

Exploring the Constraints of Implementing Total Quality Management in the Civil Engineering Consulting Companies – A Case Study

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Abstract

Introducing Total Quality Management (TQM) system in the operation of consulting and construction organizations could result in improved quality product, performance and enhance clients' satisfaction. However, if the process is not implemented successfully, organizations do not reap the inherent benefits of adopting TQM. A Civil Engineering Consulting company that specializes in structural engineering, transportation engineering, and water engineering introduced the TQM system in 2008, to improve its service delivery. Inadvertently, after twelve years of operation, the intended improvements are not obvious. Therefore, the focus of this study is to identify the constraints responsible for the non-functionality of the TQM system. The case study research strategy of qualitative research was adopted, the data collected using mixed methods involving online questionnaire, interviews, and document analysis. The findings identified factors responsible for the low functionality of the TQM system in the organization, namely, ineffective communication, lack of training on the use of the TQM system, absence of progressive monitoring, low commitment by senior management, unavailability of quality documentation, absence of quality management personnel and the low involvement of employees. The research concludes that the success or otherwise, in the implementation of the TQM system, is significantly influenced by participation of senior management of the organization, which requires paradigm shift and demonstrated commitment to the implementation of the system.

Keywords

Clients' satisfaction, Improved performance, Organization, Senior Management, Total Quality Management.

1 Introduction

The market identifies the main competitiveness criteria, which include quality, innovation, price, reliability, operating costs, delivery time and service convenience. In the competitive environment, organizations are required to respond quickly to consumers' demands as their response will determine their share in the market (Semenov et al 2016). This compels organisations to re-engineer their operations and systems to be more customer-centred and address the multi-dimensional demand and globalisation challenges. All organizations are required to efficiently participate in this market where client expectations are increasing, and quality is essential (Ooi et al 2011). In service organisations, quality encompasses the result and the process because service production and consumption are not easily separated. Customers are the judges of quality in that if the results exceed expectations, then a customer is happy and when the opposite occurs then the customer is not satisfied (Sharabi and Davidow 2010).

Total quality management (TQM) is the process of identifying and administering the activities necessary to achieve the organisations' quality objectives, aimed at meeting customers' needs satisfactorily, which requires adequate understanding of customers' requirements (Puyzdek and Keller 2013),(Harte and Dale 1995). Quality management creates an environment and culture enabling the service provider to prevent faults instead of rectifying them (Culp et al

1993), through participants, enhanced communication, customer-driven quality, and continuous performance improvement as well as employing the quality management tools and techniques (Culp et al 1993). Furthermore, Culp et al (1993), observed that TQM key principles are: focus on customer orientation; continuous improvement; involving all team players in process improvement; preventing errors instead of correcting them; recognising teamwork, cooperation, and trust; providing training; decisions based on facts and not emotions or intuition; measuring and publishing successes. As opposed to products or goods, services are intangible performances that cannot be measured or tested in advance to determine quality. TQM methods for service organisations are based on integrating technical and interpersonal skills needed. TQM promotes an organisational culture, different from the authoritarian management styles employed previously, focusing on team players. Individuals in organisations are empowered by a culture promoting training, skills to perform, provides the authority and information, involves them in the organisation's success, rewards and recognition (Culp et al 1993).

TQM is a quality management philosophy, which differs from quality control. Quality control involves inspections or checking work, whereas quality management concerns preventing defects by correctly executing work. As a management strategy, the TQM objectives are client satisfaction improvement, improved organisational performance through providing quality services and products, achieved through teamwork, continuous performance improvement and customer-driven quality. If successfully implemented, TQM could result in an economically successful company with improved performance (Mosadeghrad 2014).

2. Objectives

The research objectives were to:

- investigate the areas where the quality management system is not operating effectively.
- investigate possible ways to improve the current state of the system.

3. Research Justification

This research was conducted following an engagement with an ABC Engineering director concerning the organisation's quality management system challenges. It was observed that an investigation could assist in identifying the hindrances on implementing the quality management system. The research findings are presented to the organisation for consideration.

