THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Achieving Competitive Advantage through the Use of Total Quality Management in the Downstream Petroleum Sector

Dr. Richard Amponsah
Lecturer, Project Management, Gimpa
Harriet Duodo
Quality Controller, Cirrus Oil Services Limited

Abstract:
One of the most important factors in running a business in the world economy today is competition, andproduct quality is increasingly becoming a major factor for a company to be competitive. For the past decades, there has been a growing interest in product quality, and in particular, the concept of Total Quality Management (TQM). Reasons accounting for the interest growth in TQM include customer's increasing demanding quality requirements, higher competition in markets, demands for improved profitability and growing complexity of goods and services as well as product liability legislation(Sandholm, 2000).
In the Ghanaian economy, one of the key industries is the downstream petroleum industry. It comprises of Tema Oil Refinery (TOR) Ltd., Ghana National Petroleum Corporation (GNPC), Bulk Oil Storage and Transportation Company Ltd. (BOST), Bulk Distribution Companies (BDCs) and the Oil Marketing Companies (OMCs).TOR, currently can only satisfy up to 11.7% of the total consumption of crude oil in the country, making it imperative for BDCs to meet the remainingdomestic demandforpetroleum products. This study sought to investigate the effectiveness, effects, and challengesof TQM implementations among selected BDCs in Ghana.
The findings from this research suggested that effective implementation of the TQM practices enables the petroleum industry to gain competitive advantage, that TQM improves the performance of the downstream petroleum sector,and that industries that were planning to implement TQM would be able to understand and anticipate the potential barriers of TQM implementation. The study also recommended that the industry developed more comprehensive TQM programs as there were more benefits to be reaped from TQM.
The study also made some contribution to knowledge in that organizations need to analyse their environment to assess the applicability of TQM in their setting before implementation.

Key words*: Competitive Advantage, Total Quality Management, Downstream Petroleum, Ghana Oil Industry*

1. Introduction

One of the most important factors in running a business in the world economy today is competition. For almost every product or service ever designed, there is more than one organization trying to make a sale.Price is one of the major issues for a firm to be competitive. However, product quality is another factor a customer considers.There is considerable and growing interest in quality for several reasons: customers' increasing demanding quality requirements, higher competition in markets, demands for improved profitability and growing complexity of goods and services as well as product liability legislation (Sandholm, 2000).

The concept of quality has existed for many years, though it's meaning has changed and evolved over time. Quality management in the early twentieth century meant inspecting products to ensure that they met specifications. During the World War II, companies were using the statistical sampling method to evaluate quality and the quality control charts for monitoring the production process. In the 1970s and 80s, many US industries lost out on foreign competition to industries in the consumer goods market because these US industries still viewed quality as a means of inspection and correction whiles these foreign competitors produced considerably high quality product at a cheaper price. Since 1970, companies in every line of business are focusing on improving quality. Today, most companies practise the new concept of quality, TQM, which is proactive, in order to gain competitive advantage over their competitors.

(source:www.wiley.com/college/sc/reid/chap5.pdf; Retrieved October 22, 2013)

For the past 10 years, there has been a remarkable spread of TQM in industries. TQM initiatives award schemes such as the Deming award have been institutedand the works of quality gurus such as Joseph Juranare recognised. TQM is an integrated management philosophy and set of practices that emphasizes on continuous improvement, increased employee involvement and team work, process redesign, meeting customer requirements, competitive benchmarking, reducing rework, team-based problem solving, closer relations with suppliers and constant measurement of results (Ross 1993). TQM can be implemented in any

organization. For TQM to be successfully implemented it needs the involvement of all and sundry in the organization. Furthermore, TQM is a business level strategy because it is at the business level that competitive advantage takes place (Reed 1996).

In the Ghanaian economy, one of the key industries is the downstream petroleum industry, covering the refining, storage, internal transportation, marketing and sale of petroleum products. It comprises of Tema Oil Refinery (TOR) Ltd., Ghana National Petroleum Corporation (GNPC), Bulk Oil Storage and Transportation Company Ltd. (BOST), Bulk Distribution Companies (BDCs) and the Oil Marketing Companies (OMCs).

Current consumption of petroleum products in the country is in the region of 950,000 tons per annum. Ghana is among four (4) West African countries with an oil refinery known as the Tema Oil Refinery (TOR). The refinery has a crude distillation unit with an operating capacity of 45,000 barrels per stream day. This satisfies up to 11.7% of the total consumption of crude oil in the country which does not meet the demand of the nation, thus the licensing of Bulk Distribution Companies (BDCs) who are tasked to import refined petroleum products. These petroleum products include gasoil, gasoline, kerosene, aviation fuel, liquefied petroleum gas and residual fuel oil which are obtained from the fractional distillation of crude oil. These fractionated products are used for fuel in driving engines and heavy machinery as well as domestic needs.

(www.mbendi.com/indy/oilg/af/gh/p0005.htm; assessed on 22nd October, 2013)

Therefore, it is essential for the downstream petroleum industry to employ total quality management (TQM) in their operations since any attempt to compromise on quality can result in defective outputs and lower performance. The successful implementation of TQM will enable the organizations in this industry to meet and exceed their customers demand and expectations. Hence TQM needs to be learned and understood by both the managers and employees in the downstream petroleum industry.

