

EFFECTS OF TOTAL QUALITY MANAGEMENT PRACTICES ON PERFORMANCE OF CONSTRUCTION PROJECTS IN UASIN GISHU COUNTY

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Abstract: The purpose of the study was to analyze the effects of Total Quality Management Practices on the Performance of Construction Projects in Uasin Gishu County. This study was guided by the following specific objective; to establish the effects of customer focus on the performance of Construction Projects in Uasin Gishu County. The study was guided by: Deming Theory, Juran Theory, Crosby Theory and Ishikawa Theory. A descriptive survey research design was applied for this study. Census was conducted for data collection and questionnaires was administered to respondents. Data collection instrument was questionnaire. Piloting was done to test the validity and reliability of the data collection instrument. Data was then analyzed to determine the effects of the independent variables on the dependent variable. Regression analysis was carried out to test the significant levels of one variable to the other in the study. ANOVA was carried out to test the hypotheses of the study. The finding of the study revealed that customer focus had a significant effect on performance of Uasin Gishu Count. This study is important because: it will assist the government in strengthening the policy framework and enact laws to govern the construction industry, Construction firms will use the findings of this study to enhance their TQM and hence be able to deliver projects on time and within budget, Construction professionals like Project Managers, Engineers, Architects and Surveyors will use the findings of this study in their day to day management of construction projects and construction firms.

Keywords: Total Quality Management, Customer Focus and Performance.

1. INTRODUCTION

Globally, total quality management plays a very important role especially in the construction projects. Many projects have never lived to their goal achievements. The main philosophy behind TQM is satisfaction of customer needs. TQM is a management philosophy that aims to continually improve product, service and process improvement by focusing on customer needs and expectations to enhance customer satisfaction and organization performance (Sadikoglu & Olcay, 2014). Zehir, Ertoşun, Zehir and Muceldilli (2012) define TQM as a holistic quality improvement approach to firms for the purpose of improving performance in terms of higher quality products, more satisfied customers, reduced costs, improved financial, quality and innovation performance and improved employee satisfaction. A number of studies have indicated a positive relationship between performance outcomes and TQM. Projogo and Sohal (2003), in their study of the relationship between TQM practices, quality performance and innovation performance, underscore the importance of TQM on quality performance. TQM involves activities such as leadership, training, employee relations, quality data and

reporting, supplier quality management, product service design, process management, strategic planning, customer focus, information technology and analysis and people management.

The term quality is essentially an economic term that has emerged based on industrial and technological competition among advanced industrial countries to control production and gain customer confidence (Dawood, 2010; Abu Sultan, 2011; Aeeshe, 2012). They are defined as the suitability of the product to use, so the ability to deliver the best performance and the most accurate qualities (Saeed et al., 2013; Salami & Ufoma Akpobire, 2013). According to Al-Zu'bi (2013), quality is the comprehensive specification of an entity which could be a product, individual, organized, related to ability to satisfy existing or presumed needs. Alwan (2013) defined it as the extent to which the product conforms to the specifications set, and the extent to which the customer's needs are met in the product. Al-Hariri (2016) regarded it as efficiency and efficiency. Obaid (2017) considered it as a production management strategy. Quality is a comprehensive philosophy and methodology for organizations that continuously improve their work in order to meet the customers' needs (Samurai, 2012). It is a management methodology designed to achieve long-term success by encouraging employee responses, meeting their needs, respecting values and beliefs (Li & Houjun, 2013).

During the past decades, a number of management alternatives for quality have been developed and practiced in the construction industry. New management approaches for construction projects have mostly been concerned with liabilities and contractual claims between parties, and few have entered into developing systems that enhance open communications and total involvement of the participants in a project. The word "quality" has been derived from the Latin word *quails*, meaning, "what kind of". Quality is a difficult and elusive term to define as it has a wide variety of meanings and connotations attached to it hence it's referred to as a "slippery concept" (Sahney, Banwet & Karunes, 2004). It is slippery because it has a wide variety of meanings implying different things to different people. Thus, it has been defined with different perspectives and orientations, according to the person, the measures applied and the context within which it is considered. From the perspective of the organization providing goods/services, the process-perspective is more useful (Sahney et al., 2004).