3.1 Problem statement

Although ABC Engineering introduced a quality management system to mitigate against the quality challenges encountered, the system is not fully functional as their services are still not consistent, whilst the implemented strategies do not yield the expected results. Therefore, it is imperative to explore the constraints and proffer solutions.

3.2 Literature Review

3.3 Total quality management and the service industry

According to Ooi et al (2011), service quality was extensively debated in services literature, lacking a common definition. Several studies observed that TQM can improve organisational performance, service, quality delivery and customer satisfaction. Similarly, employee empowerment, continuous improvement, and communication, positively influence service quality (Ooi et al 2011). According to Pyzdek and Keller (2013), several organisations implementing TQM were dissatisfied with the results, however, a survey conducted on 500 United States of America companies, a third of the surveyed companies established their quality programmes as significantly impacting their competitiveness. However, failures of TQM are attributed mainly to the faulty implementation process of TQM techniques, without commitment to the underlying philosophy and low emphasis on costumers' satisfaction (Puyzdek and Keller 2013). Furthermore, deploying resources to acquire TQM tools, set up and staff quality department, without active commitment of senior management, supervision, progressive training and retraining, the objectives of the TQM system will not be achieved.

Civil engineering consulting companies are generally known as design companies in the construction industry, offering professional service. Intangible outputs characterise professional services (Harte and Dale 1995). Haywood-Farmer and Nollet (1994) states that professional implies possession of a relevant degree and some of the following traits:

- specialised knowledge and a high training intellectual degree preferred to physical skills
- individual judgement and autonomous action Employment
- delivering a service influencing individuals' lives

- conducting innovative work to develop the profession
- providing problem-solving professional advice
- adhering to practice codes

Professional service firms (PSF) are often described as organisations having non-professional staff with clearly defined functions, and professional staff arranged in various levels representing seniority and duties without reporting relationships (Haywood-Farmer and Nollet 1994). Professionals working for these service organisations are autonomous, requiring exercising individual judgement based on intrinsic values and beliefs and not on rigorous systems or procedures. Individualism, professional identity, and autonomy are the characteristics of professional cultures. These often result in professionals inheriting strong personal work distributions, contacts and accountability for their work (Harte and Dale 1995). In the case of engineers, the performance output varies amongst individuals attributable to the type of service provided, such as study, design, project management and supervision. Integrating interpersonal and technical skills is essential in achieving TQM in service organisations (Culp et al 1993).

Employee involvement and management commitment

Employee involvement in the implementation of TQM elicits accountability of actions related to employees' participation in the work process of the organisation. This involvement can be formal or informal in activities for improvement, teamwork, decision-making and commitment to the organisation's decision-making process (Haywood-Farmer and Nollet 1994). This allows the employees to have a sense of belonging, which enhances their motivation (Spinks and Wells 1995). Employee involvement in TQM is crucial as it empowers them, enabling their involvement in making decisions appropriate to their level in the organisation, enhances morale, production, innovation, and independence (Albuhisi and Abdallah 2018), allowing employees to conduct their work professionally (Albuhisi and Abdallah 2018), (Sun et al 2000).

Culp et al (1993) suggests an important step in achieving TQM in an organisation is a commitment by the Chief Executive officer (CEO). An organisation's CEO must be able to decide and not delegate the quality management decisions to their subordinates or steering committee without further significant personal involvement; this does not equate to commitment to change. This commitment is essential as senior leadership is the custodian of change in the organisation (Pyzdek and Keller 2013). Some of the ways senior management can demonstrate their commitment to quality efforts include:

- action preferred to words
- offering more training and an increased training budget
- involved by being students and instructors
- less questions to staff concerning timelines or profits and more questions concerning the work quality
- changing the work environment
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To excel in quality, quality management must be organisation-wide, from top management to other line officers in the organization. It was established previously that organisations with a high-top management level commitment produce higher quality products and service attributable to their focus on processes and improvement (Albuhisi and Abdallah 2018).