The research field and subject of this study is in Supply Chain Management and Total Quality Management, respectively. TQM assist in improving the processes involved in SCM which results in quality outcome of products, cost reduction and overall improvement of a firm performance. This research, therefore, intends to study the extent to which the firms in the downstream petroleum industry are able to implement TQM, and whether they are able to utilize TQM practices for and as a strategic tool for competitive advantage as well as the challenges that confronts the industry in its implementation.

1.1. Research Objectives

The specific objectives of the research as follows:

- To investigate how effective the downstream petroleum industry employs TQM in their operations to achieve competitive advantage.
- To investigate whether the implementation of TQM have improved the performance of the downstream petroleum industry.
- To determine the challenges pertaining to the implementation of TQM in the downstream petroleum industry.
- To make recommendations on how to improve the TQM practices employed in the operations of the downstream petroleum industry.

1.2. Significance of the Research

The significance of this study is to:

- Build a theoretical path, where future researchers may be more likely to correctly optimize the application of TQM within the downstream petroleum sector.
- Generate greater awareness among staff within the various companies in the downstream petroleum sector about the applicability of TQM and its numerous advantages.
- Provide useful knowledge that will aid the decision making process by top management in regard to the implementation of TQM.
- Contribute to the growing body of literature on quality management in the downstream petroleum sector in general.

1.3. Scope of the Research

The scope of this research took into consideration the operations of the downstream petroleum industry in contributing to the distribution of quality petroleum products in Ghana.Contextually, the research looked at the implementation of TQM practices in this industry, and the challenges these oil and gas industries face in executing these practices so as to be able to deliver quality products and services to their customers both internal and external. Recommendations were made as to how the performance of the downstream petroleum sector could be improved.

2. Literature Review

2.1. The Concept of Quality

Quality is simply meeting the customer requirements Oakland (1994). In the manufacturing or service industries the word "quality" is used for a material or equipment that conforms to industry standards or specification. The benefits of a firm producing quality products or services to customers results in customer loyalty, satisfaction and increased competitiveness.

2.2. Theoretical Literature

In the 20th century, firms used Frederick W. Taylor's approach, where engineers determined the best approachfor employees to do a job. This produced moderately high quality of products at a relatively higher cost.Based on Taylor's application of science to complex human endeavours, Walter A. Stewart developed work sampling and control charts that attracted the interest of later quality gurus to illustrate a distinctive approach to TQM and with different emphasis. For instance, Crosby (1979) identified principles and practices for a successful quality improvement program, like reduction of the cost of quality, prevention rather than inspection, doing things right the first time, and zero defects.Deming (1986) stressed the responsibilities of top management to empower everyone in the firm, that companies establish loyalties with suppliers of quality products, and firms continually improve both the people in the system and the communication between them.Juran (2003) emphasized quality at the total organization level, the concept of quality circles, and the use of statistical process control.Ishikawa (1985) emphasized a commitment to continuous improvement, employee participation,cross functional teams, and the commitment of top management.Feigenbaum (1991) stressed that controlling quality cost less than correcting mistakes and argued that customer focus is embedded in quality.

2.3. Total Quality Management Approach

Total quality management (TQM) is a management philosophy that seeks to integrate all organizational functions to focus on meeting customer requirements and organizational objectives (Kanter 2003).TQM practices requires planning before it is implemented, isa route to and philosophy of excellence (Iyayi 2004), and works when it is completely integrated into the culture of the organization.

Reed, et al. (2000) identify thatcustomer satisfaction and reducing cost are two areas,five quality gurus, namely Crosby (1979, 1996), Deming (1982, 1986), Feigenbaum (1951, 1961, 1983, 1991), Ishikawa (1985) and Juran (1951, 1962, 1974, 1988, 1989, 1992), completely agree exists in quality. Quality is defined by the customer and this creates customer satisfaction which leads to an improved competitive position. Also to reduce cost, the cost of waste and re-work must be entirely eliminated. Equally consistent are gurus' views that leadership and commitment, training and education, using teams and appropriate culture enable successful TQM implementation. Some of the gurus claimed that the use of statistical tools for analysis helps to improve management and control and others stressed on product design as key to improvement.

2.4. Total Quality Management Practices

This study conducted literature searches on the following seven TQM practices that were considered necessary and relevant: Top management commitment and leadership,Customer Satisfaction,Developing Quality Standards,Training, Employee, Involvement, Continuous Quality Improvement,and Employee Incentives and Recognition.

2.5. TQM Successful Implementation

For TQM implementation to be successful in any organization there must be an organizational change in both employees' behaviour and practise. Organizational and human issues,and not technical areas are the real barriers to implementation success (Gilmore, 1998). The more different the new strategy is from the old, the greater the resistance in implementing it (Kotter, 1996).Therefore it is important for TQM implementation be aligned clearly with the organizational goals and planned properly (Allen et al., 2001). To instil willingness to change, different areas such as communication, rewards and recognition, results and early wins, and leadership skills must be considered (Pascale et al., 1997; Pettigrew, 1995; Eisenstat, 1993).

