Evaluating the Level of Adoption of Total Quality Management (TQM) Practices in Quantity Surveying Firms (QSFs) in Kaduna State, Nigeria

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Abstract:

In construction, quality is defined by the client based on satisfaction with the product (completed work), processes, and/or services. However, several criticisms of lack of adherence to quality and standards have been directed at the Construction Industry in Nigeria. Organisations that are outcome-oriented are focused on improving products are likely to adopt Total Quality Management (TQM). This study aimed to evaluate the level of the eight latent variables of TQM practices adopted in Quantity Surveying Firms (QSFs) in Kaduna state, Nigeria. The Quantitative research design was adopted, and questionnaires were purposively distributed to the Principal and Senior Quantity Surveyors and Probationers of the firms. A sample size of 40 was established, and 28 responses representing 70%, were analysed. Descriptive statistics using SPSS version 21 was used to analyse the data collected. The results show that QSFs firms studied have high-level adoption for two latent TQM practices and a moderate level of adoption for the remaining six latent TQM practices. The study concluded that there was a moderate level of adoption of TQM practices by QSFs firms in Kaduna state, Nigeria. It thus provides QSFs and future researchers with a wider understanding of the practices that can inform the development of more effective TQM implementation. The study recommends that there is a need for further study of the challenges affecting the adoption of TQM practices by QSFs firms in Nigeria.

Keywords: Construction Firms, Quality Management, Total Quality Management.

Introduction

The concept of Total Quality Management (TQM) is becoming more widespread, which is a proactive management approach designed to build quality into the product and process (Reid and Sanders 2012). In recent years, more organisations are working towards TQM adoption (Jaeger and Adair 2016). In the global economy, many changes and transformational initiatives are being developed to increase effectiveness in organisations, TQM is one of those transformational initiatives and one of the most important management practices that have evolved (Haffar, Al-Karaghouli, and Ghoniem 2013). Previous research has viewed TQM as generic across industries and have classified firms as having the same size and financial strength (Schonberger,. 2017). In addition, almost all decisions on quality and related issues are focused on large organisations neglecting smaller firms (Chengiz 2018). Attempts should be made at assessing TQM based on the sizes of firms rather than generating generic results this is because TQM is important for small organisations as it is for large organisations (Haksever 2018).

The importance of TQM is seen in many spheres. A successful implementation of TQM helps the organization to focus on the needs of the market; facilitates to inspire for top quality performer in every sphere of activity; provides the framework necessary to achieve quality performance; helps to continuously examine all processes to remove non-productive activities and reduce waste(Attakora-amaniampong, Salakpi and Bonye 2016).

The concept of TQM is relatively new in Nigeria (Orumwese, 2014); thus, it is not progressing at the same rate as in developed countries. TQM focuses on improved customer satisfaction; however, there is no commitment to the cause among organizations in Nigeria (Chukwuka, 2016). Several criticisms of lack of adherence to quality and standards have been directed to the Construction Industry in Nigeria. Organisations that are outcome oriented and are focused on improving products are likely to adopt TQM (Olaleye, Ibrahim, Ibrahim, and Adogbo,. 2019). However, in spite of the benefits, a closer examination of literature shows that implementing TQM has not achieved results. According to Gambi, Gerolamo, and Carpinetti (2013) the problem is not with the TQM concept but the implementation of the practices.

TQM studies have been carried out in construction industry establishing the level of awareness (Shushma, 2014), the level of adoption of TQM practices (Chengiz 2018; Merih, 2016). Research have been carried out in the subject area in Nigeria, but not specifically focused on the Construction Industry. Chukwuka (2016) concluded that TQM has not yet attained a satisfactory level in Nigeria. studies by Ajayi *et al.* (2018) addressed the implementation of TQM in construction companies in Lagos, Nigerian organisations and concluded that there is a need to create awareness of the concept. Merih (2016) evaluated the TQM concept at a national level and recommends the need to assess the level of adoption of TQM practices. Therefore, this research is aimed at assessing the level of TQM practice in Quantity Surveying firms in Kaduna State, Nigeria.