Therefore, success in the TQM implementation is possible when commitment to the quality improvement and understanding of requirements with leadership guidance are present in the company (Willar et al 2016). Although management is responsible for formulating and improving the system, with full control of the changes to the system, they cannot succeed without the assistance of employees in the organisation (Bradley 1992). Success in the implementation of TQM system in any organization, especially services organizations, is significantly influenced by employees' knowledge of the organisational culture, effective communication of the quality process, expectations, and the deliverables, as well as the emphasis on training and retraining on the use of the quality tools, without underestimating the prime position of progressive supervisions (Spinks and Wells 1995), (Willar et al 2016), Bradley 1992), (Brown 1992), (Quirke 1996).

To assist in achieving a successful TQM implementation, organisations must possess a reward structure to facilitate employees' determination to work for the whole system (Bradley 1992). This structure should be directed at benefiting quality performance by the organisation in preference to quantity output (Spinks and Wells 1995). The company's performance is the combination of all individual efforts. The reward system should be designed to reward performance

by group of collaborating people and not as individuals. Rewarding individual efforts may lead to personnel to overlook customer satisfaction and focusing on working for bonuses (Bradley 1992). Motivation of staff is critical in organisations and can be achieved by developing a system that make employees to be joyful in their work. It is believed that motivation is enhanced by the conducive atmosphere in the work environment (London and Higgot 1997).

Employee training

Training and development are vital to TQM (Brown 1992). Employee training and education is necessary for a quality organisation, largely because of the ever-changing technology and client needs (Bradley 1992). Similarly, employees' training facilitates the prospect of enabling organisations to achieve their goals of having their fair share of the market and customer satisfaction (Brown 1992). Training benefits include reduced errors and complaints, increased productivity, quality improvement, decreased turnover, low staffing costs, improved communication, flexibility, improved employee relations, and less accidents. Organisations can empower their employees by providing them with skills that assist in boosting their work confidence (Albuhisi and Abdallah 2018). Training empowers employees to provide quality work to internal and external clients (Brown 1992). TQM can expose inadequacies in an organisation, challenging management to implement continuous training, which enable employees to learn new methods, teamwork, from TQM techniques (Brown 1992).

Organisations often waste efforts on ill-conceived training, which does not relate to its strategic concerns and does not produce any return on investment. Conversely, training on TQM systems is tailored towards achieving organisational strategy for improving quality in all areas and levels within the organisation. During TQM implementation training, employees may be divided into groups according to their departments and levels in the organisations. Training needs can be identified by establishing the level where the organisation should be, whilst identifying the shortfalls, as well as meet the needs of the employees, sandwiched with effective communication skills.

Communication

Effective communication is instrumental in efforts to effect change in organisations, whilst the lack thereof constitutes a barrier to the necessary change. Defective communication structure and system negatively impacts on the employees, such as lack of direction and knowledge of the culture, goals etc., of the organisation, although they believe in executing their given tasks (Quirke 1996). Quality communication is the path designed through which leaders streamline their visions, ensuring participative management in the organisation. Various approaches exist in achieving quality communication; most effective is the TQM approach as it considers vision and value-driven leadership by elevating customer focus to a major level in the company strategy (Spinks and Wells 1995).

Effective communication structure provides a seamless two-way flow of information from senior management to tactical leaders and then to the operational leaders and to the operatives in the organisational floor. Similarly, the information should flow from the lowest level to the highest level of the organisation, to achieve the objectives of the organization and customers' satisfaction (Spinks and Wells 1995). Interestingly, there is yet not one TQM-framework-fit-all, for adaptation by any organization; it therefore suggests that each organization should develop its implementation framework, through effective communication and collaboration with all the relevant stake holders (Mosadeghrad 2014).

Organizational culture

Total quality management is a company culture-oriented philosophy obtained through perfection instead of appraisal. Implementation success and functionality depend on a useful organisational culture and culture concern people management and people care. TQM necessitate a mindset change in a company from a curative to a preventive culture with the focal point on the organisation staff. Total quality requires management to focus on the all-round personnel development and system changes (Munkherjee 1998). Organisational culture is an important factor in quality management implementation, concerning people matters, indicating that an organisation with a strong organisational culture can implement an effective continually improved management system, enhancing the company's performance (Willar et al. 2016). This, however, requires that the organisation's practice be in congruence for the quality practices to function.