2.6. Challenges Of TQM Implementation

The main barriers that prevent successful implementation of TQM are high financial cost, lack of top management support (Rahim, et al., 1994), lack of communication and employee empowerment (Gunasekaran, 1999), lack of appropriate culture (Sebastianelli et al., 2003) and lack of continuous improvement.

2.7. Competitive Advantage

According to Porter (1985), "Competitive advantage exists when a firm is able to deliver the same benefits as competitors but at a lower costs, or deliver benefits that exceed those of competing products. He identified two basic types of competitive advantage namely cost advantage and differentiation advantage. He also identified that an organization develops its business strategies in order to obtain competitive advantage over its competitors by responding to the five external forces namely the threat of entry into an industry; the threat of substitutes to the industry's products or services; the power of buyers of the industry's products or services; the power of suppliers into the industry; and the extent of rivalry between competitors in the industry.

2.8. Relationship Between Tqm And Competitive Advantage

TQM has been found to produce competitive advantage as Powell (1995) considered the relationship between TQM and firm performance in a sample of U.S firms in an empirical study. This finding is also concluded in empirical studies by The Conference Board,the Gallup Organization, and the U.S Government General Accounting office in 1991, and also from the views of the five quality gurus mentioned earlier.Other scholars opposethis notion, by arguing that TQM entails excessive retraining cost, consumes unreasonable amount of management time, increases paper work and formality, demands unrealistic employee commitment, emphasizes process over results and fails to address the needs of small, service or non-profits firms (Naj, 1993; Fuchsberg, 1992a; 1993b; Schaffer and Thomson, 1992). Furthermore, empirical studies conducted by most researchers do not conclude that TQM firms consistently outperform non TQM firms (Matthew, 1992; Fuchsberg, 1993a). In conclusion,addressing the challenges and

opportunities effectively would aid firms in the downstream petroleum sector to successfully implement TQM to achieve competitive advantage.

2.9. Conceptual Framework

Based on the literature review, the researcher developed a conceptual framework that was used to examine the relationship between TQM practices and competitive advantage within the downstream petroleum sector. In this framework,TQM practices (top management commitment and leadership, customer focus, developing quality standards, training, employee involvement, continuous quality improvement, employee incentives and recognition) are independent variables and competitive advantage is a dependent variable, respectively. These independent variables will aid in the successful implementation of TQM in the downstream petroleum industry which will enable the industry to achieve competitive advantage (dependent variable).

3. Research Methodology

This chapter outlines the research method, research design, study settings, population and sampling techniques, data processing and analysing, ethical consideration, validity and reliability.

3.1. Research Method

For the purpose of this study, the Quantitative Research Method[1] was employed to help to measure the reactions of a great number of people to a limited set of questions, thus facilitating comparison and statistical aggregation of the data.

3.2. Research Design

The research design of this study is descriptive[2] but starts with some exploratory research[3] based on secondary data to provide a clear insight on the dynamics and relationship between competitive advantage and total quality management. Also the use of the descriptive survey portrays an accurate profile of persons, events or situations and allows the collection of large amounts of data from a sizeable population in a highly economical way.

3.3. Study Settings

The study was conducted on five (5) Bulk Distribution Companies (BDCs) namely Cirrus Oil Services Limited, Fuel Trade Company, Chase Petroleum, Sahara and Spring Field.

Cirrus Oil Services Limited is the leading indigenous oil and gas company in Ghana. It hastwo state-of-the art petroleum terminals in Tema and Takoradi withcapacity to handle petroleum products such as Gasoline, Gasoil, Kerosene and Aviation Turbine Kerosene (ATK) and are capable of loading millions of litres of fuel daily.(Source: www.cirrusoilgh.comRetrieved March 13, 2014).

Fueltrade is an active trader in crude oil, refined petroleum products including Gasoline, Automotive Gas Oil (AGO), Kerosene, Aviation Turbine Kerosene (ATK), Liquefied Petroleum Gas (LPG), Residual Fuel Oil (RFO) and Crude Oil. (Source: www.fueltradeghana.com; Retrieved March 13, 2014). These products are imported through its partnership agreement with its international partners and suppliers.

Chase Petroleum Ghana Limited, headquartered in Accra and incorporated in 1999, is a leading BDC across Ghana with a diverse mix of petroleum products such as Gasoil, Gasoline, Kerosene, Aviation Turbine Kerosene (ATK) and Liquefied Petroleum Gas (LPG). Chase has access to 70,000 m³ of storage facility in Tema due to their partnership with Tema Tank Farm. (Source: www.chaseghana.com; Retrieved March 13, 2014)

Sahara Ghana has constructed and commissioned state of the art Bulk storage facilities to provide quality refined petroleum products such as Gasoil, Gasoline and Kerosene to end users through road tankers and barges.

Springfield Energy Limited operates in Ghana and also exports petroleum products. It trades in gasoil, gasoline, marine gasoil, mining gas oil, cracked fuel oil, Premix fuel, light gasoline, crude oil among others.

