

# Client and User Participation: A Total Quality Management Perspective

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## Abstract

This paper assesses how nature of the public client and user participation can influence cost and success of Total Quality Management (TQM) practice for a construction project. The study has limited itself to a single public client in a construction project focussing on influential power of users as end customers. The empirical case study has illustrated the significance of understanding the complex nature inherent in public clients when drawing project objectives. The study has established decisions to influence use of resources are not necessarily dictated by ownership of resources.

**Keywords:** Public client; user participation; customer satisfaction; total quality management; construction industry.

## 1. Introduction

Substantial research in Total Quality Management (TQM) practice has mostly been done in the industrialized countries such as USA, Japan, UK and other European countries where a majority have examined TQM practice of large multi-product, multi-divisional and multi-national firms [1] albeit limited work in developing countries are seen in the manufacturing, financing and academic institutions [2,1,3,4]. For developing countries, the shortfall has similarly been observed [5]. Organizations in construction industry have been viewed to eschew implementing TQM practices [6, 7]. A number of factors are identified as making the application of TQM in construction projects a challenging task. These factors among others include: unique feature of construction projects, difficulty in defining quality standards to meet spatial, aesthetic, functional and economic requirements that are interactive, yet diverse; the uniqueness of people relationship; conflicting interests; long production cycles; inexperienced clients and lack of feedback.

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Furthermore, despite the adoption of TQM philosophy being seen as a solution for construction industry problems, some of the construction industry problems are themselves obstacles for TQM implementation. Amongst them is the practice of the construction industry in soliciting bids; where emphasis is on the lowest evaluated price. Such practice does not make contractors seek a reputation for quality; subsequently the benefits of TQM are not achieved in this industry [6]. Likewise [8] noted that TQM in construction industry is focused in cost control; partly because of the emphasis of cost and time as critical factors for a successful project. Others [6, 9, 10, 11] identified customer satisfaction as a key element of TQM implementation. Customer satisfaction as a success criterion of a construction project has equally been echoed [12, 13, 14]. Reference [13] cites Flora et. al's (1997) question as a key concern for those endeavoring to achieve project success, he quotes:

*“Are we achieving the results we desire? Are we meeting our customer’s success criteria? and “Are we achieving our desired return on investment?”*

Who then are the customers for a construction project? The one who pays for the construction of the project? Or the one who ultimately uses or inhabits the completed project? For construction projects where the client is a public body the identification of the “customer” or the “client” is not straight forward [15]. The range of stakeholder’s interests from the client’s entity may not be fully known particularly by employees and tenants. Also are the needs of building users which are often not fully understood or articulated by clients (ibid). Further, various interest groups within the stakeholder may have different functional requirements, meaning that any project definition is a compromise which may unravel as more information becomes available to those groups through the project life cycle regarding what the facility will be like. Similarly stating financiers may have a different view from the client’s employees of what is important. Reference [16] explains for instance, in the public sector the client may be a local authority which receives finance for the project from the central government and the users may be a third party such as teachers and pupils. In such a situation who is the client? In trying to meet the customer satisfaction, who then is the “customer” i.e. the “client”? Reflecting further on a construction project it is typical for a construction project team to recognize its client as the body that has the authority to approve: expenditure on the project; on the form the project has to take and pay for the professional fees. And that the project team’s wish is for all three authorities to be vested in one body [16]. In practice for construction projects with a public client this is frequently not the case. The implication then is that the public client is not a homogeneous entity and his preferences and priorities are expected to reflect this. Understanding the heterogeneous “preferences” of the client in a construction project during the design process is attainable; but with some challenges.