To succeed in TQM implementation, an organisation needs to have a culture embedded in process management by establishing operational objectives and the eagerness to satisfy or exceed their client's objectives. During this process, personnel can represent change agents (Brown 1992). A valuable organisational culture enhances a harmonic

relationship throughout the organisation, whilst assisting in creating effective communication. This could improve employee performance and motivation (Willar et al. 2016). Yeh (2003) states the nature of work, the organisational structure, interpersonal relationships, and rewards and support focus as major dimensions for sustaining a quality culture.

Employee involvement

Employee involvement relates to accountability or action related to employee participation in work. This involvement can be formal or informal in activities for improvement, teamwork, decision-making and commitment to the organisation's decision-making process (Albuhisi and Abdallah 2018). This involvement renders employees sensing that they are an integral part of the organisation, enhancing their motivation (Spinks and Wells 1995). Formal involvement is when a structure and expectation support the participation and informal involvement occurring undocumented and without management's notice. This employee participation is a major enhancement through process improvement teams (Albuhisi and Abdallah 2018).

2. Research methodology

The case study method of qualitative research was employed to execute this exercise. This strategy was chosen because, case study approach can collect holistic and in-depth information, such as individuals' beliefs, emotions, and behaviours (Trigueros 2017). This method allows respondents to be open and in turn to contribute diverse useful ideas in addressing the concerns raised in the research exercise. The case study method can be employed to explore natural occurrences and normal events in natural settings, providing a comprehension of real-life experiences. This strategy has the advantage of providing a holistic view of situations with possibilities of revealing complexities. The information provided with this method allows the reader to relate with the context where it information was created and the 'ring of truth' it possesses (Guercini 2014).

The target population for this exercise was the entire workforce of 53 employees in all the departments of the organisation. However, a representative sample of 20 was chosen from the three levels of leadership in the organisation (Strategic, tactical, and operational levels). The demography of the participants is as shown in Table 1. In a typical qualitative research, sample size is not the essence, but the quality and quantity of ideas generated and found useful in addressing the research question (Yin 2014).

The mixed method was used for data collection, which include online questionnaire, complemented with face-to-face interviews and document analysis, to achieve the principle of triangulation. The online survey was an open-ended question, which allowed the respondents to provide information freely, anonymously at the comfort of their office, while the face-to-face interview was used to correlate, confirm and expand the information, in the salient areas in their response to the online survey. Similarly, the document analysis focused on exploring the policy framework and operational guidelines of the TQM system, available in the archive of the organisation (Trigueros 2017).

The principle of content analysis of qualitative data was employed to analyse the collected data. This allowed for the effective synthesis and grouping data to identify suitable themes (Sunday 2019). The results of the data collected, and its analysis are presented and discussed in the section for discussion of findings.

2.1 Research Validity

The research outcome is considered valid because of respondents' credibility, their function in the organisation's operations and knowledge of the research subject. Their information was correlated between the three levels in the form of triangulation of information (Tuner et al 2015).

3. Data Collection

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4. Results and Discussion

Table 1 below is used to demonstrate the research finding, which is the synthesis of information from the three sources of data collection and the suitable themes developed. While Table 2, presents the whole of the themes developed in this research exercise.