Currently in Ghana, our domestic demand per month for gasoil and gasoline is approximately 135,000 m^3 and 95,000 m^3 respectively. Tema Oil Refinery (TOR) supplies about 45% of this total demand through its crude oil refining process. The balance is supplied through imports by the BDCs. (Source: www.springfieldenergy.com; Retrieved March 13, 2014)

3.4. Research Population And Sampling Technique

Five Bulk Distribution Companies (BDCs), out of the existing twenty-two BDCs in the downstream petroleum industry, were sampled for this study. These five BDCs, namely Cirrus Oil Services Limited, Chase Petroleum, Fuel Trade Limited, Sahara Ghana and Spring Field Energy Limited, were purposely selected because they have a fuel depot and they consistently import refined petroleum products to support the operations of Tema Oil Refinery (TOR) in delivering quality petroleum products to all parts of the country. Through a stratified random sampling, 170respondents (34 respondents per BDC) from these five BDCs were selected to ensure the study was reliably representative.

The Mathematical formula below and the table for determining sample size were used in determining the sample size from which data were collected for this study (Krejcie& Morgan, 1960);

[1]numerical, non-descriptive, applies statistics or mathematics and uses numbers

[2]used to obtain information concerning the current status of the phenomena and to describe "what exists" with respect to variables or conditions in a situation.

[3]conducted about a research problem when there are few or no earlier studies to refer to.

$S = \frac{X^2 NP\,(1-P)}{d^2\,(N-1)+X^2 P\,(1-P)}$

Where; S= required sample size, X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level(3.841), N = the population size, P = the population proportion (assumed to be 0.50)since this would provide the maximum sample size) and d = the degree of accuracy expressed as a proportion (.05)

3.5. Data Collection

A self-administered questionnaire was used to collect primary data. A likert scale framework was used in the questionnaire design to categorize responses ranging from 1- strongly disagree to 5- strongly agree. The secondary data was sourced from internet, books, journals and articles. These sources were used as an efficient tool to find a lot of useful.

3.6. Data Processing And Analysis

The quantitative data was analysed using the percentage method, mean, standard deviation and weighted averages such as Relative Importance Index (RII) presented in tables in Microsoft excel spread sheet (2010) for easy understanding. Responses to questions were categorized using a likert scale ranging from 1 – Strongly disagree to 5 – Strongly agree, and then scored to measure each of the variables.

3.7. Ethical Consideration

In order to perform the study, ethical clearance was obtained from the management of the fiveBDCs.Verbal consent was obtained before respondents completed the questionnaires.

3.8. Validity And Reliability

Construct and external validity are the relevant forms of validity for this research (Ellram, 1996; Ghauri and Gronhaug, 2005; Yin, 2003). The chain of evidence was retained throughout the research and the research questions were reflected in the questionnaires. In addition, the researcher ensured that content validity was guaranteed by reviewing the research instruments (questionnaires) to ensure that they adequately addressed the research objectives. Validity was also enhanced through the collection of data from appropriate respondents. Language used on the questionnaire was kept simple to avoid any ambiguity and misunderstanding.

On the other hand to ascertain the reliability of the research instrument, the researcher employed the test re-test method. Twenty (20) respondents were chosen for the pilot test study to ascertain the reliability of the questionnaires. After they had completed the questionnaires, the data was collected and the questionnaires were repeated by reframing it and sent to the same number of respondents. The consistency in their results made the research instrument highly reliable.

4. Presentation of Results and Discussion

4.1. Characteristics of the Sample

The questionnaires were sent to these respondents through email. The total response rate was 88.23%.Table 1 summarises the characteristics of the sample.

Description	Variable	No. of Respondents	Percentage (%)
Gender	Male	122	81.3
	Female	28	18.7
	Total	**150**	**100.0**
Age group (yrs)	20-29	60	40.0
	30-39	67	44.7
	40-49	23	15.3
	50 and above	0	0.0
	Total	**150**	**100.0**
Organizational Status	Senior management	12	8.0
	Middle Management	35	23.3
	Officer	76	50.6
	Junior Staff	27	18.0
	Total	**150**	**100.0**
Educational Background	Secondary	7	4.6
	Technical	20	13.3
	Tertiary	123	82.0
	Professional	0	0.0
	Other (Specify)	0	0.0
	Total	**150**	**100.0**
Working Experience	1-5 years	104	69.3
	6-10 years	34	22.7
	11-15 years	12	8.0
	16-20 years	0	0.0
	Above 20 years	0	0.0
	Total	**150**	**100.0**

Table 1: Demographic Data of Respondents

4.2. Results

The following results were obtained from the 150 respondents.

4.3. Results Of Research Question 1

The first research question examined how effective is the use of TQM practices (top management commitment and leadership, customer focus, developing quality standards, training, employee involvement, continuous quality improvement, employee incentives and recognition). Table 2 summarizes the total mean and standard deviation score of TQM practices scale.

