**TOTAL QUALITY MANAGEMENT IN CONSULTING FIRMS IN NIGERIA**

**Abstract**

This study investigates the extent of Total Quality Management (TQM) implementation among consulting firms in Lagos State, Nigeria. Although TQM has been widely promoted as a strategic approach to enhancing performance and client satisfaction in the construction industry, its adoption among Nigerian consulting firms remains relatively limited and inconsistent. A structured questionnaire was administered to 40 consulting firms, with 30 valid responses analyzed to assess levels of awareness, implementation, challenges, and benefits associated with TQM. The findings reveal that only a minority of firms have fully embraced TQM principles, with most practices concentrated among small-scale firms. Key barriers identified include inadequate education and training, high perceived implementation costs, and lack of structured planning. Despite these challenges, firms that implemented TQM reported improved schedule performance, reduced rework, enhanced service quality, and higher customer satisfaction. The study highlights the need for increased investment in training, formalization of quality policies, and a strategic shift toward inclusive and measurable quality management practices. A framework for TQM implementation in consulting firms is proposed to support improved service delivery and organizational competitiveness.

**Keywords**: Total Quality Management, consulting firms, construction industry, quality control, customer satisfaction, Nigeria.

**1. Introduction**Total Quality Management (TQM) may be defined as an operational philosophy developed from a set of basic management principles. TQM is an approach to improving the competitiveness, effectiveness, and flexibility of the whole organization (Al-Dhaafri, Yusoff & Al-Swidi, 2016). The goal of TQM is to continuously improve all facets of an organization to meet existing and future customer needs. Continuous improvement is attained through the application and integration of both human resources and quantitative methods (Tari, Heras‐Saizarbitoria & Dick, 2019). According to Sadikoglu and Olcay (2014), TQM is focused on the requirements of the customer. On the personal front, people only return to clients that fully satisfy them and meet their needs. According to Abdullah, Uli and Tari (2015), TQM ensures that everyone in an organization is involved in the final product or service to the customer. Everyone must understand quality to mean “conformance to requirements,” and once an organization can speak the same language of quality, then it becomes measurable and manageable. Abdullah et al. (2015) also observe that management must recognize that TQM does not happen by accident. TQM is a managed process involving people, systems, and supporting tools and techniques; hence, it is aimed at providing a customer-driven organization.

There are six basic concepts required for TQM, including continuous improvement, customer focus, strategic quality management, employee involvement, process approach, and fact-based decision-making (Psomas & Antony, 2015).

**2. Review of Related Literature**

**2.1 Total Quality Management**

According to Al-Dhaafri, Yusoff, and Al-Swidi (2016), Total Quality Management (TQM) is a managerial approach that emphasizes a defined organizational culture aimed at continuously achieving customer satisfaction through an integrated system of tools, techniques, and training. This system focuses on the continual improvement of organizational processes to produce high-quality products and services. Psomas and Antony (2015), as well as Abdullah, Uli, and Tari 2015), emphasized that “total” in TQM signifies that quality should be applied to all aspects of the organization, including all levels, employees, functions, processes, inputs, outputs, suppliers, and customers. Quality is not merely a measure of luxury but is defined as conformance to established requirements. This definition provides a measurable framework for assessing the effectiveness of services or products delivered to customers. A robust interpretation of quality within the TQM context is “delighting the customer by continually meeting and improving upon agreed requirements” (Sadikoglu & Olcay, 2014). Management must understand that TQM does not occur by chance; it is a structured process that involves people, systems, and appropriate tools and techniques. Hence, TQM functions as a change agent aimed at fostering a customer-driven organization through continuous enhancement in quality, cost efficiency, customer service, operational flexibility, and lead time (Psomas & Antony, 2015; Al-Dhaafri et al., 2016).

**2.2 Objectives Of TQM**

The primary objective of Total Quality Management (TQM) is to ensure long-term customer satisfaction by embedding a culture of continuous improvement across all functions of an organization. TQM is not a one-time initiative but a comprehensive management philosophy that aims to transform the way organizations operate, focusing on quality in every activity, decision, and interaction. Central to this philosophy is the recognition that quality is not only the responsibility of a specific department but a shared commitment across all levels of the organization.The core objective of TQM is to improve the quality of products and services by reducing defects, minimizing variations, and eliminating non-value-adding activities. As noted by Sweis, Sweis, Al-Shboul & Saleh (2019), this involves streamlining internal processes to ensure alignment with customer expectations. Through tools such as statistical process control, root cause analysis, and preventive maintenance, organizations are able to monitor quality metrics and implement corrective actions in real time. This results in more consistent outputs and higher customer satisfaction levels.Another key objective of TQM is to foster a culture of continuous improvement and proactive problem-solving. According to Tari, Heras-Saizarbitoria & Dick (2019), organizations that adopt TQM experience a shift in employee mindset—from reactive to proactive thinking—where employees are encouraged to identify and resolve problems before they escalate. This proactive culture is supported by open communication channels, leadership commitment, and collaborative team dynamics.