Literature Review

In construction, quality is defined by the client based on satisfaction with the product (completed work), processes and/or services (Harinarian, Bornman, and Botha 2012). TQM concept properly implemented in construction has saved the construction industry from crisis that existed over a period of time (Shushma 2014). One of the strengths of quality improvement programmes is the ability to control the work process of management and employees, to recognize their problems, to trace the cause of the problems and to implement effective remedies (Nukic and Matotek 2014; Zhang, and Lui, 2017). Based on the review of literature, it is necessary to identify factors that contribute to the success of TQM implementation. These factors are considered critical to TQM implementation and are often stressed by TQM researchers (Makhdoomi, 2018; Flynn, and Saladin, 2016; Jaca, and Psomas 2015).

Most of the previous studies report that overall TQM practices have positively been related to productivity and manufacturing performance, quality performance, employee satisfaction/performance, innovation performance, customer satisfaction/results, competitive advantage market share, financial performance, and aggregate firm performance. However, some authors have found negative or insignificant results (Sadikoglu and Olcay, 2014; Sadikoglu, and Zehir 2012). Based on the literature reviewed by Sadikoglu and Olcay (2014) summarised eight TQM practices. These TQM practices are further discussed in the next section;

1. *Top management support (Leadership)*

Literature places emphasis on the vital role of top management in TQM implementation as a prerequisite for effective and successful implementation (Merih, 2016; Kantardjieva, 2015). This evidence is provided in previous research projects stressing that the role of leadership in TQM successful implementation. Top management takes the centre stage and must show strong evidence of commitment for the initiative to be successful (Valmohammadi, and Roshamir, 2015). Leadership must emphasize that quality initiatives are not just programmes of the year but a lifelong commitment by the firms to ensuring quality is attained in the products and processes of the firms (Talib, Rahman, and Quresh, 2012). Top management supervises, participates in the planning processes, ensures that policies are adhered to and properly implemented and provides support and motivation for the entire workforce.

2. *Strategic planning*

Strategic planning is a necessary foundation in the success of TQM, specifically, strategic plans on quality issues should be based on strength, weakness, opportunity and threats analysis (Talib, Rahman, and Quresh, 2012). Substantial attention has been paid to quality planning that are customer based by quality gurus though the attention they give to strategic planning vary. Planning is a vital stepping stone to accomplishing any task, TQM cannot be accomplished without strategic planning (Zu, Robbins, and Fredendall, 2010). One important factor that influences performance of any organisation is the strategic plan in place, which must be inclined towards quality. When strategic plans are not clearly defined, it is difficult to implement quality plans. According to (Gimenez-Espin, and Martínez-Costa, 2013), it is also important for strategic plans to be customer driven that is, customers must be at the centre of strategic plans of any organisation.

3. *Customer focus (Client satisfaction)*

Quality is defined by the customer; it is centred around the demands of the customers. Customer focus emphasizes on meeting and exceeding customer satisfaction as one of the most important features of TQM and that is also the focus of TQM definition (Talib, Rahman, and Quresh, 2012). In any production process, customer is an important element.

Any effective production process is aimed at meeting the needs and expectations of customers, which comes via, listening to customers and obtaining feedback for improvement (Migayawa and Yoshida, 2010). On a continuous basis, customer satisfaction must be stressed (Nasar, Yahaya and Shorun, 2015). The major aim of TQM implementation in any organisation must be to satisfy the needs of the customers and this must be emphasized in the mindset of the entire workforce. According to Goestec and Davis (2014), it is more expensive for organisations to gain a new customer than to keep a satisfied customer and further, easier to keep a customer that is pleased in the products (Migayawa and Yoshida, 2010).

4. *Measurement, Analysis, and Knowledge Management*

Measurement analysis is a detailed assessment of a measurement process that include research that is designed to identify variations that occur in the production process (Yasin and Alavi, 2007). similar to the production process that varies, the process of data collection and analysis also varies and can generate wrong results.

Measurement analysis checks the method used to conduct the test, the instrument used to conduct the test and the process of collecting the data to ensure the integrity of the data for analysis (Jaca, and Psomas, 2015). A careful assessment of the implication of errors is dome prior to decision making about the product or process. measurement analysis is vital for quality management and six sigma methodology.