Regionally, construction firms keeps on facing many challenges while trying to achieve the desired objectives. TQM seeks to create a distinct culture based on efforts of all members of organization to meet the customers' needs and their desires at the lowest cost, effort and time. This indicates that TQM has become importance to organizations through reducing costs, increasing profits and productivity, increasing customer satisfaction, achieving competitive advantage and high returns (Fernandes, 2017). Anaman and Amponsah (2007), in their study of Analysis of the causality links between the growth of the construction industry and the growth of the macro economy in Ghana, state that, "A vibrant construction industry in a developing country, that mobilizes human and local material resources in the development and maintenance of buildings, housing and physical infrastructure, is an important means to promote increased local employment and accelerate economic growth". They further note that the construction industry is often seen as a driver of economic growth in developing countries.

Kheni and Ackon (2015) carried out a study in Ghana on the impact of total quality management practices on construction project quality performance and state that effective quality management of construction processes and products is an important consideration in modern construction as evidenced from clients' increasing use of companies' reputations for good quality work as a basis for selecting prospective Contractor's. There is therefore a need for the construction industry in developing countries to implement total quality management due to global competition. They further note that even though TQM has had numerous benefits in developed countries, it is yet to be confirmed that the same benefits shall be derived with the implementation of TQM in construction projects in developing countries. The findings of this study indicated that TQM practices are positively related to construction project quality performance. Magutu et al. (2010) point out that TQM presents a strategic option and an integrated management philosophy for organizations which enables them to attain their objectives effectively and efficiently and to achieve sustainable competitive advantage. Magutu et al. (2010) further elaborate that from a managerial philosophy viewpoint, the elements of TQM are varied. Different terms like total quality improvement, total quality leadership and strategic quality management are actually examples showing the different emphasis placed on particular aspects of what is generally called total quality management. Wamweya (2013) also carried out a study of total quality management in the lift industry and found that total quality management has a positive effect on performance.

Zehir et al. (2012) define TQM as a management approach for improving organizational performance and it encompasses a variety of both technical and behavioural topics. Due to clients' continued use of contractor's past reputation, there is need for projects to embrace proper implementation of TQM. Successful implementation of the project is the ultimate goal of all the stakeholders. Though extensive research on TQM and its impact on project performance has been done elsewhere (Kheni & Ackon, 2015; Zu, 2009; Jaafreh & Al-abadallat, 2012; Saeed & Hasan, 2012; Gonzalez, Jimenez & Lorente, 2013; Prajogo & Sohal, 2003), there is no similar research in Kenya, aimed at examining the effect of total quality management practices on the performance of construction projects. TQM has brought around higher quality products, more satisfied customers, reduced costs, improved financial, quality and innovation performance, however, there has been complaints of lack of communication between management and Employees, intimidation of Employees by the management, nonsupport of employees' ideas, indecision of the top management, management's unfairness to employees, keeping improper records and lack of knowledge transfer due to poor Knowledge management, obsolescence, inefficiency and incompetence of employees due to lack of training, dissatisfaction of customers, poor customer management, injustice and unfairness to customers. Construction industry as well plays a major role in development and achievement the goals of society. It is one of the largest industries and contributes about 10 percent of the gross national product (GDP) in industrialized countries (Narvon 2005). Construction industry has complexity in its nature because it contains large number of parties' clients, contractors, consultants, stakeholders and regulators. The performance of the construction industry is affected by national economies (Navon 2005). This study therefore sought to examine the effects of customer focus on the performance of construction projects in Kenya.

2. EFFECT OF CUSTOMER FOCUS ON PERFORMANCE OF CONSTRUCTION PROJECTS

The customer is one of most important pillars in which TQM is based. Customer focus is defined as the degree to which a firm continuously satisfies customer needs (Gherbal, Shibani, Saidani & Sagoo, 2012). According to Sadikoglu and Olcay (2014), TQM firms normally focus on serving the external customers. They first establish customers' expectations and requirements and then offer products/services accordingly. With the help of successful customer focus efforts, production can be done with respect to the customers' needs, expectations and complaints. This enables firms to produce high quality and reliable products/services on time with increased efficiency and productivity. Meeting customer expectations will increase their satisfaction and this will in turn increase the firm's sales and the market share.

