, it was noticed that customers were more satisfied with in-service delivery than that of products of the company. For example, one of the customers who responded to the study mentioned:

Its critical review revealed that customers' interest and satisfaction depended more on the service provision as compared to product delivery. For instance, one respondent during the data collection process argued by commenting as follows:

I think that the company has been able to improve upon its services delivery through the implementation of TQM most especially in the professional orientation of the customers.

However, service quality on tangibles such as company's equipment and tools including the services were noted to be inefficient in performance.

It was also observed that management shared same sentiment as one Operations Manager commented on as follows:

The problem in my view is one of the limitations of modern-day technology which customers need to understand. However, customer satisfaction has increased in other aspects of our operations in terms of quality of product and even pricing.

The views of staff in relation to how TQM influences customers' satisfaction in the companies were also explored. In relation to improved satisfied customers, about 66.7 percent of the customers who responded to the study indicated that the TQM of the company has improved satisfied customers. This result was further supported by the management members who responded to the study. On the issue of the Companies having to focus its attention on issues of improving, measuring, and controlling its service quality and efficiency through the implementation of total quality management, the head of customer service stated during the interviews that 'the customer must always leave here a happy person'.

Staff view concerning how TQM implementation affects customer satisfaction levels was also examined. It is observed that 66.7% of the respondents argued company responded as follows:

TQM will improve standards and guarantee service quality which will eventually lead to certification of policies and procedures.

The implementation of TQM will guarantee improvement in delivery in quality-of-service standards, thereby resulting to a collective endorsement of the company policies and procedures.

Hypothesis Experimenting

This study adopted the ordinal regression analysis to examine the hypothesis as part of measures to determine how TQM has helped ensure positive impact on customer satisfaction.

H₀: The implementation of TQM practices insignificantly impacts on the service satisfaction of customers of OMCs.

H₁: The implementation of TQM practices significantly impacts on the service satisfaction of customers of OMCs.

In undertaking the regression analysis, the variable “How would you describe your level of satisfaction in relation to the quality of service rendered by your oil marketing company” was used and represented the dependent variable to determine customer satisfaction. On the other hand, “*continuously improving product; Participation in product quality; employee empowerment; and commitment to TQM* were among the deduced principles of TQM used as the independent variables in determining. As the dependent variable was deduced on an ordinal scale, the ordinal regression analysis was performed on the independent variables.

Table 8. Model Summary on Customer Satisfaction

Model	2 Log Likelihood	Chi-square	Sig
Intercept only	60.304	-	-
Final	26.664	33.639	0.040

Source: Fieldwork, 2023

Predictors: Continuously improving product, participation in product quality, employee empowerment, commitment to TQM and p is significant at 0.05.

In examining the significance of the ordered logistic regression analysis, the significance of the predictor variables model derived through an iterative process that tend to increase the log likelihood of the outcome as seen the outcome variable was performed. It is observed that the regression model is significant as shown from the table above (where $\chi^2 = 33.639$, $p = 0.040$), also as at least one of the regression coefficients in the model is not equal zero. It can also be observed from the table that as the predictor variables are included and the log likelihood of the outcomes are maximised as seen in the data, the “final” model has improved upon the “Intercept Only” model. This can be observed from the -2(Log likelihood) values in connection with the models. The Pseudo R-Square analysis presented a Nagelkerke value of 0.380, implying that 38% of the variation in the level of customer

satisfaction in relation to the services offered to customers by staff of OMCs has been explained by the TQM principles and dimensions.

In the end, as the significance value of the test-statistics ($p=0.040$) derived is below 0.05, it therefore means the null hypothesis:

H₀: The implementation of TQM practices insignificantly impact on the service satisfaction of customers of OMCs is rejected in favour of the alternative hypothesis:

H₁: The implementation of TQM practices insignificantly impacts on the service satisfaction of customers of OMCs.

In effect, this study concluded that TQM implementation and practices by OMCs impacted on customer satisfaction. This assertion is in line with Paxton (1993) conclusion that TQM tend to form an underpinning for customer satisfaction and a path for assessment of customers’ needs through continuous quality improvement and benchmarking. Taking note of a major impact of TQM implementation on customers’ satisfaction

will require that the opportunities associated with TQM are well tapped by management of OMCs to create a well-coordinated strategy of innovation and teamwork to satisfy the ever-increasing customer expectations and satisfaction continually and adequately.