One of the challenges is that project organization structures are seldom set up such that members of the project team meet the client; rather the project team leader acts as a surrogate client; and the team members know the client’s requirement at 2<sup>nd</sup> and 3<sup>rd</sup> hand only [16]. With such a scenario the attributes of quality communication and information sharing: frequency, bi-directionality and formality [17] are hardly achieved. The accuracy of second and third hand information creates doubt on the final version of requirement by the client as received by recipients; further complicated by the multi-constituent nature of the Client’s body of financier/funder, employing department or user; and typical organizational power struggles [18]. Since power is reflected in an ability to influence use of resources (ibid), what is the user position for a multi-constituent client? Reference

[18] in his power theory noted that the power to influence use of resources goes hand in hand with influence of decision and exertion of power. Based on this concept a presumption is made that the power of the end user customer, the one who ultimately uses the completed product is limited; so is his power to influence decision. Of interest then is how this power manifests in a case of a construction project?

### 1.1 Identifying Client's objective

In addition to ensuring quality communication and effective information sharing through: frequency of dialogue, feedback and formality [17], a key prerequisite for the project design team to capture client's objective is in understanding how the client's organization works [16]. This puts the design team in an advantageous position to interpret and implement client's objectives. This is even more important when the client is a public client. Walker emphasizes the need for the project team to develop skills in understanding how such (public) organizations work as "*objectives can be difficult to pin down and unresolved conflicts may exist between the various client's interests and potential users of the project*". Reflecting on the client's objectives in a construction project as the achievement of the desired quality, time and price, Walker [16] acknowledges that each objective shall have its own weighting depending on the nature of the client; and that a balance has to be achieved by the project actors amongst these competing priorities (weightings). A balance of which may not be possible hence a compromise is imperative. He provides a weighting of the client's objective where a target of 100 points is anticipated. Figure 1 illustrates the disintegrated nature of the client's objective and his [16] conception of priorities for a construction project.

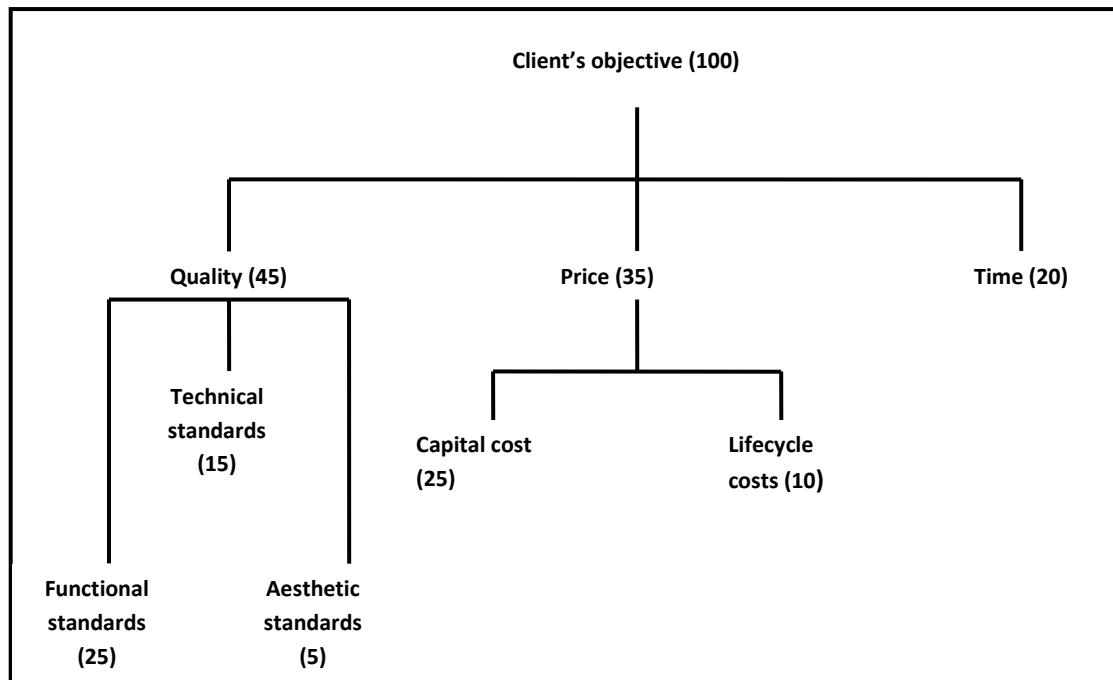


Figure 1: Client objectives- weighting of factors [16]

An emerging concern of Walker's concept is whether there will be consensus in priorities or weightings for the various objectives and sub-objectives in a multi-faceted public client's organization. This has been explained

[16, 19] as the “trade-off” that needs to be made amongst varying interests in clients’ organizations. Of interest then is how the trade-off takes place and what mechanisms need to be in place for it to occur.