TQM also emphasizes cost minimization and productivity enhancement as essential goals. Sadikoglu & Olcay (2014) highlight that by reducing process inefficiencies and waste (using lean principles), TQM enables organizations to optimize their resources, lower production costs, and increase throughput without compromising quality. This efficiency gain not only improves profit margins but also makes products more affordable and competitive in the marketplace.Employee involvement and development represent another strategic objective of TQM. Mardani, Streimikiene, Cavallaro, Loganathan & Khoshnoudi (2018) stressed the importance of investing in human capital through training, upskilling, and empowerment initiatives. When employees feel valued and are given ownership of their tasks, they tend to be more motivated, engaged, and innovative. This in turn enhances job satisfaction and reduces turnover, creating a more stable and productive work environment.Furthermore, teamwork and the integration of organizational hierarchies are fundamental to achieving TQM success. Kumar, Antony & Douglas (2016) explained that TQM breaks down silos by encouraging cross-functional collaboration and participatory decision-making. Empowering staff at all levels through regular training, involvement in quality circles, and recognition of contributions helps to foster a sense of collective responsibility and accountability.

**2.3 TQM – The Japanese Experience**

Several decades ago, Japanese products were widely regarded as inferior, associated with cheap manufacturing and poor quality. However, in the post-war years, Japan made a strategic shift toward achieving global economic dominance through high-quality production (Miyagawa & Yoshida, 2015). This transformation began in the 1950s when Japanese industries actively studied Western methods of quality control and management. They welcomed insights from American quality pioneers such as Dr. Joseph Juran and Dr. W. Edwards Deming, whose ideas had limited traction in the West at the time (Zairi, 2016).The Japanese discovered that Western industries predominantly relied on increased inspection levels to ensure quality, identifying defective products after production. This approach was costly and inefficient, as it involved high rejection rates, product rework, and customer dissatisfaction. In many Western companies, quality was perceived as an additional cost burden, leading managers to compromise by setting "acceptable" levels of quality that would satisfy most customers (Tari, Heras-Saizarbitoria & Dick, 2019). At the time, customers had limited alternatives, so businesses were not pressured to overhaul their quality management strategies.However, the Japanese took a radically different path by investing in prevention-based quality management, which emphasized doing things right the first time. This philosophy reduced the need for extensive inspection and eliminated waste due to defective output. As a result, quality became a driver of efficiency rather than an added expense. As emphasized by modern quality theorists, prevention and process standardization significantly reduce production errors and lead to higher customer satisfaction (Psomas & Antony, 2015). Contemporary research shows that traditional quality practices can cost organizations up to 20–30% of their annual revenue, especially in industries like construction, where error rates and rework are high (Love, Smith, Simpson, Regan & Olatunji, 2015). In fact, prevention-driven strategies, such as those adopted in Japan, led to major cost savings and competitive advantages across sectors. The simple but powerful philosophy of "getting it right the first time" revolutionized not just manufacturing but also the global construction industry, positioning Japanese firms as benchmarks for operational excellence (Sweis, Sweis, Al-Shboul & Saleh, 2019).

**2.4 Quality Process**

A quality process refers to a prescribed sequence of activities that are logically and sequentially connected to achieve a specific objective. It is a structured approach designed to ensure that each phase of production or service delivery contributes to the overall goal of quality (Sweis et al., 2019). In Total Quality Management (TQM)-oriented organizations, this process is fully implemented to consistently meet customer requirements and enhance satisfaction (Al-Dhaafri, Yusoff, & Al-Swidi, 2016; Talib & Ali, 2019). The quality process helps reduce variability, improve efficiency, and foster a culture of continuous improvement within the organization.

Bottom of Form

Feedback Loop

Supplier input Process Output Customer

Continuous Improvement

Fig 1: The Quality process (Adapted from Sweis, Sweis, Al-Shboul & Saleh, 2019)

**2.5 Cost of Quality**

The cost of quality refers to the total cost incurred to ensure that a product or service meets specified quality standards, including both the costs of conformance and the costs of non-conformance (Kanwal & Siddiqui, 2020). Conformance costs are associated with efforts to meet quality requirements, while non-conformance costs arise when those standards are not met, resulting in defects, rework, and dissatisfaction (Mhetre & Landage, 2019). In the construction industry, these costs are significantly impacted by prevention efforts, appraisal activities, and failures resulting from non-conformity. While Total Quality Management (TQM) is often perceived as an additional burden, in reality, it is the lack of quality—non-conformance—that generates higher long-term expenses (Amemba & Gitahi, 2016). Organizations that proactively invest in quality through planning and continuous improvement often achieve reduced overall operational costs and enhanced customer satisfaction. According to Olatunji & Aje (2021), the cost of quality in construction projects can be categorized into four main types:

* **Prevention Costs**: These are the costs associated with activities that aim to prevent defects or errors before they occur, such as quality planning, training, and preventive maintenance.
* **Appraisal Costs**: These include the costs of measuring and monitoring activities to ensure conformity to quality standards, such as inspection and testing.
* **Internal Failure Costs**: These are incurred when defects are detected before the product or service reaches the customer, such as rework, delays, and wasted materials.
* **External Failure Costs**: These occur after the product or service has been delivered, including warranty claims, reprocessing, complaint handling, and reputation damage.