5. *Workforce focus (Employee involvement)*

Workforce management can be defined as a systematic and planned activities to enhance an individual's performance. Success of TQM depends on people orientation that can be exhibited through initiatives such as team work, training and development (Goestec and Davis, 2014). Workforce management involves empowering the workforce to solve problems and make decisions at levels appropriate (Olaleye *et al*., 2019).This step is of great importance as workforce is closest to problems identified and are in the best position to take decisions that will solve the problem to improve production process. Workforce management begins with a personal commitment to quality. If the workforce accepts and commit to a quality course, they are more likely to be involved in quality tools and technique and apply the techniques in their daily activities (Arewa and Farell, 2015).

Workforce management include involvement of employees at all levels of the organisation, use of systems that motivate and promote workforce involvement, support from workforce should be encourage throughout the organisation, the level and effectiveness workforce should be assessed, teamwork should be encouraged between departments through effective workforce management to ensure effective TQM implementation (Zu, Robbins, and Fredendall, 2010).

6. *Operation focus (Process management)*

In any organisation, processes especially those that involve quality initiatives should include all functions and departments as the central focus of production (Arewa and Farell, 2015). A combination of process understanding, and process improvement is the lifeline of any organisation seeking to implement TQM. Process is what transform the input (i.e., actions, methods and operations) into output and should be error proof (Kim, Kumar and Kumar, 2012). For organisations that are quality focused, the customer should be at the centre of the process; that is, the output must satisfy or exceed the needs and expectations of their customers. At every stage of the process whether it is documented or not,

several processes take place. Processes interact with each other throughout an organisation because the output from a process can be the basis of input to another process (Talib, Rahman, and Quresh, 2012).

7. *Supplier partnership*

Use of supplier rating system, selection of the supplier based on quality instead of price, clarity of specification provided by supplier, technical assistance to improve the quality and responsiveness of suppliers, involvement of the supplier in the project development process. Supplier quality management involves the "development of close partnerships, mutual trust, and parallel growth with suppliers" (Talib, Rahman, and Quresh, 2012). Effective supplier quality management is facilitated by long-term, cooperative relationships with as few suppliers as possible to obtain quality materials and/or services" (Mosadeghrad, 2015). Maintaining a small supplier base improves product quality and productivity of buyers by encouraging

8. *Project design*

Coordination among professionals involved in project design, analysis of client's requirement, clarity of project design, determination of quality standard, and design of the implementation system. The TQM practice, product/service design refers to the efforts to achieve clarity in respect to product and process design specifications prior to the offering of products / services to the market (Shan, Zhao and Hua, 2013). Engaging customers in the product/service design process and incorporating customers' expectations into new product development will enhance manufacturability, product features, and serviceability. Consideration of design for manufacturability will also lead to less manufacturing variances in the manufacturing process (Shan, Zhao and Hua, 2013). Hence, it is anticipated that the focus on product design will result in improved process management.

Research Methodology

Research Design

A quantitative research approach was chosen for this study. The target population of the study was all registered quantity surveying firms practicing in Kaduna State, Nigeria as obtained from the Nigerian Institute of Quantity Surveyors (NIQS) Directory. The sample size was 40 and data was collected using a purposive sampling strategy. The questionnaires were self-administered to the respondents. Respondents were informed that their participation in the survey was voluntary and that it was part of an academic investigation. All respondents were assured of the anonymity of their submitted surveys. Principal quantity surveyors, senior quantity surveyors, and probationers working in QSFs in Kaduna state were the respondents.

Data Collection

The questionnaire was designed to address the research objectives, determining the level of adoption of TQM practices in Quantity Surveying firms in Kaduna state, Nigeria. It has two sections, the first containing respondents' profiles, while the second has the eight reviewed TQM practices. The respondents indicated their views for fifty (50) range of statements regarding the presence of the eight TQM practices in their firms: top management support (leadership), strategic planning, customer focus (client satisfaction), measurement, analysis, and knowledge management, workforce focus (employee involvement), operation focus (process management), supplier partnership, and project design in their firms. The respondents use the five-point Likert scale (5=Very High, 4=High, 3=Moderately High 2=Low and 1= Very Low) to indicate their level of agreement to the statements.

Data analysis

The researchers gave 40 questionnaires to the participants and received 32 responses. There were 28 valid responses left out of 32 surveys gathered, equating to a 70 per cent effective response rate and representative of several QSFs within Kaduna state. The data from the questionnaire was transferred to an Excel spreadsheet so that it could be analysed more easily. The average of all the respondents'

responses was used to create the overall company profile. The total firm profile was then translated to an Excel spreadsheet graph. Both perceived and preferred cultures' profiles were established.