TQM Practices	Total Mean Score	Total Standard Deviation Score
Customer Focus	4.32	0.19
Developing Quality Standards	4.06	0.22
Top Management Commitment & Leadership	3.35	0.24
Continuous Quality Improvement	3.21	0.1
Employee Involvement	3.1	0.11
Training	3.01	0.27
Employee Incentives & Recognition	2.9	0.06

Table 2

The findings for research question one suggest that the petroleum industry is that of quality since 81% of respondents responded that their organizations have made a significant commitment to a quality program. These findings support the assertions that customer focus, developing quality standards and top management commitment and leadership as TQM practices have a significant positive impact in enhancing customer satisfaction, productivity, profitability and competitive advantage in industries (Dimitriades,2006; Mehra et al., 2002; and Sit et al., 2009). Also, the finding suggest that continuous quality improvement is the key to satisfy the needs and expectations of the customer(Goval et al., 2001), and that quality circles or team work for employee involvement is very key since it improves effective communication from top management level down to the junior staff (Mahadevappa et al., 2004). However, the findings of the employee incentives and recognition principle,contradict Hackman et al. (1995) who proposed that in order for firms to achieve quality improvements, employees must be recognised and rewarded based on their performance.

4.4. Results Of Research Question 2

The second research question investigated the extent to which a total quality program has improved the performance of the downstream petroleum industry especially the Bulk Distribution Companies (BDCs). Table 3 summarizes the responses to the Total Quality Program Performance scale.

TQM PROGRAM PERFORMANCE	Agree	Disagree	N	Mean	Standard Deviation
The quality program practiced in my organization has immensely increased our productivity and overall performance.	127	23	150	1.86	0.13
The quality program practiced in my organization has improved our competitive advantage.	121	29	150	1.82	0.16
Our quality program has increased the organization's profitability and overall performance.	123	27	150	1.83	0.15
Our quality program has had a negative impact on our performance and profitability.	4	146	150	1.03	0.03
We would have been better off without a quality program.	0	150	150	1.01	0.00

Table 3

The results implies that the total quality program practised in the petroleum industry especially the Bulk Distribution Companies (BDCs) has enabled these companies to immensely increase their productivity and overall performance. Also through the implementation of a Total Quality program, these companies have been able to improve upon their competitive advantage thus increasing profitability in the industry. Majority of the respondents concluded that the quality program helps the industry to benefit immensely from it, supporting Walton (1986) and Reed et al. (1996) who concluded that a successful implementation of a total quality program helps organizations to improve their financial performance, productivity and competitive advantage.

4.5. Results Of Research Question 3

In the third research respondents were asked to rate the main causes that hinders TQM successful implementation in the industry. Relative Importance Index (RII) was used to rank these challenges on a level of importance.Table 4 Statistical Description of Challenges hindering TQM Implementation.

TQM IMPLEMENTATION CHALLENGES	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	N	RII	Mean	SD
High financial cost in relation to quality training programs impedes the successful implementation of TQM.	12	23	10	98	7	150	0.51	2.58	1.13
Lack of employee involvement and empowerment hinders TQM successful implementation.	108	35	5	1	1	150	0.93	4.68	0.42
Lack of effective communication between top management and staff impedes TQM successful implementation.	24	122	2	1	1	150	0.82	4.14	0.25
Lack of top management commitment and support hinders successful TQM implementation.	20	121	4	3	2	150	0.81	4.05	0.36
Lack of appropriate culture hinders successful TQM implementation.	128	18	2	1	1	150	0.96	4.84	0.31
Lack of continuous improvement impedes successful TQM implementation.	80	47	13	7	3	150	0.86	4.32	0.91

Table 4

The relative importance index (RII) and descriptive statistics was used to answer the research question three for the various challenges of TQM implementation on the Table 4 Lack of appropriate culture was the major challenge affecting the industry. This implies that the prevailing organizational culture practiced in the industry was not compatible with the values of TQM discipline, hence making it difficult for both the managers and the employees to work together as a team to achieve a common quality goal and purpose. Further, the second challenge affecting TQM implementation was employee involvement and empowerment. This means that top management feel reluctant in delegating some form of authority to their employees thereby making the employees rescind themselves by not taking full responsibility of their actions resulting in poor output. Additionally, lack of continuous improvement was the third highest factor affecting TQM implementation implying that the industry hardly innovate new processes to produce quality product and service to meet the increasing demand of customers. However, high financial cost does not greatly affect TQM implementation in the industry which was observed from the findings.

It appears therefore that the findings go a long way to support the work of Al- Qudah (2006) who concluded that lack of appropriate culture, employee involvement and empowerment and lack of continuous improvement are the first, second and third highest rankings of impediments confronting TQM implementation in industries. This contradict Naj (2003) who stated that high financial cost relating to training cost is the greatest challenge hindering total quality management successful implementation since it requires skilled labour with continuous and consistent training.

4.6. Conclusion

Based on the above findings, it was concluded that in order for the industry to have an efficient quality management system, the downstream petroleum industry must effectively utilize the TQM practices that have been discussed above. Hence it is the responsibility of top management to ensure that these practices are fully implemented to optimize profitability, productivity and gain competitive advantage as well.

5. Summary of Study Findings and Recommendation

This chapter summarizes the findings of this investigation.