Deming (1986) and Juran (1986) promoted customer satisfaction as the ultimate goal of TQM. Deming underscored the importance of customer focus by stating "The consumer is the most important part of the production line. Quality should be aimed at the needs of the consumer, present and future". Deming proposed that firms should constantly improve their services and products for customers while Juran defined quality as fitness for use or the service's or product's ability to satisfy customers' needs. Further, many leading firms have claimed that their TQM efforts have led to increased customer satisfaction (Ross, 1995). For instance, one of the effects of TQM practices has been on employee empowerment and involvement and this has a positive impact on the satisfaction of customers (Flood, 1993; Ross, 1995). With empowerment, management gives workers increased access to resources and information and delegate's decision-making (Blau & Alba, 1982; Ahire, Golhar & Waller, 1996). This enables workers to be flexible and responsive to satisfying the needs of the customers. Dean and Bowen (1994) state that the study of customer satisfaction falls under the domain of marketing. Generally, authors of marketing literature agree with the observation that TQM practices lead to customer satisfaction (Babich, 1992; Rust & Zahorik, 1993; Anderson, Fornell & Lehman, 1994). They bring out customer satisfaction as a very important indicator of a firm's financial health, largely because it is perceived to be a key indicator of a firm's profitability and market share. As a matter of fact, a customer who is satisfied will repeat his or her purchases of goods or services, increasing the market share and profits of a firm. Zairi, Letza and Oakland (1994) argue that TQM practices translates to improvement of the bottom-line results such as returns on assets and profits. This means that TQM practices will have a positive impact on the market share and profits of the firm, although facilitated through customer satisfaction. Management of customer relationship focuses on meeting and exceeding customers' expectations hence resulting in customer satisfaction. Distribution of customer-related information through the organization (e.g. customer complaint resolution) enhances effective relationship management.

The role of construction industry is to provide clients with structures or facilities which meet their needs. For a construction company to remain in business, this service has to be provided at a competitive cost. TQM is a management philosophy that effectively determines the clients' needs and provides the framework and environment for meeting these

needs at the lowest cost possible. Customer satisfaction is guaranteed in the quality of the final product by ensuring quality from project conception through completion. Customers can be either internal or external. External customers are not part of the company producing the service or product but they are impacted by it. In engineering, the products are the specifications and plans and customers are the construction organization responsible for the construction and the owners. In construction, the product constitutes the completed facility and the customer is the final user of that facility. These products are supposed to satisfy the needs of an external customer. There are also customers in the design firm and the construction organization. These internal customers receive products and information from groups or individuals within their organization. Satisfying the needs of internal customers is a fundamental part of the process of supplying the external customer with a quality product (Orberlender, 2000).

Previous studies have found that customer focus positively affects aggregate firm performance (Zehir and Sadikoglu, 2012). PM has become popular as an important management concept that is driving the economic development agenda of nations, especially developing countries and business organizations are also using it to drive their objectives (Barghoth, Salah, & Ismail, 2020). It is also noted that project implementation in Ghana was declining which caused a substantial loss to the country, and is a cause for worry and thereby needs to improve (Kaile & Fore, 2018; E. Opong, 2019). Even though Ghana has a few Management Consultants and managers involved in diverse projects in various industries from both private and public sectors of Ghana's economy, projects keep on failing and much is not seen as it is either delayed or incomplete work which is worrying because proper project handling and successful execution is what drives a good economy (Niesing, Merwe, & Potgieter, 2016; Williams, 2017).