The sample for this study was made up of the use of structured questionnaires employed for data collection to achieve the study's objectives. The collected data were analysed using the Mean Item Score (MIS). The decision rule adopted for the MIS analysis is summarised in Table 1

Table 1: Decision Rule for MIS Analysis

Scale	**Cut-off points**	Remarks/ Decision
		Level of TQM Practices
5	4.50 -5.00	Very high
4	3.50 -4.49	High
3	2.50 -3.49	Moderate
2	1.50 -2.49	Low
1	1.00 -1.49	Very low

Source: Adapted and modified from Agumba and Haupt, (2014)

Data Presentation and Analysis

Likert scale was used for each item measured 5 Points representing very high to 1point representing very low adoption of TQM practices. The data collected were analyzed using SPSS version 21 to tabulate the TQM practices.

Results

The Demographic Information on Respondents

This section presents and discusses the results of the demographic analysis of the participants in the field survey carried out during this study. A total of five (5) demographic variables were examined, as shown in Table 2.

Table 2: Result and Discussions on the demographic information on respondents

Demographic information	**Frequency**	**Percent**
Rank		
Principal partner	15	53.57
Senior Quantity surveyors	5	17.86
Junior Quantity surveyors	8	28.57
Total	28	100.00
Year of experience in the consultancy business	Frequency	Percent
1-5 years	5	17.90
6 – 10 years	8	28.60
11 – 15 years	3	10.70
16-20 years	3	10.70
> 20 years	9	32.10
Total	28	100.00
Respondent's years of experience in the firm	Frequency	Percent
1-5 years	13	46.43
6 – 10 years	3	10.71
11 – 15 years	5	17.86
> 20 years	7	25.00
Total	28	100.00
Respondents' awareness of organisation culture in the firm	Frequency	Percent
Yes	25	89.29
No	3	10.71
Total	28	100.0
Respondents' awareness of Total Quality Management in the firm	Frequency	Percent
Yes	28	100.00
Total	28	100.00

Sources: Authors field work (2022)

Table 2 presents the rank of respondents from the survey. The findings revealed that 54.0% of the respondents were principal partners, while 29.0% and 18.0% were junior quantity surveyors and senior quantity surveyors, respectively. Majority of the respondents (83%) were either principal quantity surveyors or senior quantity surveyors. Therefore, the respondents are adequately knowledgeable about organisational culture and total quality management practises in their various firms.

In addition, Table 2 shows results of years of experience of respondents in consultancy services. The results revealed that 18% of the respondents had less than 5 years of experience, 29% of respondents had 6–10 years of experience, 11% of the respondents had 11–15 years of experience, 11% of the respondents had 16–20 years of experience, and 32% had more than 20 years of experience in consultancy. In summary, about 82% of the respondents had 6years and above experience in consultancy services. This shows majority of the respondents have a vast level of experience in their field of quantity surveying. Furthermore, Table 2 revealed the findings on respondents' awareness of organisation culture in their firm. The findings show that 89.29% of the respondents opined yes, while 10.7 % of the respondents stated otherwise. Furthermore, the findings show that all the respondents (100%) are aware of total quality management practices in the quantity surveying firms.

Christabel and Vincent (2010) found that there are differences in the perceptions of professional quantity surveyors based on age, membership levels, and work experience. (Fan, Ho and Ng 2001) also pointed to the differences in perceptions of professional quantity surveyors due to differences in training. In research carried out by Lowe and Skitmore (2011) on the learning climate of chartered quantity surveying practices, it was found that as quantity surveyors rise in the hierarchy of an organisation, their perception of its ability to provide an appropriate learning environment increase. By implication, the perception of quantity surveyors' changes as their hierarchies increases in organisations. Hassan and Minden (2010) identified three hierarchies in quantity surveying firms, including directors, senior quantity surveyors, and junior quantity surveyors in Malaysian quantity surveying firms. The research also made explicit the expressed differences in perceptions of the hierarchies.

Level of adoption of TQM practices in Quantity surveying firms

The respondents indicated their views for a range of statements regarding the presence of TQM practices into eight; top management support (leadership), strategic planning, customer focus (client satisfaction), measurement, analysis, and knowledge management, workforce focus (employee involvement), operation focus (process management), supplier partnership, and project design in their companies as presented in Table 2. These findings are discussed in the next section.