As a strategy to capture the diverse and competing interests in clients’ organizations [20] developed an approach to construction project briefing that may capture the client’s objective in all its complexity. Green’s three metaphors of typical approaches to developing design concept from the client identified: an approach where the design team takes for granted that client’s objectives are clear and predetermined (the machine metaphor) ; a second one where there are repetitive developers; hence requirements are already known and understood (the cybernetic metaphor) and a third one (the organic metaphor) where in developing the concept and preparation of brief, there is an extensive collaboration between client and designers over time.

The project team’s understanding of the nature of client’s organization is however not in itself adequate to effectively capture client’s objective for a construction project. A need exists for the client to make sense of his own organization [16]. Clients as purchasers of services have to develop core skills and competences such as: knowledge and experience in application of value management, risk assessment and allocation, performance monitoring and measurement and highly developed skills in communication and team work [21]. Reference [22] alternatively advocated for a more creative, interactive and participatory approach in the use of consultants as service providers in a construction project.

### ***1.2 Power relations in Client’s organization***

The author has considered it significant to briefly draw on the power relation in client’s organization so as to best reflect the case that has been investigated. Drawing from Turner’s [18] three-process theories of power, as emanating from a *psychological group formation* where there is emergence of shared social identity; consequently bringing in *influence* where there is collective reality testing through: persuasion, authority or coercion. Exertion of *power* then occurs where one’s will is exerted through others and lastly *control of resources* occurs. The latter then dominates decision making.

### ***1.3 Customer satisfaction***

Customer satisfaction, a key element of TQM philosophy [6, 9, 10, 16, 23] has been identified as an implementation challenge of TQM in construction industry. A challenge since to articulately identify “the” customer in a construction project is a complex task [24]. TQM philosophy identifies two types of customers: an internal and end user; where, the latter may not be easy to identify since in construction projects the end users are often varied in nature and may have conflicting needs( *ibid*). For instance a potential conflict exists between requirements of a building purchaser and of user; a client who commissions a project is generally concerned with different aspects of cost than the lessee or tenant, who by his lease arrangements may be responsible for only maintenance cost [25]. The internal customer has been explained as the next person down the production chain [24, 25]; of interest then is where does the production chain end for a construction project? How-Ming and Wu [26] identified the production chain for a construction project as constituting: conception, planning, production, hand-over, utilization and close-down. Conventionally does the customer satisfaction perspective go

all the way through this production chain?

Customer importance has been acknowledged in awards for quality performance, a good example is the Malcolm Baldrige National Quality Award (MBNQA); an award administered by the National Institute of Standards and Technology in the USA [27]. The evaluation award has seven examination categories totaling 1000 points (ibid). The categories include: Leadership (100 points); Information and Analysis (70 points); Strategic Quality Planning (60 points); Human Resource Utilization (150 points); Quality Assurance of Products and Services (140 points); Quality Results (180 points); Customer Satisfaction (300 points). Customer satisfaction which is the highest point value of the seven sections in the MBNQA stipulates the following determinants: determining customer requirements and expectations, customer relationship management, customer service standards, commitment to customers, complaint resolution for quality improvement, determining customer satisfaction, customer satisfaction results, and customer satisfaction comparison. Of the 1000 point scores for this award, 300 points are awarded to the customer satisfaction category. Of interest to this article is acknowledgement of the weight given by the MBNQA to “customer satisfaction”; carrying the highest point of all of the evaluation categories. The significance of customer satisfaction has been equally advocated in other works [12, 28]. For a public client organization that has units of varying interests, priorities and power, whose satisfaction should a construction project meet? A compromise of conflicting interests or priorities have been suggested in [15, 16] but again, what are the mechanisms in place to facilitate such a compromise? It is from this background that the author aims to:

“Assess the nature of the public client and inherent challenges in meeting customer satisfaction in a construction project”

## **2. Materials and Methods of study**

A qualitative approach was adopted through a single case study. The strength of a case study has been articulated [29] and also emphasized in [13] in his single case study approach where he cites classic case studies by Whyte ( 1943) and Allison( 1971). A case has been adopted to see how processes or phenomena in the case project are reflected and explainable in available theories [15, 16, 18]; what [30] had referred to as the use of an “instrumental case study”; the use of a case to understand something else, or use of “an unusual case” that may help illustrate matters overlooked in typical cases (ibid). The single case adopted is seen by the author as the “unusual case” [30]; that illustrates user influences in a construction project, consequences of lack of deployment of TQM philosophy and the resulting quality of project management. The case is not expected to be representative but rather, to provide a case for lessons learned.

### **2.1 Case Study data**

A construction project has been used as a case study; consisting of a three-storey building with a gross floor area of 1100 square meters, built at Dar es Salaam City in Tanzania, a country close to the equator. The building designed to house lecture theatres and offices for staff. The client is a public institution whose users are employees and students. Construction projects commissioned by the client are managed by the estate department

and various committees within the organization.

At the inception of the project, the client (Dean of the respective school) contacted the design consultants, where a discussion by the project Architect with two departments Heads ensued with a focus on space requirements and general layout preferences. A cost limit using the superficial floor area method was established by the project quantity surveyor.

The method establishes an estimate where the gross floor area of a building is multiplied by a superficial market rate reflecting price per square meter. At the time of project conceptualization, the superficial rate for buildings with high quality finishes in Dar es Salaam city ranged from US \$475 to \$563 per square meter of gross floor area. The projected total cost from sketch design was US \$ 562,500 implying a cost per square meter of USD 511.36.

Schematic architectural drawings had more information with respect to forms of construction and specifications hence it was possible to slot cost figures to the various elements of the proposed building thus producing a preliminary estimate of US \$505,485 at a cost per square meter of USD 459.53; a lower estimate than previously established when using the superficial floor area method. An explanation for this is the fact that: there was relatively more information for estimating the cost hence the approximate estimating technique was used ; external works, drainage works and prime cost items were also lumped in the contingency sum. With an estimate within the client's budget, the designers were given approval to develop detail design.