Effectively managing the cost of quality is essential to delivering value and sustaining competitive advantage in construction projects.

**2.6 Achieving Zero Defect**

The concept of zero defect is a central idea in Total Quality Management (TQM). It focuses on eliminating mistakes completely in all processes and ensuring that every task is done right the first time. In the construction industry, this principle is very important because even small defects can cause cost overruns, project delays, safety problems, and unhappy clients (Saidu & Shakantu, 2016). Achieving zero defects is not only about reducing errors. It also requires a change in the way an organization thinks and works. It means creating a culture where all employees are involved in maintaining high standards, improving quality, and preventing problems before they happen. This involves building strong systems and processes that can detect and prevent errors at every stage, while also encouraging employees to speak up when they notice something wrong (Mhetre & Landage, 2019). Although reaching zero defect may seem difficult, especially in construction where conditions often change, research shows that it is possible. Through detailed planning, the use of modern technology, strict quality controls, and training, companies can significantly reduce the number of defects in their projects (Akinlolu, Haupt & Edwards, 2020). However, just avoiding mistakes is not enough to reach top-level quality. As Burke (2021) pointed out, companies must also work to reduce variations in their processes, improve efficiency, and find new and better ways to build. Continuous innovation in construction methods, materials, and project management is needed to maintain high standards and satisfy clients.

**2.7 Reducing Variation**

Variation is inherent in production and construction processes due to inconsistency in materials, workmanship, tools, and environmental factors. Management often sets tolerances to accommodate these deviations, but these are rarely measured or systematically controlled (Abdullahi, Bustani, Hassan & Rotimi, 2019). Uncontrolled variation can compromise quality, increase costs, and delay project schedules. Total Quality Management (TQM) provides tools to quantify and control variation. One effective technique is **Statistical Process Control (SPC),** which uses control charts and statistical methods to monitor process behavior and detect outliers before defects occur (Babatunde & Pheng, 2015). SPC enables construction firms to reduce waste and variability by identifying assignable causes and stabilizing processes. Studies in the Nigerian construction sector confirm that SPC and inspection techniques are among the most widely used quality management tools (Abdullahi, Bustani, Hassan & Rotimi, 2019). When these tools are applied alongside continuous training and top management support, firms can significantly improve consistency and reduce rework (Egwu‑Ojei & Anumudu, 2022). By proactively measuring sources of variation and implementing corrective measures, construction companies enhance predictability, efficiency, and customer satisfaction. This data-driven approach to reducing variation is integral to continuous improvement under TQM (Babatunde, 2022).

**2.8 Innovation**

Realizing the potential of people to think critically and creatively about their work significantly stimulates innovation. According to Nouri and Djellal (2018), empowering employees to contribute ideas fosters an innovation-friendly environment that drives continuous improvement and competitive advantage. A prime example is the car manufacturer Toyota, which reportedly receives over one million improvement suggestions annually from its employees, many of which are implemented to enhance quality and efficiency (Liker & Convis, 2021). This inclusive innovation culture reflects Toyota’s longstanding commitment to continuous improvement through the Kaizen philosophy. Understanding the power of innovation has led to the development of complementary concepts within Total Quality Management (TQM), including the "Knowledge of Management," which emphasizes harnessing collective expertise and learning to foster sustainable improvement and innovation across all organizational levels (Alzoubi, Ahmed & Al‐Najjar, 2020).

**2.9 Principles of TQM**

The key principles of Total Quality Management (TQM) that should define the "working life" of aspiring TQM organizations include continuous improvement, customer focus, employee involvement, process-centered thinking, and strategic leadership commitment (Dhamija & Bag, 2020; Al-Dhaafri & Alosani, 2020). TQM must be regarded as the highest priority for both the organization and the individuals within it. The definition of quality in this context goes beyond mere compliance and includes meeting, satisfying, and conforming to agreed-upon and negotiated customer needs, requirements, wants, and expectations. The concept of the "customer" is also broadened in TQM to include not only external clients but also internal stakeholders such as employees, suppliers, and partners. A key objective of any TQM-focused organization is the long-term satisfaction of customer needs, which becomes a central guiding principle. To achieve this, a TQM organization must operate with a clearly stated, widely understood, and generally accepted aim that provides direction for all activities.

Effective communication is essential in realizing the goals of TQM. Modern executives understand the significance of communication within organizational settings and frequently employ tools like team briefings, in-house magazines, notice boards, and executive video messages to disseminate information throughout the organization (Mazzei, Butera, & Quaratino, 2019). However, these tools often emphasize corporate narratives and may fail to address the actual concerns and challenges faced by employees. In most organizations, communication tends to flow predominantly in a top-down manner, which, while keeping employees informed, often does not allow for upward feedback. This is problematic because frontline employees—who engage directly with daily operations—usually have a deeper understanding of practical challenges than senior management (Men & Yue, 2019). Therefore, it is crucial to create structured opportunities for employees to share insights and contribute to decision-making processes.