1. Top management support (Leadership)

The results of the analysis from Table 2 revealed that all the six statements of TQM practices under the top management support (leadership) very high and high mean scores. The range of mean scores was between 4.38 and 3.50, which corresponds to high level of TQM practices adoption. While the average mean score was 3.92 indicating high level of Top management support adoption in QSFs.

2. Strategic planning

The Strategic planning components of TQM results indicated in Table 2 revealed that three out of the five statements have mean scores ranges between 3.5-4.0 which represent high level of adoption of TQM practices. While the remaining two mean scores were between 2.78-3.0 indicating moderate level of TQM practices adoption. But the average mean score was 3.3 indicating the respondent's perception was moderate level of Strategic planning adoption in QSFs.

3. Customer focus (Client satisfaction)

In the case of customer focus, two out of the six statements have mean scores of 3.89 and 4.0 indicating high level of adoption. But the remaining four statements under customer focus have mean scores

ranges between 2.78-3.0 representing moderate level of their adoption. The findings also revealed average mean score was 3.3 representing moderate level of customers focus.

4. Measurement, Analysis, and Knowledge management

Table 3 indicated that four of seven statements of measurement, analysis, and knowledge management have mean scores ranges between3.77-4.23 representing high level adoption. While one statement has a mean score 4.5 establishing very level high adoption. The remaining two statements have mean scores were 2.65 and 3.00 representing moderate adoption. Finally, average mean score was 3.74 establishing high level of adoption of measurement, analysis, and knowledge management.

5. Workforce focus (Employee involvement)

The results of the analysis from Table 3 revealed that one out of the seven statements have a mean score 3.50 representing high level of adoption. While five have mean scores ranges between 2.5-3.33 representing moderate level of adoption. However, the average mean score was 2.83 showing moderate level of adoption of workforce focus practice.

6. Operation focus (Process management)

The results presented in Table 4.3 showed three out of the nine statements have mean scores ranges between 3.75-3.99 representing high level of adoption, another three have mean scores between 2.87-3.40 indicating moderate level of adoption. While the remaining three have mean scores range between 2.11-2.45 representing low level of adoption. The average mean score was 3.06 which established moderate adoption of Operation Focus (Process management) practices.

7. Supplier partnership

The results presented in Table 3 showed that four statements out five have mean scores range between 2.87-3.40 representing moderate level of adoption. While the remaining one has a mean score 2.47 indicating low level of adoption. The overall level of adoption of supplier partnerships practises was moderate level based on the average mean score value of 2.86.

8. Project design

Under project design as presented in Table 4.3, all the five statements have their mean scores range between 2.60- 3.47 representing moderate level of adoption. While the overall project design practises adoption was moderate level based on the average mean score value 3.02.

Table 3: Level of adoption of TQM practices in Quantity surveying firms

Top management support (leadership)	**Mean Score**	**Rank**
Top management hold meetings discusses and reviews quality related issues	4.38	1st
Top management establishes and sustains clear and visible customer-focused quality vision, values, and mission.	4.06	2nd
Top management encourages quality-related concepts and skills	3.98	3rd
Top management participates in quality management and improvement process	3.85	4th
Top management allocates adequate resources for quality Improvement	3.78	5th
Top management pursues long-term quality improvement process	3.50	6th
Overall level of Top management support (leadership)	**3.92**	
Strategic Planning	**Mean Score**	**Rank**
A mission statement which has been communicated throughout the company and is supported by employees	3.70	1st
A comprehensive structured planning process which regularly sets and reviews short and long-term goals	3.68	2nd
Incorporate supplier capabilities and needs of other stakeholders including the community when develops organisation's plans, policies, and objectives	3.50	3rd