In connection with staff extensively complying to customers' expectations (TQM on customer orientation), it was observed that this had a significant positive effect on customer satisfaction ($b=0.453$, $p=0.024$). This on the other hand means that as staff develop more commitment towards meeting customers' expectations in the same vein customers' satisfaction level is likely to increase in magnitude. The TQM principles of continually improving and learning through staff demonstrating customer serving skills was also found to have major impact ($b=0.505$, $p=0.005$). Therefore, a major positive impact relationship was observed between continuous improvement and learning and customer satisfaction. This also means that if staff of OMCs put up a philosophy and strategic system for improving the level of quality of product and service offered to customers, customers' satisfaction levels is also likely to accelerate. This also means that for management of OMCs to ensure that TQM implementation adequately have positive effect on customers satisfaction, they ought to give utmost priority to customers ideas and concerns and convert these ideas into attainable information so as to evaluate the effects of improvement measures and to further strengthen the customer focus and commitment in the company. As pointed out by [4] in order to arrive at maximum customer satisfaction, there is the need to adequately improve quality process until customer demands are met.

Leadership commitment was also found to have a significant effect on the satisfaction of customers ($b=0.455$, $p=0.056$). This result is consistent with [7] empirical finding that there is a significant effect of leadership on the implementation of total quality management. Another factor that was observed from the study

is that leadership commitment played a major role on customer satisfaction ($b=0.455$, $p=0.056$). This is in tandem with empirical conclusion by [8] implying that there is a major impact of leadership role on the successful implementation of TQM in an organisation. This means that the more leadership are committed in overseeing the implementation of TQM principles and dimensions there is the more likelihood that staff will be able to convert efforts and principles towards enhancing the general quality of product and service for the general benefit of customers. In effect as indicated by [32], commitment of management leadership is a very crucial factor in implementing TQM since it helps improve performance by influencing other TQM practices and principles.

Conclusion

The results of the study showed that oil marketing companies that have implemented the principles of TQM especially with high leadership commitment and training will experience higher customer satisfaction which could translate into improved financial performance. This is very critical especially given the deregulation of the sector and the fact that quality service could help make a customer decide to patronize a particular OMC or not. In summary, customer service by OMCs in Ghana is characterized by a focus on service quality, well-trained staff, clean and safe facilities, product availability, convenience, and transparency. These companies value customer feedback, offer loyalty programs, and uphold social and environmental responsibilities. By prioritizing customer satisfaction and continuously improving their services, OMCs aim to build strong relationships with their customers and maintain a competitive edge in the industry.

Conflict of Interest

Author declares that there is no conflict of interest.

References

- [1] Acquah, I. S. K., Quaicoe, J., & Arhin, M. (2022). How to invest in total quality management practices for enhanced operational performance: findings from PLS-SEM and fsQCA. *The TQM Journal*, (ahead-of-print).
- [2] Adusa-Poku, N. Y., & Anokye, R. (2020). Proposed Framework for Applying Total Quality Management in Construction Industry in Ghana. *International Journal of Construction Engineering and Management*, 9(3): 92-98.
- [3] Emeje, M., Ekere, K., Olayemi, O., Isimi, C., & Gamaniel, K. (2019). Total Quality Management in a Resource-Starved Nation. In *Quality Management and Quality Control-New Trends and Developments*. IntechOpen.
- [4] Owusu-Kyei, M., Kong, Y., Owusu Akomeah, M., & Owusu Afriyie, S. (2023). Assessing the Influence of Total Quality Management on Customer Satisfaction in the Telecom Industry: A TQM-SERVQUAL Perspective. *Businesses*, 3(2), 251-271.
- [5] Al-Jarrah, M., Hailat, K., & Jarah, B. (2023). Total quality management and its role in improving customer relations in Jordanian Islamic banks. *Uncertain Supply Chain Management*, 11(1), 119-126.
- [6] Nguyen, T. L. H., & Nagase, K. (2019). The influence of total quality management on customer satisfaction. *International journal of healthcare management*, 12(4), 277-285.
- [7] Anil, A. P., & Satish, K. P. (2019). An empirical investigation of the relationship between TQM practices, quality performance, and customer satisfaction level. *International Journal of Productivity and Quality Management*, 26(1), 96-117.
- [8] Amegayibor, G. K., & Korankye, C. O. (2021). Customer satisfaction and the influence of quality service aspects: A case study of a cooperative union in Cape Coast, Ghana's Central Region. *Annals of Management and Organization Research*, 2(4), 253-269.
- [9] Chenhall, R. H. (1997). Reliance on manufacturing performance measures, total quality management and organizational performance. *Management accounting research*, 8(2), 187-206.
- [10] Abudu, H., & Sai, R. (2020). Examining prospects and challenges of Ghana's petroleum industry: A systematic review. *Energy Reports*, 6, 841-858.
- [11] Douglas, T. J., & Judge Jr, W. Q. (2001). Total quality management implementation and competitive advantage: the role of structural control and exploration. *Academy of Management journal*, 44(1), 158-169.
- [12] Yidana, M. B., & Aboagye, G. K. (2017). Total Quality Management (TQM): A Continuous Improvement Framework for Boosting Higher Education in Ghana. *International Journal of Education and Evaluation*, 3(11), 37-47.
- [13] Aquilani, B., Silvestri, C., & Ruggieri, A. (2016). Sustainability, TQM and value co-creation processes: The role of critical success factors. *Sustainability*, 8(10), 995
- [14] Boateng-Okrah, E., & Fening, F. A. (2012). TQM implementation: a case of a mining company in Ghana. *Benchmarking: An International Journal*. 19(6), 743-759.
- [15] Prajogo, D. I., & Hong, S. W. (2008). The effect of TQM on performance in R&D environments: A perspective from South Korean firms. *Technovation*, 28(12), 855-863.
- [16] Tena, A. B. E., Llusar, J. C. B., & Puig, V. R. (2001). Measuring the relationship between total quality management and sustainable competitive advantage: A resource-based view. *Total quality management*, 12(7-8), 932-938.
- [17] Sadikoglu, E., & Zehir, C. (2010). Investigating the effects of innovation and employee performance on the relationship between total quality management practices and firm performance: An empirical study of Turkish firms. *International journal of production economics*, 127(1), 13-26.
- [18] Fening, F. A., Pesakovic, G., & Amaria, P. (2008). Relationship between quality management practices and the performance of small and medium size enterprises (SMEs) in Ghana. *International Journal of Quality & Reliability Management*. 27(7), 694-708.
- [19] Sharma, B. (2006). Quality management dimensions, contextual factors, and performance: an