5.1. Study Findings For Research Objective 1

The first research objective seeks to examine the extent to which TQM practices are effectively implemented to achieve competitive advantage in the downstream petroleum. The study revealed that these TQM practices were effectively implemented since their average scores were more than 3 hence enabling the bulk distribution companies in the downstream petroleum industry

to thrive well in a competitive environment. However, not all the findings were positive since employee incentives and recognition had the least average score of 2.90 meaning this tool was not effectively implemented.

5.2. Study Findings For Research Objective 2

The second research objective determined the extent to which the implementation of total quality management has improved the performance of the downstream petroleum sector. The findings of the study revealed that total quality management has positive and direct relationship on productivity (1.86), profitability (1.83) and competitive advantage (1.82) in the industry.

5.3. Study Findings For Research Objective 3

The third research objective determined the challenges confronting the downstream petroleum industry in the implementation of total quality management. The study also revealed that lack of appropriate culture (4.84), lack of employee involvement (4.64) and lack of continuous improvement (4.32) were the main challenges affecting the implementation. Other challenges identified were lack of effective communication (4.14), lack of top management commitment and support (4.05) and lack of high financial cost (2.58).

5.4. Conclusion

This chapter summarizes the conclusions of the three research areas.

5.4.1. Conclusions From Research 1

The findings from this research suggest that effective implementation of the TQM practices enables the petroleum industry gain competitive advantage. Therefore, before the leadership of an organization decides to implement TQM, it needs to analyse its environment to determine the level of implementation. Also, Total quality principles have strong drive to competitive advantage. Thus, establishing a quality department to assure the quality of processes, services and products have a clear positive impact on organization's competitive advantage. In addition to future practise and research, the current study also offers promise for developing future policy.

5.4.2. Conclusions From Research 2

This research implies that TQM improves the performance of the downstream petroleum sector. Therefore if managers could make staff be interested in their careers by motivating and encouraging them, there will be no need to control and supervise them continuously thus increasing their self-confidence and assurance. Additionally based on the current study, it is suggested for organizations to use PDSA improvement cycle proposed by Deming (1994) because it provides an organized improvement process and help organizations to recognise basic problems so that they can discard or find solutions to the problems.

5.4.3. Conclusions From Research 3

This research implies that industries who are planning to implement TQM would be able to understand and anticipate the potential barriers of TQM implementationfrom the industries who have already implemented TQM and are facing challenges. Additionally, for TQM to be more effective and efficient it is vital for industries to recognise and understand all the barriers that can impede the successful implementation of a TQM program.

5.5. Recommendation

In view of the results and findings emanated from the study, the following are recommended;

- Organizations in this industry must continuously train their staff in Total Quality Management principles and its benefits in order for them to maintain or carry out quality work within the organization.
- Organizations in the downstream petroleum industry must develop quality programs to reward and recognize employees based on their quality achievement in order for them to be motivated to work hard.
- Organizations must provide an appropriate quality organizational culture where all the managers and employees work together as a team in quality improvements projects relevant to their work. This will encourage employees' feedback, suggestions and effective administration of allotted work.
- Organizational leadership should continuously improve the processes of the organization since TQM is a continuous process and not a program; thus procedures and policies laid down by management must by constantly reviewed and improved.
- Organizational leadership must empower staff by delegating some form of authority to them. This will enable staff to make the right decisions and choices concerning work related issues thereby boosting their confidence; hence resulting in quality performance.
- Due to the sample size that was used for this study, it is recommended that other researchers test their findings using larger samples and alternative methodologies.
- Further studies should be carried out on the Oil Marketing Companies since this study took into consideration the operations of the Bulk Distribution Companies.

5.6. Policy Implications

The policy implications of this study are that the subject of Total Quality (TQM) Management can no longer be ignored by firms which intend to have a competitive edge over its rivals. The study revealed that TQM that customer focus, developing quality standards and top management commitment and leadership as TQM practices have a significant positive impact in enhancing customer satisfaction, productivity, profitability and competitive advantage in industries. This point is buttressed from the finds of the second study that none of the respondents agreed with the view that their companies would have been better off without a quality program.

The other policy implication is that proper implement procedure was necessary for the company to realize the benefits of TQM. To be specific, an organization implementing TQM should be mindful that the quality program should be well aligned with the organizational culture of the company. It was also necessary that the goals of the TQM program should be shared by the employees of the company and that the company should continuously improve its TQM efforts. Efficiency and effectiveness are key to realizing the full benefits of quality programs, otherwise the company may be better off not implementing the program at all.

Also, another policy implication is that quality programs are organisational-wide effort as the commitment of top management to TQM goals are as important the efforts of individual employees. Thus, planning a quality program thoroughly before implementation iskey to success of the quality program.