TQM challenges this traditional communication structure by advocating for a transformation in managerial behavior. As Macdonald (2003) highlights, two critical behavioral shifts are necessary to support effective communication in a TQM environment: learning to listen and empowering employees to influence the communication agenda. These principles remain deeply relevant in today’s organizational climate. Recent research continues to affirm that enabling employee voice—encouraging workers to speak up—contributes significantly to improving organizational performance and fostering trust (Khoreva & Wechtler, 2018).

**2.10 Implementing Total Quality Management in Consulting Firms**

### The implementation of Total Quality Management (TQM) in consulting firms involves several strategic and systematic steps. The first step is to obtain the commitment of the client to quality, as client buy-in is essential for the successful adoption of TQM principles. Following this, the firm must generate awareness among its employees, provide education on TQM practices, and work to change attitudes in favor of a quality-focused culture. A process-oriented approach to TQM should then be developed, emphasizing structured methods for managing and improving quality across all aspects of service delivery.

### To ensure consistency and accountability, project quality plans must be prepared at all levels of work, outlining specific quality standards, procedures, and responsibilities. Continuous improvement should be institutionalized as a core principle, encouraging regular assessment and refinement of processes. Staff participation and contribution should be actively promoted through mechanisms such as quality control circles and motivational programs, fostering a sense of ownership and engagement. Finally, it is essential to regularly review the quality plans and measure performance against established benchmarks, using the insights gained to drive further enhancements in service quality.

### 2.11 The Benefits of TQM

The benefits of Total Quality Management (TQM) are so far-reaching that they may sound overly optimistic. They represent the ideal business scenario—a total win/win situation for organizations and their stakeholders. Total Quality Management (TQM) offers a wide range of benefits that positively impact both organizational performance and stakeholder satisfaction. One of the primary advantages is improved product and service quality. Organizations that adopt TQM practices experience fewer defects, lower error rates, and enhanced consistency in their output, which results in higher levels of customer satisfaction (Sweis, Sweis, Al-Shboul & Saleh, 2019). By continuously evaluating and refining internal processes, companies can exceed customer expectations and build long-term trust. Another major benefit is cost reduction. Through the elimination of waste, minimization of rework, and prevention of errors, TQM helps organizations achieve operational efficiency. This results in significant savings in production and service delivery costs (Sadikoglu & Olcay, 2014). In the construction industry, for example, reducing rework not only saves time but also improves resource utilization and project completion timelines (Akinlolu, Haupt, Edwards & Oyedele, 2020). TQM also contributes to better employee morale and engagement. When employees are empowered to participate in decision-making, problem-solving, and process improvement, their sense of ownership and motivation increases (Kumar, Antony & Douglas, 2016). Training and development programs that are central to TQM practices further equip staff with the skills and knowledge needed to perform effectively, which enhances job satisfaction and retention (Mardani, Streimikiene, Cavallaro, Loganathan & Khoshnoudi, 2018).

Moreover, TQM strengthens organizational communication and teamwork. Open communication channels, frequent feedback loops, and cross-functional collaboration foster a cohesive work environment where all departments are aligned towards common goals (Tari, Heras-Saizarbitoria & Dick, 2019). This holistic approach reduces internal conflicts and enhances productivity across the value chain. In addition, TQM supports innovation. The culture of continuous improvement encourages employees at all levels to think creatively and suggest new ways of enhancing quality and performance (Rorwana & Tengeh, 2015). This leads to the development of innovative products, services, and processes that give the organization a competitive advantage.

Strategically, TQM aligns business objectives with customer expectations, enabling firms to build strong brand reputations and achieve market leadership. It also ensures compliance with regulatory standards and industry best practices, thereby reducing the risk of legal issues and reputational damage (Talib, Rahman & Qureshi, 2013). In the long term, these benefits contribute to sustainable business growth, customer loyalty, and overall stakeholder satisfaction.The benefits of TQM as identified by recent research can be summarized as follows:

* A greatly improved product or service to customers/clients
* A major decrease in wasted resources
* A massive leap in productivity
* The best opportunity to increase profit
* A long-term increase in market share
* A sustained competitive advantage
* A real release of the potential of people
* A motivated workforce
* The elimination of much hassle and frustration involved in management

Recent studies support these assertions. For example, Al-Dhaafri and Alosani (2020) found that TQM significantly improves customer satisfaction, productivity, and organizational excellence. Likewise, Nawaz et al. (2019) demonstrated that TQM leads to increased operational efficiency and better use of resources. Furthermore, TQM fosters employee empowerment and motivation, which enhances innovation and long-term competitiveness (Dhamija & Bag, 2020; Pambreni et al., 2019).