- empirical investigation. *Total Quality Management and Business Excellence*, 17(9), 1231-1244.
- [20] Curkovic, S., Vickery, S., & Dröge, C. (2000). Quality-related action programs: Their impact on quality performance and firm performance. *Decision Sciences*, 31(4), 885-902.
- [21] Nair, A. (2006). Meta-analysis of the relationship between quality management practices and firm performance—implications for quality management theory development. *Journal of operations management*, 24(6), 948-975.
- [22] Lee, S. M., Rho, B. H., & Lee, S. G. (2003). Impact of Malcolm Baldrige National Quality Award criteria on organizational quality performance. *International journal of production research*, 41(9), 2003-2020.
- [23] Fuentes, M. M. F., Montes, F. J. L., & Fernández, L. M. M. (2006). Total quality management, strategic orientation, and organizational performance: the case of Spanish companies. *Total Quality Management & Business Excellence*, 17(3), 303-323.
- [24] Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approach*. Sage publications.
- [25] Claassen, J. O. (2016). Application of manufacturing management and improvement methodologies in the southern African mining industry. *Journal of the Southern African Institute of Mining and Metallurgy*, 116(2), 139-148.
- [26] Mann, R., & Kehoe, D. (1994). An evaluation of the effects of quality improvement activities on business performance. *International Journal of Quality & Reliability Management*.
- [27] Prajogo, D. I., & Sohal, A. S. (2006). The integration of TQM and technology/R&D management in determining quality and innovation performance. *Omega*, 34(3), 296-312.
- [28] Sadikoglu, E., & Olcay, H. (2014). The effects of total quality management practices on performance and the reasons of and the barriers to TQM practices in Turkey. *Advances in Decision Sciences*.
- [29] Agus, A., & Sagir, R. M. (2001). The structural relationships between total quality management, competitive advantage and bottom-line financial performance: An empirical study of Malaysian manufacturing companies. *Total Quality Management*, 12(7-8), 1018-1024.
- [30] Brah, S. A., Tee, S. S., & Rao, B. M. (2002). Relationship between TQM and performance of Singapore companies. *International Journal of Quality & Reliability Management*.
- [31] Mohrman, S. A., Tenkasi, R. V., Lawler, E. E., & Ledford, G. E. (1995). Total quality management: practice and outcomes in the largest US firms. *Employee relations*.
- [32] Yuliyati, E. (2020). Pengembangan Sumber Daya Manusia Berbasis Total Quality Management di SMK Muhammadiyah Prambanan. *Al-Tanzim: Jurnal Manajemen Pendidikan Islam*, 4(1), 24-35.
- [33] Zaid, A. A., Arqawi, S. M., Mwais, R. M. A., Al Shobaki, M. J., & Abu-Naser, S. S. (2020). The impact of Total quality management and perceived service quality on patient satisfaction and behavior intention in Palestinian healthcare organizations. *Technology Reports of Kansai University*, 62(03), 221-232.