6. References

1. Al-Dabal, J. K. (2001). Is total quality management enough for competitive advantage?Retrieved February 10, 2014, from http://www.dissertation.com/library/1121261%20a.htm
2. Al-Qudah, M. A. (2006). Impact of adopting Total Quality Strategy (TQS) in improving competitiveness. An analytical study for Jordanian pharmaceutical industry companies. Unpublished Ph.D. Dissertation, Amman Arab University for Graduate Studies
3. Anderson, J. C., Rungtunsanatham, M., & Schroeder, R. G. (1994). A Theory of Quality Management Underlying the Deming Management Method.Academy of Management Review, 19(3), 472-509
4. Anon (2010).About Dr. W. Edwards Deming.Retrieved February 14, 2014, from http://www.managementwisdom.com
5. Anon (n.d.) About ISO - ISO.Retrieved February 17, 2014, fromhttp://www.iso.org/iso/home/about.htm
6. Anon (2014).ISO Quality Manual Templates for ISO Certification.Retrieved February 17, 2014, from: http://www.iso-quality-manual.com
7. Anon (2014).What is Organizational change? Definition and meaning.Retrieved February 18, 2014, from http://www.businessdictionary.com/definition/organization-change.html
8. Anon (2010).Competitive Advantage - QuickMBA. [Online] Retrieved February 19, 2014, from
9. http://www.quickmba.com › Strategy
10. Anon (2010).Cirrus Oil Services Limited - Safety in every drop.Retrieved March 13, 2014, From http://www.cirrusoilghana.com/
11. Anon (2011).Fuel Trade Limited: Home Page.Retrieved March 13, 2014, from http://www.fueltradeghana.com/
12. Anon (2011).Chase Petroleum-Petroleum Trading and Distribution. Retrieved March 13, 2014, from http://www.chaseghana.com
13. Anon (2012).Spring Field Energy Limited- Home Page.Retrieved March 13, 2014, from http://www.springfieldghana.com
14. Anon (n.d.). Top management leadership, employee empowerment, job satisfaction Retrived February 12, 2014, from: http://lab4.psico.unimib.it/nettuno/forum/free_download/tqm_customer_sat_150.pdf
15. Anon, (2010).Competitive Advantage – QuickMBA.Retrieved February 20th, 2014, from http://www.quickmba.com
16. Anon (2011). 3 Exploratory, Descriptive and Casual Research Designs.Retrieved March 1, 2014, from
17. http://www.monroecollege.edu/academicresources/ebooks/9781111532406_lores_p01_ch03.pdf
18. Barney, J. B. (1986). Organization Culture: can it be a source of sustained competitive advantage? Academy of Management Review, 11, 656-665
19. Crossman, A. (2014).Stratified Sample-Sociology-About.com.Retrieved March 5, 2014, from http://sociology.about.com/od/Types-of-Samples
20. Curkovic, S., &Pagell, M. (1999). A critical evaluation of the ability of ISO 9000 to lead to a competitive advantage. Journal of Quality Management.
21. Daily, B.F.,& Bishop, J.W. (2003). TQM workforce factors and employee involvement: the pivotal role of teamwork.Journal of Managerial Issues, 15(4), 393–412.
22. Deming, W. Edwards. (1982).Quality, Productivity, and Competitive Position. MIT Press.
23. Dimitriades, A.S. (2006). Customer satisfaction, loyalty and commitment in service organizations: some evidence from Greece, Management Research News, 29(12), 782-800.
24. Feigenbaum, Armand V. (1991).Total Quality Control (4th ed.). McGraw-Hill.
25. Fulzele, H. (2013). Quality Management Philosophers and their Contribution, Management Guru: Journal of Management Research, 1(3), 28-34.
26. Garvin, D. A. (1988). Managing Quality: The Strategic and Competitive Edge. NY: The Free Press.