A construction project is acknowledged as successful when it is completed on time, within budget and in accordance with specifications and to stakeholder's satisfaction. Performance planning is the starting project point for an employee and manager in the performance management process. The manager and employee work jointly to identify what the employee should be doing for the period being planned for, how the work should be done, identify and plan to overcome challenges and come to a common understanding about the work. Performance communication is the next step and it is the process by which the manager and employee share information about work progress, potential challenges and how the manager can help the employee (Omran, Abdalrahman & Pakir, 2012). According to Enshassi, Mohamed and Abushaban (2009), project performance is measured and evaluated using a number of performance indicators that could be related to various dimensions (groups) such as time, cost, quality, client satisfaction, client changes, business performance, health and safety. However, the predominant performance evaluation dimensions are cost, time and quality. They further state that project performance can also be evaluated through 2 sets of indicators. The first set is related to the groups of people who will look at project performance from the macro viewpoint and they include the owner, users, stakeholders and the general public while the second set comprises the groups of people who will look at project performance from the micro viewpoint and they include the developer and the contractor. The concept of performance measurement or assessment has become a matter of concern to countries at different levels of socio-economic development which appreciate the need to improve the performance of their construction industry (Ofori, 2000; Beatham, Anumba, Thorpe & Hedges, 2004). According to Cho, Hong and Hyun (2009), the success of a construction project is the main goal of project investors including the owners and Contractors and many researches have been done analyzing the factors that affect the success of a construction project.

Success of construction projects depends mainly on success of performance. Many previous researches had been studied performance of construction projects. Dissanayakaa and Kumarawamy (1999) remarked that one of the principle reasons for construction industry poor performance has been attributed to the inappropriateness of the chosen procurement system. Reinchelt and Lyness (2010) remarked three important structures underlying the dynamic of a project performance which are the work accomplishment structure, feedback effects on productivity and work quality and effects from upstream phases to downstream phases. Thomas (2002) identified the main performance criteria of construction projects financial stability, progress of work, standard of quality, health and safety, resources, relationship with clients, relationship with consultants, management capabilities, claim and contractual disputes, relationship with subcontracting. Chan and Kumaraswamy (2002) stated that construction time is increasingly important because it often serves as a crucial benchmarking for assessing the performance of a project and the efficiency of the project organization.

Ling, Chan, Chong and Ee (2004) presented the characteristics affecting construction project performance as: project characteristics, contractor characteristics and owner and consultant characteristics. The project characteristics include the

form of contract, type of building, level of design and construction complexity and the percentage of repetitive elements while the Contractor characteristics include communication among team members and staffing levels. Enshassi et al. (2009) argue that performance dimensions may have one or more indicators and could be influenced by various project characteristics. For instance, Iyer and Jha (2005) identified many factors as having influence on project cost performance. These include: top management support, project manager's competence, project manager's coordinating and leadership skills, monitoring and feedback by the participants, decision-making, coordination among project participants, owners' competence, social condition, economic condition and climatic condition. Alghamdi (2019) in his study, confirmed the positive and statistically significant association between TQM and organizational performance. The author emphasized on to put more focus on customers, human resource, and top management commitment to attain improved performance. Mahmood et al. (2014) affirmed that employee involvement and continuous improvement are statistically significantly positively related to organizational performance. Whereas, top management support and customer focus have not statistically significant effect on organizational performance. Ngambi and Nkemkiefu (2015) found that employment training and empowerment has a significant impact on financial performance and corporate social responsibility; leadership commitment, quality control and inspection have a significant impact on cost reduction. However, none of the TQM practices appear to have a significant effect on customer satisfaction.

According to Kurt and Zehir (2015) on the relationship between TQM, cost leadership strategy, and financial performance suggest that there is a relationship between TQM practices and financial performance. Pambreniet al. (2019) in his study also revealed that TQM elements such as customer focus, continuous improvement, and strategically based, and total employee involvement have significant positive impact on organizational performance. Hard TQM elements have positive relationship with financial and non-financial results while people related elements do not have significant relationship with financial and non-financial results. (Shafiq et al., 2019). Alshatnawi and Ghani (2018) found positive relationship of TQM components leadership commitment, strategic planning, training & learning, management by fact, process focus with Organizational performance.