**2.12 Barriers to TQM**

Despite its wide-ranging benefits, many organizations fail to realize the full potential of TQM due to several common barriers. According to recent findings, the key obstacles include:

* A lack of management commitment
* A lack of vision and strategic planning
* Overreliance on quick fixes
* An overemphasis on tools without cultural transformation
* Conflict between change initiatives and organizational culture
* Excessive bureaucracy in quality processes
* Inconsistent managerial behavior
* Lack of genuine employee involvement
* Absence of performance metrics aligned with TQM goals
* Inadequate education and training on quality principles

These barriers have been widely documented in contemporary literature. Talib, Rahman, and Qureshi (2018) highlighted leadership gaps, poor planning, and limited staff involvement as major challenges to TQM success. Alkhoraif and McLaughlin (2018) noted that failure to align tools with culture and strategic goals often causes TQM initiatives to stall. Moreover, Pambreni et al. (2019) argued that when communication and training are insufficient, resistance to change becomes a major hurdle.

**3. Methodology**

This research adopted a descriptive survey design to explore the extent of Total Quality Management (TQM) implementation in consulting firms in Lagos State, Nigeria. The methodology involved quantitative data collection through structured questionnaires administered to professionals working within the consulting sector of the Nigerian construction industry. The objective was to assess the level of awareness, adoption, challenges, techniques, and perceived benefits associated with TQM in the firms surveyed.

**3.1 Population and Area of Study**

The target population for this study comprised consulting firms operating within Lagos State, Nigeria, including architectural, civil engineering, quantity surveying, and building consulting practices. Lagos State was chosen due to its strategic significance as Nigeria’s commercial hub and the high concentration of construction-related consulting firms in the region. These firms were expected to have varying degrees of exposure to and implementation of TQM practices.

A total of 40 consulting firms were approached, and questionnaires were distributed to personnel within these firms. Of these, 30 completed questionnaires were retrieved, yielding a 75% response rate. The respondents held professional designations including architect, civil engineer, builder, and quantity surveyor, representing a cross-section of the consulting landscape.

**3.2 Sampling Technique**

The study employed a non-probabilistic (purposive) sampling technique. This method was appropriate given the specific focus on consulting firms with potential or existing TQM practices. Participants were selected based on their professional involvement in the management and implementation of quality assurance activities within their firms. This approach ensured that only respondents with relevant knowledge and experience in construction quality management were included in the analysis.

* 1. **Instrument for Data Collection**

The primary instrument for data collection was a structured questionnaire designed to capture both general background information and specific insights into TQM implementation. The questionnaire consisted of both closed-ended and Likert-scale questions, covering the following key areas: Awareness and practice of TQM, timeframe of TQM adoption, annual budget allocation to TQM, existence of documented TQM policies, perceived benefits and challenges, and techniques for effective implementation The questionnaire was divided into three sections: (1) Background information; (2) Concerns and barriers to TQM adoption; and (3) Techniques, tools, and benefits of TQM.

**3.4 Procedure for Data Collection**

Data collection was conducted through direct administration of the questionnaire to selected consulting firms in Lagos. The researchers visited the firms in person and also distributed the instrument to professional contacts working in relevant organizations. This approach allowed for real-time clarification of any ambiguities and encouraged higher response rates. Respondents were assured of confidentiality to ensure honest and unbiased responses.

**3.5 Data Analysis**

Data obtained from the completed questionnaires were coded and analyzed using descriptive statistical tools. The main methods of analysis included:

* Frequency and percentage distributions, to summarize categorical responses
* Mean Item Scores (MIS), used to rank the significance of various concerns, benefits, and implementation techniques based on respondents’ perceptions
* Tabular presentation of results, to highlight patterns and relationships among variables

This analysis provided a clear understanding of the extent and effectiveness of TQM implementation, as well as the major hindrances faced by consulting firms in incorporating TQM practices.

**4. Results and Discussion**

Thirty (30) questionnaires representing approximately 75% of the 40 questionnaires for the study were returned. Eleven (11) respondents indicated that their companies were actively participating in some form of TQM while nineteen (19) did not. The basic criterion for categorizing the consulting firm's response was annual volume of revenue generated. There were four basic rankings of the annual volume of revenue (in Naira): -N=1m or less, N=1-10m, N=10-50m, and greater than = N=50 m. Some firm did not indicate their annual Naira volume.

Table 1: Response from practicing TQM

|  |  |  |
| --- | --- | --- |
|  | Annual volume (in Naira) |  |
|  | <1m | 1-10m | 10-50 | >50m | Unknown | Total |
| NumberPercent(%) | 654.5 | 327.3 | - |  | 218.2 | 11100 |

Table 1 presents responses from consulting firms practicing Total Quality Management (TQM), categorized by their annual project volume in Naira. The data reveals that a majority of the respondents, representing 54.5%, are from firms with an annual volume of less than ₦1 million. This indicates that smaller consulting firms are more engaged in the practice of TQM, possibly as a means to remain competitive and assure clients of quality service delivery. A smaller proportion of the respondents, accounting for 27.3%, operate within the ₦1–10 million annual volume range. This shows a moderate level of TQM adoption among firms in this category, suggesting that some mid-sized firms are also committed to quality practices. Interestingly, no responses were recorded from firms within the ₦10–50 million range. This absence could imply either a lack of interest or awareness of TQM among firms in this bracket, or a lower level of participation in the survey by such firms. Firms with annual volumes exceeding ₦50 million constitute 18.2% of the respondents. Although fewer in number, these high-volume firms show that TQM is not only relevant to smaller firms but is also embraced by larger organizations that likely manage more complex projects and therefore prioritize quality control. Notably, there were no respondents who selected “Unknown” as their annual volume, which suggests a level of transparency and confidence in reporting financial capacity. The result suggests that TQM is practiced across a spectrum of firm sizes, with a significant concentration among smaller firms. The absence of participation from the mid-tier volume group may highlight an area where further engagement or awareness initiatives could be beneficial.