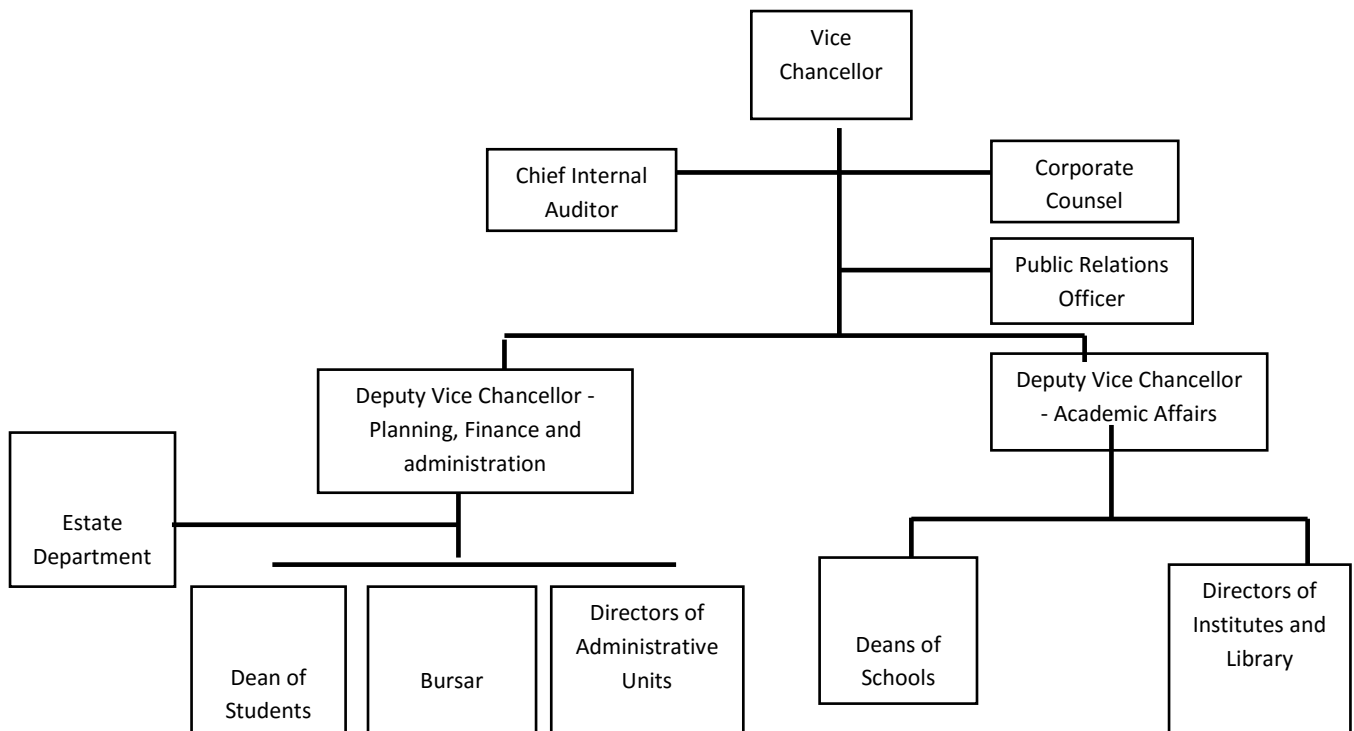
The set budget had hence laid down the tone for the design process to proceed. According to Walker's weighting concept of client's objectives [16]; price in this instance took more than 35% of total objective points; that, it became a dominant factor. (Refer Figure 1)

## ***2.2 Award and contractual arrangement***

The successful bidder was awarded the contract at a fixed contract sum of US \$557,500, at a cost per square meter of USD 506.81. This cost is higher than the preliminary cost as it is now established from detailed drawings where each cost for an element of the building is illustrated and precise measurements done using the Standard Method of Measurement as East Africa (1970).

The contract was signed between the Client, the chief executive officer of the institution and the contractor. At implementation phase, the client's different organs represented the chief executive in various roles. The Heads of department/division provided briefing of requirements; the estate department took charge of all technical verifications, various client's committees and organs being responsible for other approvals related to the project. Such approvals covered technical requirements, financial matters and completion times.

On award and subsequent construction process that ensued, the role of users noted to remain in the background while the estate department took a more dominant role as the client. Figure 2 shows the Clients organization structure illustrating the various parties of the Client.



**Figure 2:** Client’s organization structure

### 3. Results

#### 3.1 Customer relationship management

The significance of customer relationship management in aspects of quality is vital as observed in an incident that occurred. All reinforced concrete for use in the project was specified by consultants as concrete grade ‘20’ (i.e. mix of 1:2:4 of cement: sand: coarse aggregate respectively; and all plain in situ concrete to be concrete grade 15(i.e. mix of 1:3:6 of cement: sand: coarse aggregate respectively). However only on award of contract fortunately before the work on site had commenced did the estate department who was now representing the client at operational phase made a statement regarding the quality policy of its buildings. The policy requires, all reinforced concrete to be grade ‘25’ (1:1.5:3 of a mix of cement: sand: coarse aggregate respectively) and plain in situ concrete to be of grade ‘20’ only. This was definitely a change of specification that necessitated a variation. An approval had to be sought from the client through its organs. These approvals went through its estate committee, the University management and the Tender board. Hence the first interim certificate started with a variation. Its total effect was an addition of \$17,500.