3. METHOD

The study employed a descriptive survey research design. A descriptive survey research design gathers, summarizes, presents and interprets information for the purpose of clarification (Orodho, 2008). The target population was 110 professionals in construction projects in UasinGishu County. This study carried out a census for the collection of data where 110 professionals in 20 construction projects in Uasin Gishu County was interrogated. Data collection instrument was questionnaire Piloting was done for validity and reliability of the research instrument. Data analysis coded, edited and organized to bring a meaning. Multiple regression analysis technique was used to determine the effect of independent variables on the dependent variable, it was used to measures the relative influence of each independent variable based on its covariance dependent variable and was useful in forecasting

4. RESULTS AND DISCUSSION

The study sought to determine the effect of customer focus on performance of construction projects in Uasin Gishu County. The study sought to determine the effect of customer focus on performance of construction projects in Uasin Gishu County. The findings are presented in a five point Likerts scale where SA=strongly agree, A=agree, N=neutral, D=disagree, SD=strongly disagree and T=total. The respondents were asked whether construction firms are frequently in close contact with our customers. The distribution of findings showed that 30.0 percent of the respondents strongly agreed, 36.0 percent of them agreed, 17.0 percent of the respondents were neutral, 11.0 percent disagreed while 6.0 percent of them strongly disagreed. These findings imply that they are frequently in close contact with customers. Equally on whether firms are actively and regularly seek customer inputs to identify their needs and expectations. The distribution of the responses indicated that 31.0 percent of the respondents strongly agreed to the statement, 16.0 percent of them agreed, 31.0 percent of them were neutral, 16.0 percent of them disagreed while 6.0 percent of them strongly disagreed to the statement. These findings imply that the respondents actively and regularly seek customer inputs to identify their needs and expectations.

The respondents were also asked whether customers give feedback on quality and delivery performance. The distribution of the responses indicated that 19.0 percent of the respondents strongly agreed to the statement, 42.0 percent of them agreed, 33.0 percent of them were neutral, 6.0 percent of them disagreed while none of them strongly disagreed to the

statement. These findings imply that customers give feedback on quality and delivery performance. On whether customers' complaints are used as inputs to improve processes, findings revealed that 8.0 percent of the respondents strongly agreed to the statement, 52.0 percent of them agreed, 28.0 percent of them were neutral while 6.0 percent of them disagreed and 6.0 percent of them strongly disagreed to the statement. These findings imply that customers' complaints are used as inputs to improve processes. Finally, the respondents were asked whether customer satisfaction is measured systematically and regularly. The distribution of the responses indicated that 27.0 percent of the respondents strongly agreed to the statement, 51.0 percent of them agreed and 22.0 percent of them were neutral. None of the respondents disagreed or strongly disagreed to the statement respectively. These findings imply that customer satisfaction is measure systematically and regularly. The findings are shown in table 4.1 below.

Table 4.1: Customer focus

Statements		SA	A	N	D	SD	T
Construction firms are frequently in close contact with our customers	%	30.0	36.0	17.0	11.0	6.0	100.0
Construction firms are actively and regularly seek customer inputs to identify their needs and expectations	%	31.0	16.0	31.0	16.0	6.0	100.0
The customers give feedback on quality and delivery performance	%	19.0	42.0	33.0	6.0	0.0	100.0
Customer complaints are used as input to improve our processes	%	8.0	52.0	28.0	6.0	6.0	100.0
Customer satisfaction is measured systematically and regularly	%	27.0	51.0	22.0	0.0	0.0	100.0

The findings of the study revealed that they are frequently in close contact with customers, they actively and regularly seek customer inputs to identify their needs and expectations, customers give feedback on quality and delivery performance, Customers' complaints are used as input to improve processes and customer satisfaction is measured systematically and regularly.

Inferential Statistics

4.1.1 Pearson Correlation

The study sought to establish the strength of the relationship between independent and dependent variables of the study. Pearson correlation coefficient was computed at 95 percent confidence interval (error margin of 0.05). Table 4.2 below illustrates the findings of the study.