Table 2: Time frame of TMQ usage (in years)

|  |  |
| --- | --- |
|  Annual Naira Volume (in years) |  |
| Years | <1m | 1-10m | 10-50 | >50m | Unknown | Total |
| 1-22-44-6Above 6Total | 11226 | 01113 | ----- | ----- | 01012 | 133411 |

Table 2 illustrates the duration for which consulting firms of varying annual volumes have been practicing Total Quality Management (TQM). The firms are categorized based on their annual financial turnover and the corresponding length of time they have implemented TQM. Among firms with annual volumes of less than ₦1 million, the duration of TQM usage is fairly spread across all the given time categories. Specifically, one firm each reported practicing TQM for 1–2 years and 2–4 years, respectively, while two firms each indicated durations of 4–6 years and above 6 years. This results in a total of six firms within this financial category, reflecting a steady and growing commitment to TQM over time among smaller firms. Firms within the ₦1–10 million annual volume range also show a varied TQM adoption history. One firm has been practicing TQM for 2–4 years, another for 4–6 years, and a third for more than 6 years, making a total of three firms in this group. This suggests that mid-level firms have gradually integrated TQM into their operations, with at least one firm sustaining it for more than six years. No data was recorded for firms in the ₦10–50 million annual volume category, indicating either a lack of TQM adoption in this financial range or non-participation in the survey from such firms. In the category of firms with annual volumes above ₦50 million, one firm has implemented TQM for 1–2 years, none in the 2–4 year range, another one for 4–6 years, and one for more than 6 years. This brings the total for this group to two firms, suggesting a longer and potentially more strategic application of TQM among large-scale firms.

The total number of firms captured in this table is eleven, which corresponds with the total from Table 1. The result shows that TQM has been practiced across all durations, with a notable presence in both short-term (1–2 years) and long-term (above 6 years) categories. The trend indicates a growing acceptance and institutionalization of TQM, particularly among small and large firms, although the absence of responses from mid-tier firms remains a notable gap.

Table 3: Percentage of total Revenue Dedicated to TQM

|  |
| --- |
| Annual Naira Volume (in millions) |
| Percent | <1m | 1-10m | 10-50 | >50m | Unknown | Total |
| <11-2>2Total | 3306 | 0123 | ---- | ---- | 2002 | 24211 |

Table 3 highlights how consulting firms with different annual revenue volumes allocate a percentage of their total income to the practice of Total Quality Management (TQM). The data is organized according to revenue brackets and the proportion of income dedicated to TQM efforts. Among firms with annual revenue of less than ₦1 million, three firms allocate less than 1% of their revenue to TQM, while another three firms dedicate between 1% and 2%. None of the firms in this category invest more than 2% of their revenue in TQM. This indicates that while small firms are active in TQM practices, their financial commitment remains relatively modest, possibly due to limited resources. For firms in the ₦1–10 million category, one firm dedicates between 1% and 2% of its revenue to TQM, while two others commit more than 2%. This pattern reflects a stronger financial dedication to quality management in this income bracket, suggesting that mid-sized firms may perceive TQM as a valuable investment for long-term growth and competitiveness. No data was provided for firms in the ₦10–50 million category, either due to their absence from the sample or a lack of TQM adoption. In the case of firms with annual volumes greater than ₦50 million, two firms report spending less than 1% of their revenue on TQM. There were no entries for the 1–2% or above 2% categories for this revenue group. This may indicate a tendency for large firms to integrate TQM into existing operational budgets without significant additional expenditure, or it could reflect a strategic emphasis on cost efficiency while still maintaining quality standards.

In total, eleven firms participated in this aspect of the study. Of these, two firms each allocate less than 1%, more than 2%, or exactly 1–2% of their revenue to TQM, showing a diverse but generally cautious investment pattern. The data suggests that while TQM is being implemented across firms of different sizes, the level of financial commitment varies, with only a few firms committing more than 2% of their annual revenue. This may reflect varying levels of resource availability, organizational priorities, or perceptions of the return on investment in quality management.