27. Goetsch, D.L.,& Davis, S.B. (2000).Quality management: Introduction to total quality management for production, processing, and services.NJ: Prentice Hall.
28. Gotzamani, K.D. &Tsiotras, G. D. (2002). The True motives behind ISO 9000certification. Their effect on the overall certification benefits and their long term contribution towards TQM.International Journal of quality and Reliability Management, 19(2), 151-169.
29. Goyal, S.K and Islam, M. (2001). Total quality management through activity-based costing and cultural setting—a versatile tool.Industrial Engineering, 30(1), 9–12.
30. Gunasekaran, A. (1999). Agile Manufacturing: A Framework for Research and Development. International Journal of Production Economics, 62, 87-105.
31. Hewitt, S. (1994). Strategic advantages emerge from tactical TQM tools. Quality Progress, 27(10), 57-59.
32. Hill, C.W.L., and Jones, G.R., (2009) Essentials of Strategic Management(2nd ed.). Canada: Cengage Press.
33. Isaksson, R. (2004). Total Quality Management for Sustainable Development. Unpublished Doctoral Thesis, Luleå University of Technology.
34. Johnson, G., Scholes, K. and Whittington, R. (2008) Exploring Corporate Strategy(8th ed.). London: Prentice Hall.
35. Jones, O., & Tilley, F. (2003). Competitive Advantage in SMEs: Organising for Innovation and Change. John Wiley & Sons.
36. Juran, J. M. (1992).Juran on Quality by Design: The Next Steps for Planning Quality into Goods and Services. Free Press.
37. Kanter, R. (2003). The Change Master. NY: Simon and Schuster Company.
38. Krejcie, V.R. and Morgan, D.W. (1960) Small-Sample Techniques. The NEA Research Bulletin, 38, 99.
39. Kimberlin, C.L. and Winterstein, G.A., (2008). Validity and Reliability of Measurement Instruments Used In Research. Am J Health Syst Pharm, 65, 2276- 2284
40. Kuhn, J. (2000). The Role Of Continuous Improvement Within Globalization, International Journal of Technology Management,20(3/4), 442– 458.
41. Kujala, J. and Lillrank, P. (2004) Total Quality Management as a cultural phenomenon.The Quality Management Journal,11(4), 43-55.
42. Labaree, R. (2013).Types of Research Designs - Organizing Your Social Sciences.Retrieved March 1, 2014, From http://...libguides.usc.edu › USC Libraries › LibGuides
43. Lagrosen, S. (2001). Strengthening the weakest link of TQM from customer focus to customer understanding, The TQM Magazine, 13(5), 348-54.
44. Mahadevappa B, &Kotreshwar, G. (2004). Quality Management Practices in Indian ISO 9000 Certified Companies: an Empirical Evaluation, Total Quality Management, 15 (3), pp. 295–305.
45. Manktelow, J. (2014).Porter's Generic Strategies - Mind Tools.Retrieved February 19, 2014, from: http://www.mindtools.com › Strategy Tools
46. Mbendi (2014).Oil and Gas in Ghana-Overview-Mbendi.com.Retrieved October 22, 2014, from: http://www.mbendi.com/indy/oilg/af/gh/p0005.htm
47. Mehra, S., &Agrawal, S.P. (2002). Total Quality as a New Global Competitive Strategy. The International Journal of Quality and Reliability Management, 20(8/9).
48. Monczka, R. M., & Morgan, J. (1997). What's wrong with supply chain management? Purchasing, 122(1), 69–72.
49. Murray, M. (2014).Total Quality Management (TQM).Retrieved February 15th, 2014, from http://logistics.about.com › ... › Quality in the Supply Chain
50. Naj, A. (1993). Some Manufacturers Drop Efforts to Adopt Japanese Manufacturing Techniques.Wall Street Journal, A1
51. Noori, H. (1991). TQM and its building blocks: learning from world-class organizations. Optimum, 22(3), 31-38.
52. Oakland, J.S. (1994). Total Quality Management: The Route to Improving Performance (2nd ed.). London: Butterworth Heinemann.
53. Oakland, J.S. (2003) TQM Text with Cases(3rd ed.). Oxford: Butterworth Heinemann.
54. Porter, M.E. (1998). Competitive Advantage, Creating and Sustaining Superior Performance. Free Press.
55. Powell, T.C. (1995). Total Quality Management as Competitive Advantage: A Review and Empirical Study, Strategic Management Journal,16(1) 15-37.
56. Rahim, M. and Whalen, M. J. (1994). Common barriers to implementation and development of TQM.Industrial Management,36(2), 19.
57. Reed, R., Lemak, D. J., & Montgomery, J. C. (1996). Beyond process: TQM content and firm performance. Academy of Management Review, 21, 173-202.
58. Reed, R., Lemak, D., &Mero, N., (2000). Total Quality Management and Sustainable Competitive Advantage, Journal of Quality Management, 5, 5-26.
59. Sandholm, L. (2000). Total Quality Management. IAQ Book Series, 11(1).
60. Salaheldin, S. (2003). The implementation of TQM strategy in Egypt: a field-force analysis.The TQM Magazine, 15(4), 266-274.
61. Sanchez-Rodriguez C., Dewhurst W.F., & Martinez-Lorente R.A (2006).IT use in supporting TQM Initiatives: an empirical investigation.International Journal of Operations and Production Management, 26(5), 486-504.
62. Saunders, M.N.K., Thornhill, A., &Lewis, P., (2009).Research Methods for Business Students Essex. Financial Times/Prentice Hall.

63. Shibani, A., Saidani, M., &Gherbal, N., (2012). An evolution of Obstacles Preventing Implementation of TQM in Libyan Organizations. Business and Management Research Journal, 1(13), 84-91
64. Singh, P., Qureshi, O.F., &Butt, Z.A. (2007). Total Quality Management and Competitive Advantage. Unpublished Master Thesis, Mälardalen University, School of Business.
65. Smith, S. (2013).Determining Sample Size: How to Ensure You Get the Correct Sample Size. Retrieved March 14, 2014, from http://www.qualtrics.com/blog/determining-sample-size
66. Talib, F., Rahman, Z. and Qureshi, M.N. (2013). An empirical investigation of relationship between total quality management practices and quality performance in Indian service companies, International Journal of Quality & Reliability Management, 30(3), 280-318.
67. Twaissi, N., Rollins, R., and Worsdale, G (2010). A review of current issues and challenges for TQM implementations in the Jordanian Information and Communications Technology Sector, Journal of Quality Management, 3(1) 1-22.
68. Ustadh (2012).Barriers to Total Quality Management Implementation.Retrieved February 22, 2014, from http://smartinvestorsreports.blogspot.com/.../barriers-to-total-quality-managem...
69. Zairi, M. (2000).Managing customer satisfaction: a best practice perspective.The TQM Magazine, 12(6), 389-94