Table 4.2: Correlation Matrix

		Project Performance
Customer focus	Pearson Correlation	.713**
	Sig. (2-tailed)	.000
	N	80

** . Correlation is significant at the 0.05 level (2-tailed).

The p-value for customer focus was found to be 0.000 which is less than the significant level of 0.05, ($p < 0.05$). The result indicated a Pearson Correlation coefficient (R-value) of 0.713, which represents a strong, positive relationship between customer focus and performance of construction projects in Uasin Gishu County.

4.1.2 Multiple Linear Regression

Multiple linear regressions were computed at 95 percent confidence interval (0.05 margin error) to show the multiple linear relationship between the independent and dependent variables of the study.

4.1.2.1 Coefficient of Determination (R^2)

Table 4.3 below shows that the coefficient of correlation (R) is positive 0.529. This means that there is a positive correlation between total quality management practices and performance of construction projects in Uasin Gishu County. The coefficient of determination (R Squared) indicates that 27.9 percent of performance of construction projects in Uasin Gishu County is influenced by total quality management practices. The adjusted R^2 however, indicates that 25.2 percent of performance of construction projects in Uasin Gishu County is influenced by total quality management practices leaving 74.8 percent to be influenced by other factors that were not captured in this study.

Table 4.3: Model Summary

Model	R	R Squared	Adjusted R Squared	Std. Error of the Estimate
1	.529 ^a	.279	.252	4.10718

a. Predictors: (Constant), customer focus

4.1.2.2 Analysis of Variance

Table 4.4 below shows the Analysis of Variance (ANOVA). The p-value is 0.000 which is < 0.05 indicates that the model is statistically significant in predicting how total quality management practices affects performance of construction projects in Uasin Gishu County. The F – test was 34.211. The results also indicate that the independent variables are predictors of the dependent variable.

Table 4.4: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	786.755	4	174.691	34.211	.000 ^b
	Residual	1681.234	76	18.869		
	Total	2345.000	80			

4.1.2.3 Regression Coefficients

From Table 4.5, the regression model can be derived as follows:

$$Y = 33.755 + 1.421 X_4$$

The results in table 4.5 below indicates that all the independent variables have a significant positive effect on project performance. The most influential variable is customer focus with a regression coefficient of 1.421 (p-value = 0.000). According to this model when all the independent variables values are zero, project performance of will have a score of 34.755.

Table 4.5: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	34.755	2.638		15.279	.000
	Customer Focus	1.421	.179	.733	5.722	.000

4.1.3 Hypothesis Testing

H_{01} : Customer focus does not a significant effect on performance of construction projects in Uasin Gishu County.

From Table 4.5, Customer focus ($\beta = 1.421$) was found to be positively related to performance of construction projects in Uasin Gishu County. From t-test analysis, the t -value was found to be 5.722 and the p -value 0.000. Statistically, this null hypothesis was rejected because $p < 0.05$. Thus, the study accepts the alternative hypothesis and it concludes that customer focus affects performance of construction projects in Uasin Gishu County.

5. CONCLUSION AND RECOMMENDATION

The study concluded that Customer focus ($\beta = 1.421$) was found to be positively related to performance of construction projects in Uasin Gishu County. From t-test analysis, the t -value was found to be 5.722 and the ρ -value 0.000. Statistically, this null hypothesis was rejected because $p < 0.05$. Thus, the study accepts the alternative hypothesis and it concludes that customer focus affects performance of construction projects in Uasin Gishu County. Based on the findings, the study recommended that construction projects should concentrate more on customer focus as it has a very significant effect on project performance. The management should introduce a continuous monitoring and evaluation system for customers so as to effectively address their complaints and hence reduce the number of complaints. The study recommends that the management of construction projects should have a thorough review of their construction policies to incorporate top management commitments aspects that would enhance performance of the employees and delivery of the project within cost and time. A training program may be established as a regular practice for provision of training and retraining (refreshment courses) opportunities for employees. This would not only satisfy employees' growth need but also enhance employee performance. An environment of continuous learning should be introduced in construction projects. Construction projects must manage their resources well as resources is an asset which if used well can lead to competitive advantage through minimized costs and cheaper working methods.

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