Table 1. Summary of findings and suitable themes

S/No	Interview question	Synthesis of response	Suitable theme
2.1	Are you aware that there is a quality management system being used in this organisation?	The respondents suggest an awareness of the existence of a quality management system in the organisation	Quality management personnel
2.2	If yes, what do you think is the purpose of the TQM system?	Responses to this question indicate that respondents understand the purpose of the TQM system.	
2.3	In your view, do you think the System is functional?	Most of respondents are of the view that the system is starting to yield some results, however the system processes are not fully understood by employees.	Training
3.1	Do you understand what is expected of you to meaningfully contribute to the effective implementation of the TQM system?	Not all employees in the company from all leadership levels understand their respective roles in the functioning of the system.	Communication
3.2	Did you receive training on using the system?	A few employees received training on the system.	Training
3.3	Who provided the training?	Strategic leaders were trained by external specialists while other levels of leadership have not received any formal training.	
3.4	What was the duration of the training?	Most of the employees have not attended training on TQM	
3.5	How often do you attend the training?	No periodic structured training programme not in place.	
4.1	Do you think you adequate training to perform your daily tasks to achieve the objectives of the Quality System?	Respondents are indicating that they are not adequately trained on the system.	
5.1	Do you regularly attend quality improvement meetings or discussions in your department?	No quality improvement meetings taking place in the organization.	Employee involvement
5.2	Have you participated in any process or initiative intended to improve the management system?	Employees are not partaking in the quality improvement discussions or meetings.	
5.3	Do you think management is committed to the implementation of quality management system and why do you think or do not think so?	Apart from strategic leaders, employees from other leadership levels in the organization are not convinced that the management of the organization is committed to the implementation of the system.	Management commitment.
6.1	Are you aware of any challenges or successes so far recorded since the implementation of the quality system?	Most respondents indicate that they are not aware of any successes or failures of the implemented system.	Communication.
6.2	Does the company have quality manuals?	The company does not have a manual available for the implemented system.	Documentation
6.3	Do you know any person employed by the company who	The organization does not have personnel assigned to oversee the implementation of the system.	Employee involvement

	is responsible for maintaining the implementation of the system?		
6.4	Do you think the company encourages teamwork and what is the reason for your response?	All respondents suggest that the organization encourages teamwork.	Culture
6.5	What suggestion(s) do you have for improving the level of implementation of quality in the organization?	<ul style="list-style-type: none"> • Establishment of quality management department • Clear quality standards • Improve accountability by clarifying job descriptions • Quality manual • Reward systems 	Quality management personnel
		Employee involvement	Employee involvement
		Effective communication	Communication
		Training on TQM	Training

Table 2. The themes developed

S/No	Theme
1	Communication
2	Training
3	Employee involvement
4	Quality management personnel
5	Management commitment
6	Documentation
7	Culture

To ensure brevity of information and sustain the interest of our reading audience, only three of these themes will be discussed, namely, communication, training, and senior management involvements.

3.1 Communication

A synthesis of information from the online questions and face-to-face interviews, the participants observed that the level of communication between employees and top management was not adequate to maintain quality standard in the operation of the organisation. The periodic meetings by the respective teams were more task oriented rather than pursuing the ideals of organisational culture or achieving quality standard. The importance of effective communication cannot be overemphasised in TQM implementation. A successful TQM system requires reliable process management, which in turn demand high level of commitment of senior management through exemplary leadership and effective communication. Effective communication, in all ramifications, be it formal, informal or verbal, non-verbal is the lubricant that facilitate policy assimilation, effortless performance of task and elicit commitment from the employees. Complementary to effective communication is the need for periodic and continuous training of employees, to increase and improve their skills and adaptation of new technologies (Willar et al 2016).

3.2 Training

As observed in the responses from the surveyed employees, the organisation should focus on training and retraining of his employees to be acquainted with the details and operational procedures of TQM. When employees are suitably trained in using the relevant devices provided to ease executing their duties, it becomes easier for them to improve in their productivity, identify problem areas in the processes and suggest the possible interventions to remedy the potential challenges in the workflow process. When there is effective working of internal workflow processes in an organisation, it encourages innovation, efficiency, improved product and production to satisfy customers' demand, as well as increased profitability for the organisation (Albuhisi and Abdallah 2018).

The key to effective working of a workflow process is training and retraining of employees. In a teamwork, the quality of the outputs in one process are inputs for another process in the workflow network (Bradley 1992). Thus, the quality

of the output at the end of the work process reflects the image of the organisation to the client. Therefore, it is imperative to prioritise orientation and continuous employee training in the operation of the TQM system, to improve employees' proficiencies in their work process, reduce the incidence of rework, delay and improved quality outputs.

To achieve success in training, allowing the employees to own and hone the new skills, it is helpful if the employees are involved in the development and execution of the training processes.