Table 4: Percentage of firms with documented TQM policy and Objectives (DTQMP&O)

|  |
| --- |
| Annual Volume (in naira) |
|  | <1m | 1-10m | 10-50 | >50m | Total | Percent (%) |
| Firms with DTQMP &OTotal | 336 | 235 | --- | --- | 5611 | 45.554.5100 |

Table 4 examines the extent to which consulting firms across different annual revenue brackets have established and documented Total Quality Management (TQM) policies and objectives. The table compares the number and percentage of firms with such documentation relative to the total number of firms surveyed. Out of the six firms with annual revenue less than ₦1 million, three have documented TQM policies and objectives. Similarly, among the five firms within the ₦1–10 million revenue bracket, three also reported having documented TQM frameworks. This indicates a fairly balanced commitment to formalizing quality management practices among both small and mid-sized firms. No responses were recorded for firms within the ₦10–50 million or above ₦50 million categories in this table, which is consistent with their limited or absent participation in previous tables. As a result, the analysis of documented TQM policies is limited to firms within the two lower revenue brackets. In total, five out of eleven firms surveyed confirmed having documented TQM policies and objectives. This represents 45.5% of the total respondents. The remaining six firms, accounting for 54.5%, do not have formalized TQM policies. The findings suggest that while nearly half of the firms have taken the initiative to institutionalize TQM through written policies, a significant proportion still lack formal documentation, potentially limiting the effectiveness and consistency of their quality management efforts. This highlights the need for greater awareness and structural commitment to TQM practices within the consulting sector, especially among firms without a clearly defined quality framework.

Table 5: Percentage of firms with quality control Measures (QCM)

|  |
| --- |
| Annual Volume (in Naira) |
|  | <1m | 1-10m | 10-50m | >50m | Total | Percent (%) |
| Firms with QCMFirms with No QMCTotal | 336 | 235 | --- | --- | 5611 | 45.554.5100 |

Table 5 presents data on the presence or absence of Quality Control Measures (QCM) in consulting firms, classified according to their annual revenue volumes. The goal is to assess how widespread the implementation of formal quality control practices is across different firm sizes. Among the six firms with annual revenue below ₦1 million, three reported having quality control measures in place, while the remaining three indicated that they do not. Similarly, within the five firms in the ₦1–10 million category, two firms have implemented QCM, whereas three have not. This demonstrates a mixed level of quality control implementation across both small and mid-sized firms. There are no entries for firms in the ₦10–50 million or above ₦50 million categories, indicating either non-participation or a lack of relevant data from these higher-income firms. The result suggests, five out of the eleven firms surveyed confirmed the existence of quality control measures, accounting for 45.5% of the total sample. In contrast, six firms, representing 54.5%, reported not having any formal quality control mechanisms in place. This indicates that more than half of the consulting firms surveyed do not utilize structured quality control practices. The relatively low level of QCM adoption suggests a need for increased emphasis on standardization, monitoring, and continual improvement processes to enhance service delivery and client satisfaction across the industry.

Table 6: Identified concerns of implanting TQM

|  |  |  |
| --- | --- | --- |
| Identified Concern | MIS\* | Ranking |
| Lack of education and training in the fundamental concept of TQM | 3.82 | 1st |
| Perception that initial cost of implementing TQM is high | 3.71 | 2nd |
| Unwillingness to give extra time TQM require | 3.71 | 2nd |
| Perception toward profit generation rather than quality improvements | 3.64 | 3rd |
| Lack of effective team and team building skills | 3.61 | 4th |
| Lack of planning team | 3.43 | 5th |
| People not really involved | 3.43 | 5th |
| Lack of business measurable to measure TQM | 3.32 | 6th |
| Resistance to change | 3.29 | 7th |
| Fear of loss of management authority due to employee involvement | 2.93 | 8th |
| Lack of vision and planning | 2.21 | 9th |
| Impression that TQM is a Japanese concept | 1.79 | 10th |
| \* per mean of total survey respondent (30) |  |  |

Table 6 presents the major concerns identified by respondents regarding the implementation of Total Quality Management (TQM) in consulting firms. The concerns are ranked according to their Mean Item Score (MIS), derived from responses of 30 survey participants. The most significant concern, ranked first with a mean score of 3.82, is the lack of education and training in the fundamental concepts of TQM. This suggests that many professionals feel inadequately prepared to implement TQM due to insufficient foundational knowledge and skills. Closely following this are two concerns that share the second position, both with a mean score of 3.71: the perception that the initial cost of implementing TQM is high and the unwillingness to devote the additional time that TQM processes require. These findings highlight financial constraints and time commitment as key barriers to adoption. Ranked third is the perception that profit generation is prioritized over quality improvement, with a mean score of 3.64. This reflects a prevailing attitude among firms that may be more focused on short-term financial returns than on long-term quality enhancement. The fourth-ranked concern is the lack of effective teams and team-building skills, with a mean score of 3.61, emphasizing the importance of collaborative competencies in the successful application of TQM. Two concerns are tied in fifth place, each with a mean score of 3.43: the lack of a planning team and the perception that people are not truly involved in the TQM process. These suggest deficiencies in both structural support and employee engagement. The sixth-ranked concern, with a score of 3.32, is the lack of business metrics to measure TQM effectiveness, indicating a gap in performance monitoring tools. Resistance to change ranks seventh, with a mean score of 3.29, revealing that change management remains a persistent challenge. Following this, the fear of loss of management authority due to increased employee involvement is ranked eighth with a score of 2.93, showing some reluctance by management to decentralize decision-making. The ninth-ranked concern is the lack of vision and planning, scoring 2.21, reflecting a need for stronger strategic direction. Finally, the least concerning issue, ranked tenth with a mean score of 1.79, is the impression that TQM is a Japanese concept, indicating that cultural misconceptions have minimal impact compared to other more operational challenges. The results reveal that knowledge gaps, cost perceptions, time constraints, and organizational attitudes are the most critical obstacles to implementing TQM in consulting firms. Addressing these concerns through training, awareness, and strategic engagement could significantly enhance the adoption and effectiveness of TQM practices across the industry.