Had there been good customer relationship management between the project team (consultants) and the client (in his totality inclusive of all internal stakeholders); that the former understood the nature and complexity of the client and how he operates and the latter understanding himself [16]; the client’s quality policy on reinforced concrete work could have been cleared from the outset.

As the work progressed, project users continued to come up strongly with requirements that had to be taken

aboard. This behavior supports Winch’s [15] acknowledgement of the fact that as the project unravels during its life cycle more information becomes available to the various interest groups and different functional requirements emerge. For the case studied, requirements that emerged were both of functional and aesthetic nature; the result of which was a significant surpass of the contracted sum (Refer Table 1)

**Table 1:** User driven changes, net additions and purpose

	<b>Proposed Changes</b>	<b>Net additions</b>	<b>Purpose</b>
		<b>US\$</b>	
	Addition of an extra floor	132,500	Functional
	Roof cover specification change	8,244	Aesthetic
	Ceiling material specification	6,242	Aesthetic
	Window type	9,716	Aesthetic
	Finish to external wall	5,328	Aesthetic
	Room layout	1,000	Functional
	Additional cooling equipment	11,250	Functional
	Miscellaneous items	1,250	Functional
	<b>Total additional cost( \$)</b>	<b>175,530</b>	

The Client’s initiated change of concrete specification of US \$ 17,500 if included, the total cost as a result of the changes is US\$ 193,030; a value which was 34.62% of the contracted sum. This final cost definitely is not in accordance with client’s expectation [25] metaphor identified such dissatisfaction as cost of quality. The final project cost brought frustration to the client who was compelled to solicit additional funding from its development budget.

**3.2 Manifestation of user satisfaction in end –product and its implication on project costs**

As the project progressed, users felt a marginalization of their needs, a scenario replicating [18] theory that power emanates from psychological *group formation* resulting to a shared social identity; an identity that brings in influence and exertion of power (ibid). In the case studied the marginalization of users’ interests either functional or aesthetic resulted to a social identity within the client’s organization that exerted power and influenced design decisions. The changes introduced to meet the new project requirements created a cost overrun of US\$ 193,030 (refer Table 1).

**3.3 Success of TQM practice- and client’s satisfaction**

Another concern of the author with regard to the case studied is whether the outcome reflected a successful TQM practice. Some of the essential features of TQM such as: leadership and management commitment;



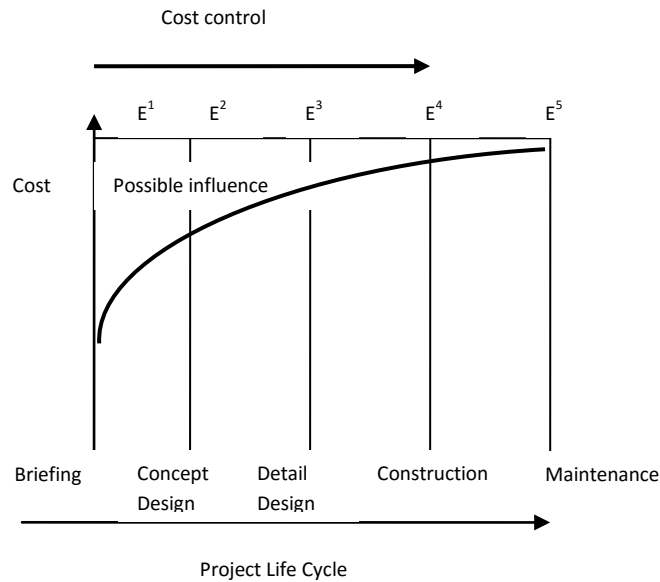
communication; teamwork; customer satisfaction; quality measures [6] are absent. A holistic approach as explained in [23] is likewise missing; quality is centered in satisfying the client that has pay authority. Integration, another essential of successful TQM (ibid) is also absent; as the project was managed in hierarchical compartments of: client, consultants, users, contractors etc. Absence of customer focus, a focal point of TQM [31] contributed to dissatisfaction of both client and user.