3.3 Commitment of senior management

The synthesis of information from the participants confirmed the fact that senior management of ABC Engineering are positively committed to the structure and operational processes of the organisation but lacking in the support for the tool of operation, especially TQM (Beer 2003). Observed that the failure of TQM system in many organisations "can be attributed to a gap between top management's rhetoric about their intentions for TQM and the reality of implementation in various subunits of the organisation. The gap varies from subunit to subunit due to the quality of management in each". This aptly describe the scenario in ABC Engineering; some teams are doing better than the others in the quality of their service deliveries. Senior management, in any organisation, influences change by adopting two key roles and operates through two key paths. The two key roles are strategic choices and leadership style, while the paths are their influence on unit and organisational outcomes. In this organisation, the influence of the senior managers is not felt at the unit levels and that is having significant impact on the organisational outcomes. The panacea and practical approaches that can be adopted to improve the influence of the senior managers on the units and organisational outcomes, include 'leader-member exchange' (Furst and Cable 2008) and empowering the tactical leaders of the organisation, as agent of change (Buick et al 2017). As suggested by the participants, the senior management of ABC Engineering may adopt the practice of designating someone, at the tactical level of leadership, with the responsibility of managing the operation of the TQM system and interface with the strategic leaders.

3.4 Quality management personnel

The collation of information from the participants (online survey and one-on-one interviews) suggests that the low performance of the TQM system in ABC Engineering revolves around the fact that there is no designated officer to coordinate, supervise and manage the process. There is a common saying that, 'everybody's job is nobody's job'. Therefore, to improve on the operation of the TQM system, appointing a designated officer (Quality management personnel - QMP) is imperative; such officer should be domicile within the human resource (HR) department. This is because, HR department coordinates the front desk and image management of the organization.

In many organizations, orientation, also known as onboarding exercise, is the exercise that helps the new employees to settle effectively into the new employment. Onboarding is a process that introduce the new employees into their new work environments, helping them to become part of existing teams and prepares the new hires to take on new responsibilities (Jeske and Olson 2022). The exercise exposes the new hires to organizational practices, processes, policies, and values, helping the new hires to adjust and develop positive attitudes in the new work environment (Caldwell and Peters 2018; Cesário and Chambel 2019). Furthermore, onboarding is beyond introduction or orientation of new hires to an organized process, going beyond the first few days, weeks, or months into the long future of the relationship between the new employees and the organization. Bell (2021) observed that the objectives of a functional onboarding process, "is to develop a long-term relationship between the new hire and employer over the employee's duration of employment. An organization's goal is to get new hires equipped to perform their duties quickly and smoothly so that they can contribute to the success of the organization".

The content and details of the exercise vary from organization to organization. Best practice suggests that onboarding programme should include, but not limited to, critical information about the organisation, vision and goal statement, organisational culture, role, responsibilities, relationship, and communication structure, as well as the function of supervisors, mentors, and senior management (Caldwell and Peters 2018; Jeske and Olson 2022). The information content of the orientation exercise should provide both general and specific guidance suitable for the level of each cluster of employees, on their roles, responsibilities, performance quality and performance measurement. The session should emphasis organisational culture, product quality and standard, as well as tools available for job performance, the formal and informal learning opportunities and continuous personal development (Bell 2021).

Progressing from the orientation exercise, the QMP continuously create awareness on the need to maintain quality service and product, inspect staff production sites (offices), interact with supervisors, identify, and organize trainings tailored towards improvement of function and end-product. Furthermore, the QMP interface between senior management, the tactical and operational levels of leadership to evaluate, measure performance and compliance to the

quality measures as well as resolve areas of challenges. This confirms the observation of Bell (2021) that onboarding exercise is beyond orientation programme. The effective use of the office of the QMP holds the potential of improved quality of the production processes, continuous improvement in the products available for delivery to the customer and reduction in the incidence of reworks.

3.5 Employee involvement

Essential to achieving the objectives of training includes the need to engage and actively involve the employee in the process, allowing them to see the training as skills development rather than the ease of executing their task. In this regard, they see the training as contribution to their career development, it motivates the employees to own the process, diligent to learn the requirements of the process, progressively applying the knowledge acquired in the execution of their tasks, innovatively improving on their proficiencies and dedication to achieving the organisation's goals set by senior management (Spinks and Wells 1995). Furthermore, when the employees are actively motivated, they run with the process, ensuring that the introduced system is functional (Sun et al. 2000). Periodic reviews of the procedures are essential to update the knowledge of the employees, enabling them to fully understand the system and constantly direct their energy towards achieving the objectives of the project at hand and the goals of the organisation. Employees, if involved, they easily come up with innovative ideas and solution to simplify the processes of executing tasks (Kit-Fai and Raj 2002).