Integrate continuous quality improvements into planning process	3.00	4th
Organisation's strategic plans and tactical plans are linked to quality values	2.78	5th
Overall level of Strategic Planning	**3.33**	
Customer Focus (Client satisfactions)	**Mean Score**	**Rank**
Take customer complaints as continuous improvement process	4.00	1st
Review customer complaints and take into consideration for product innovation	3.98	2nd
Provide mechanism for customer feedback	3.48	3rd
Customer focused practice and culture	2.90	4th
Conduct market study to collect suggestions for improving Product	2.85	5th
Conduct a customer satisfaction survey	2.60	6th
Overall level of Customer Focus (Client satisfactions)	**3.30**	
Measurement, Analysis and Knowledge Management	**Mean Score**	**Rank**
Data and information collection at all levels and in all parts of rganisation	4.50	1st
Analyse and review the data and information collected	4.23	2nd
Conduct organisational performance measure at a constant time interval period	4.10	3rd
Availability of key performance figures for analysis and decision making	3.95	4th
Performance review findings for continuous improvement and Innovation	3.77	5th
Implement organisational performance measurement system	3.00	6th
Benchmarking of other firms' product quality and procedures	2.65	7th
Overall level of Measurement, Analysis and Knowledge Management	**3.74**	
Workforce Focused (Employee involvement)	**Mean Score**	**Rank**
Employee performances are monitored and measured	3.50	1st
Encourage teamwork and problem solving among Employees	3.33	2nd
Provide training and development process for all Employees	2.98	3rd
Maintain a working environment that contributes to the health, safety, and well-being of all employees	2.85	4th
Instill quality culture on continuous improvement among Employees	2.78	5th
Promote compensation, recognition, and reward system among employees	2.50	6th
Measure employee satisfaction	1.85	7th
Overall level of Workforce Focused (Employee involvement)	**2.83**	
Operation Focus (Process management)	**Mean Score**	**Rank**
Practice daily operation work processes report system	3.99	1st
Develop a set of key work processes	3.80	2nd
Use of approaches or tools to improve process performance and reduce variability	3.75	3rd
Establish Key Performance Indicators (KPIs) for monitoring purpose	3.40	4th
Monitor and reviews on work processes performance	2.90	5th
Continuous improvement process	2.87	6th
Exercise two-way communication with suppliers	2.45	7th
Quality culture	2.30	8th
A well-prepared disaster and emergency preparedness system to ensure the continuity organisation's operations	2.11	9th
Overall level of Operation Focus (Process management)	**3.06**	
Supplier partnership	**Mean Score**	**Rank**
Use of supplier rating system	3.28	1st
Clarity of specification provided by supplier	3.08	2nd
Technical assistance to improve the quality and responsiveness of suppliers	2.89	3rd

Clarity of specification provided by supplier	2.58	4th
Involvement of the supplier in the project development process	2.47	5th
Overall level of Supplier partnership	**2.86**	
Project design	**Mean Score**	**Rank**
Coordination among professionals involved in project design	3.47	1st
Analysis of client's requirement	3.44	2nd
Design of the implementation system	2.88	3rd
Clarity of project design	2.75	4th
Determination of quality standard	2.60	5th
Overall level of Project design	**3.02**	

Source: Author's field survey (2022)

Discussion of Results

1. *Top management support (Leadership)*

The overall average mean score for Top management support was 3.92, which is for all the statements in the group. This means that all the responds agree that there was high level of adoption of Top management support practice in all the studied firms. The findings are line with the finding with the grand mean value 3.93 by (Olaleye *et al.* (2019). This is further collaborated other research findings by Ooi (2014) and Alidrisi and Mohamed (2012). Furthermore, the results established that, respondents agreed with following statements, that Top management hold meetings discusses and reviews quality related issues, leadership establishes and sustains clear and visible customer-focused quality vision, values and mission, and leadership encourages quality-related concepts and skills as they were ranked first, second and third, respectively.

The overall average mean score for Top management support was 3.92, which is for all the statements in the group. This means that all the responds agree that there was high level of adoption of Top management support practice in all the studied firms.

2. *Strategic planning*

The overall of the mean scores obtained for strategic planning was 3.33 which is for the five statements in the group. This indicates that all the respondents agree that the level of adoption of strategic planning practice was moderate. The finding is in line with the findings of (Frolova and Lapina, 2015; Mahmood, Qadeer, and Ahmad 2015). The study also established that these two statements were key; a mission statement which has been communicated throughout the company and is supported by employees and a comprehensive structured planning process which regularly sets and reviews short and long-term goals. Thus, they were ranked first and second.

3. *Customer focus (Client satisfaction)*

The overall mean score of customer focus (client satisfaction) obtained was 3.30, this implies that the firms agree that they moderately execute the activities that make up customer focus practice. This is similar to a finding by Olaleye *et al.* (2019) with the grand mean value 3.77. In addition, the findings confirm the findings by Mahmood, Qadeer, and Ahmad (2015) whose findings show a high degree of customer focus in the firms' studies. He further confirmed that customer focus is important for TQM implementation in Malaysia organisations.