#### 4. Conclusion

##### 4.1 Understanding the complex nature of the client and power relations

The significance of understanding the complex nature of client and the diverse interests has been illustrated; that the client could be a multifaceted entity that may constitute; the one with authority to approve payment, or the financier, the user, the one with authority for quality assurance and technical performance etc.

The author further advocates for the thrust of user participation at design phase, as it is a phase where opportunity of influence with relatively less costs prevail. Figure 3 illustrates cost check points  $E^1$ ,  $E^2$  and,  $E^3$  of facilitating user participation; at briefing, conceptual and detail design stages of a project. One notes  $E^4$  and  $E^5$  definitely as the most costly stage when changes are introduced. During the occupation stage or the maintenance phase of the project,  $E^5$  opportunities for cost control are limited.



**Figure3:** User influence areas

Key:

$E^1$  = Most influential stage for managing cost (Briefing stage)

E<sup>2</sup>= Influential stage for managing cost (Concept design development)

E<sup>3</sup>= Less influential stage for managing cost (Detail design development)

E<sup>4</sup> = Least influential stage for managing cost (Construction stage)

E<sup>5</sup> = Influence of cost very limited (Maintenance/ Occupation stage)

Knowing the power relations in client's organizations is a strategy towards understanding the client's organization and henceforth fulfilling his diverse objectives. Likewise, the client is advised to understand how his organization operates in relation to commissioning of construction projects. This is imperative since it is believed once the client understands the complexity of his organization, this will prompt enhancement of competence in purchase of services.

Reference [32] have considered the customer to include a whole host of stakeholders besides the paying client, such as end users, the public and the environment; alleging, a design that accommodates these external customers goes a long way to including most of what good buildings aim to achieve. This view as given in [31] augments what has been portrayed by the case studied.

The case has also illustrated the two-way relation of project management and TQM implementation as purported by Hides, and his colleagues [10]. The cost overrun of 34.62% experienced by the case is noted surpassing significantly the 5-7.6% established in [33] of a study in the UK construction industry. A plausible explanation for such deviation in magnitude of cost emanating from design changes at post contract stage is that Cox and his colleagues [33] used multiple cases that represented very successful projects; while the single case used, does not qualify that recognition. Nevertheless, findings of factors leading to design changes at post contract stage of a construction project are noted similar: designer's omission in tender documents, coordination defects in tender documents and employer changing his requirements.

The role of leaders in facilitating implementation of TQM through fostering internal communication as stated in [34] is proven to be weak. For the case, the leaders include the project manager, the multi-role client with roles changing according to task such as: party to contract, brief provider, technical coordinator, verifier of payment, and end- user.

## **5. Learning experience from the case study**

The case study has distinctly illustrated the significance of understanding the complex nature typical of public clients when drawing project objectives. The article has shown decisions to influence use of resources is not necessarily dictated by ownership of resources. Social power inherent in the users of the case study had proven this scenario; whereby user influenced decisions that had a significant effect to the construction cost.

Clients in industry can learn from the case experience and acknowledge the significance of internal customers in fulfilling project objectives.

For the design team the case has highlighted the significance of having a complete understanding of the client's organization, so as to capture the heterogeneity and priority of objectives in clients' organizations.

## **6. Limitation of the study**

The study has limited itself to a single public client in a construction project. The analysis of the case limited to available theories in assessing processes and phenomena as reflected in the single case studied relevant to the study's objective. Further limitation has been in the "customer"; influence of the external user customer was not considered. The study has limited its investigation to the internal and end user customers only.

## **7. Recommendations**

To achieve public clients' objectives in construction projects service delivery entities are obliged to understand the diverse and competing interests of such clients. For successful delivery of services they have to capture their heterogeneous and multi- constituent nature, strategies ways to serve customer needs and expectation and avoid client surprise [35, 36]. The public client has to develop competence for successful procurement of services. The skills include effective communication and team work, performance monitoring and measurement. The adoption of TQM shall hence embrace the said skills. The author recommends further research to examine the relationship between successful project management and the implementation of TQM practice in construction projects.

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