To enjoy the benefits of TQM, organisations need to discuss the implementation with their employees regularly to track progress, processes improvements and resolve any challenges in any part(s) of the processes. The periodic (weekly) meeting of each team should be broad based, beyond the review of progress in given tasks, to include discussions on maintaining team quality in each process to reduce delay and rework. In addition to the periodic meeting, conscious efforts should be dedicated to supervision, to ensure quality is maintained.

3.6 Documentation

The trainings provided for any group of employees, especially at the operational level, should be reduced to basic steps, for ease of comprehension and application. They should equally be accompanied with suitable manuals and templates for application. This approach will assist the employees to know what to do, how to do it and be able to measure performance. It equally assists the supervisors to check compliance, effect correction during production and ensure quality product available for delivery to the customers. Effective and quality documentation facilitates the assimilation of training, ensure easy compliance to standard procedures, provides tools for periodic checks, guide management reviews and self-evaluations can be useful, ensuring procedures are not indiscriminately and separately developed (Kit-Fai and Raj 2002).

The TQM system is a complex and technical process that is difficult for operation without adequate training, suitable manuals, and periodic re-trainings, especially for operatives at the operational levels of leadership. It is, therefore, critical that the management of ABC Engineering should document the TQM processes and procedures, in the form of manuals and template, to ensure performance improvement.

3.7 Culture

Organizational culture describes what is unique about an organization, as expressed by the shared beliefs, principles and values established by the founders and communicated to the employees through different ways. What makes an organization's culture unique are the feelings, the air within the organization, standards, customs, process, and rules that it is based on. Regardless of company size and the industry they operate in, organizations embrace three elements-goals, people, and systems. People interact within a system, thereby contributing to the achievement of an organization's goals (Jigjiddorj et al. 2012). The system encompasses the organizational structure, process, and tools for operation. Understanding the organizational structure, system and tools of operation have significant influences on employees' commitment, job satisfaction, productivity, and retention (Manetje and Martins 2009; Habib et al. 2014).

Three elements of organisational culture evident in ABC Engineering are organisational structure, process, and tools. The organisational structure exemplifies a top-down-bottom-up system and horizontal relationship across departments. The employees are grouped together in teams, based on their specialty and functions, across the three levels of leadership (Strategic, tactical, and operational). Integral to the process of operation, each team has horizontal relationship with each other, fostering inter-disciplinary opportunities for knowledge sharing and problem solving (Habib et al. 2014). Furthermore, to improve on the quality of service delivery, among other things, the organisation

introduced the TQM tools. Inadvertently, the objective of introducing this tool have not been fully realised. Exploring the constraints and how to ameliorate the negative effects and chat a positive way forward are the objectives of this research.

4. Conclusion

The purpose of this research was to evaluate the level of understanding, use and identify the constraints to the effective implementation of the TQM operation in the Civil Engineering company, used for this research. The company introduced the TQM system in 2008, to improve its service delivery, retain its market share in the competitive environment and enhance customers' satisfaction. The case study method of qualitative research was employed to execute this research exercise. The findings revealed that it does not appear that the objectives for introducing the quality system is being achieved, especially with the spate of reworks, high level of low-quality service delivery and many customers have expressed their low level of satisfaction. The constraints observed are, among others, the lack of effective communication, training, active involvement of the employees and the commitment of senior management, as factors critically impacting the effective implementation of the TQM system.

Therefore, this research recommends that the senior management should lead the re-kindled interest in the implementation of the TQM system by:

- Employing quality management personnel to midwife the operation,
- ensure effective communication,
- Implementing a progressive training programme for employees
- Involving employees in the implementation process to enhance understanding of the system
- Documenting all make accessible all procedures and policies.

Since this research was conducted in a single organisation, efforts should be made to evaluate the effectiveness or otherwise of implementing similar quality measures in other civil engineering consulting organizations, in South Africa or else where in the world for effective comparison.

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