The study established that these three priority statements; take customer complaints as continuous improvement process, review customer complaints and take into consideration for product innovation and provide mechanism for customer feedback. These were ranked first, second and third respectively.

4. *Measurement, Analysis, and Knowledge management*

The overall average mean score value 3.74 for measurement, analysis, and knowledge management practices implies all respondents agree to high level of adoption by all the firms studied. This is in agreement to a study by Olaleye *et al.* (2019) with an overall average of 3.95 for the 46 classifications

of firms. The finding is also consistent with the findings of Jaca and Psomas (2015) whose findings show high level of measurement analysis practice in the firms studied. The respondents established by ranking the seven statements in the order of importance. Thus, the first, second and third were, data and information collection at all levels and in all parts of organisation, analyse and review the data and information collected, and conduct organisational performance measure at a constant time interval period, respectively.

5. *Workforce focus (Employee involvement)*

The average mean score was 2.83 which implies that all respondents agree to moderate level of adoption of Workforce Focused (Employee involvement) practises in the firms studied. The findings of this study agree with the conclusion by Kafetzopoulos, Gotzamani and Gkana (2015) whose findings concluded that Employee management also instils a better understanding of importance of the product quality in employees and makes them committed to the quality improvement. Furthermore, the findings of this study agree with the conclusion by Kim, Kumar and Kumar (2012), whose findings conclude that workforce involvement is important for TQM to be effectually realized, their findings indicate a high level of workforce commitment to quality in the firms studied.

6. *Operation focus (Process management)*

Operation Focus (Process management) practice has an overall average mean score value 3.06 implying that all the respondents agree that the level of adoption was moderate for all the firms studied. This finding is contrary to Olaleye *et al.* (2019) result with the average grand mean for the 46 classes of firms is 4.09. Furthermore, the findings by Kaluarachchi (2010) who studied Sri Lankan firms and Wu (2015) who studied Chinese firms.

7. *Supplier partnership*

The overall mean score 2.86 for Supplier partnerships practises implies that all the respondents agree that there was moderate level of adoption for the firms studied. The study also revealed the ranking of the first three statements out five as follows; use of supplier rating system, Clarity of specification provided by supplier, and technical assistance to improve the quality and responsiveness of suppliers, first, second and respectively.

8. *Project design*

The overall mean score was 3.02 indicating that all respondents agree that there was Moderate level of adoption of project design practises in the firms studied. The findings are consistent with the findings (Kafetzopoulos, Gotzamani and Gkana, 2015; Yusr, Mohd Mokhtar and Othman 2014)

In addition, the results established the importance of these statements: Coordination among professionals involved in project design, analysis of client's requirement, and Design of the implementation system as they were first, second and third, respectively.

Conclusions

This study is aimed at determining the level of TQM practices adoption in QSFs firms in Kaduna State, Nigerian. A total of eight TQM practices were evaluated for the QSFs firms. The study concludes that two out of the eight TQM practices; top management support, and measurement analysis and Knowledge (average mean scores 3.92 and 3.74) have high level adoption in the QSFs firms studied. While the remaining six practices; strategic planning, customer focus, workforce management, operation focus, supplier partnership and project design (average mean scores were 2.83-3.3) were moderately adopted in the firms studied.

The conclusion underscored need for TQM practices must start with top management and must demonstrate commitment towards the course, the central focus of quality is the customer thus firms must demonstrate their commitment to customer satisfaction, workforce execute the plans that firms. The implication of these findings is that the QSFs firms' level of adoption TQM practices is moderate

therefore may difficult realise the full benefit of its implementation. Moreso, for TQM to be effective all the eight practices must have high level of adoption across the firms.

This article concludes by providing the Quantity Surveying firms with areas that require addressing, in order to improve TQM practices adoption in their firms to help ensure that the full benefit is achieved. This study has contributed to TQM practices levels of various QSFs firms in Nigeria. It thus provides QSFs and future researchers with a wider understanding of the practices that can inform the development of more effective TQM implementation. The study recommends that there is need for the further study of challenges affecting firms in the adoption and implementation of TQM.

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