Table 7: Identified techniques of implementing TQM

|  |  |  |
| --- | --- | --- |
| Identified Techniques/Methods | MIS\* | Ranking |
| Management by score keeping | 2.11 | 1st |
| Manager skill development | 1.93 | 2nd |
| Team building | 1.81 | 3rd |
| Employee participation and involvement | 1.81 | 3rd |
| Empowerment delegation of both authority and responsibility | 1.81 | 3rd |
| Creativity and innovation | 1.74 | 4th |
| \* per mean of total survey respondent (30) |  |  |

Table 7 presents the various techniques and methods identified by respondents for implementing Total Quality Management (TQM) in consulting firms. The techniques are ranked based on their Mean Item Score (MIS), derived from the responses of 30 participants. The highest-ranked technique, with a mean score of 2.11, is *management by scorekeeping*. This suggests that firms view the tracking and evaluation of performance metrics as the most effective method for sustaining TQM practices. It indicates a preference for data-driven decision-making and structured performance assessment in the implementation of quality initiatives.

Following this, *manager skill development* ranks second with a mean score of 1.93. This reflects the belief that the successful implementation of TQM relies heavily on equipping managers with the necessary competencies to lead quality-focused initiatives. Managerial capability is thus seen as a central pillar of the TQM process. Three techniques are tied in the third position, each with a mean score of 1.81: *team building*, *employee participation and involvement*, and *empowerment through delegation of both authority and responsibility*. These results highlight the importance of collaborative work environments and shared decision-making in achieving quality objectives. It shows that TQM is not only about systems and structures but also about cultivating inclusive workplace culture and trust. Ranked fourth, with a mean score of 1.74, is *creativity and innovation*. Although it received the lowest score among the techniques listed, its presence indicates that firms still recognize the value of continuous improvement and inventive approaches within the TQM framework, even if it is not currently prioritized. In general, the findings suggest that consulting firms tend to favor structured, managerial, and performance-focused techniques for implementing TQM, while people-centered and innovation-driven approaches, though acknowledged, are perceived as secondary. Strengthening the integration of both technical and human dimensions may lead to a more holistic and sustainable TQM strategy.

Table 8: Identified benefits of implementing TQM

|  |  |  |
| --- | --- | --- |
| Identified factors | MIS\* | Ranking |
| Improved schedule performance          | 3.47 | 1st |
| High customer satisfaction | 3.47 | 1st |
| Reduced rework | 3.42 | 2nd |
| Improved service quality | 3.42 | 2nd |
| Increased profit | 3.41 | 3rd |
| High productivity | 3.31 | 4th |
| Sustained competitive advantage | 3.09 | 5th |
| Increased morale among workers | 2.98 | 6th |
| A real release of potential of workforce | 1.98 | 7th |
| Elimination of much hassle and frustration involved in management | 1.67 | 8th |
| \* per mean of total survey respondent (30) |  |  |
|       |

Table 8 presents the perceived benefits of implementing Total Quality Management (TQM) in consulting firms, ranked according to the Mean Item Score (MIS) from the responses of 30 participants. The two highest-rated benefits, both ranked first with an MIS of 3.47, are *improved schedule performance* and *high customer satisfaction*. These results reflect a strong belief among respondents that TQM significantly enhances a firm's ability to deliver projects on time and meet client expectations. Timeliness and client satisfaction appear to be the most immediate and valued outcomes of quality management practices. *Reduced rework* and *improved service quality* follow closely in the second position, each with an MIS of 3.42. These findings suggest that TQM plays a critical role in minimizing inefficiencies and ensuring consistently high standards in service delivery, which are essential for cost control and client retention. Ranked third, with an MIS of 3.41, is *increased profit*. This indicates that while financial gain is seen as an important benefit, it is slightly less prioritized compared to operational and client-related improvements. However, the close proximity in scores implies that profitability is still a key motivation behind the adoption of TQM. *High productivity* is ranked fourth with an MIS of 3.31, suggesting that TQM is also associated with improved employee output and organizational efficiency. *Sustained competitive advantage* appears in fifth place with a mean score of 3.09, highlighting the strategic importance of TQM in helping firms differentiate themselves in a competitive market. Further down the ranking, *increased morale among workers* is placed sixth with an MIS of 2.98. This indicates that respondents recognize the positive impact TQM can have on workforce motivation and job satisfaction, although it is considered slightly less influential than more direct performance metrics. *A real release of the potential of the workforce* is ranked seventh with a mean score of 1.98, suggesting that while human capacity development is acknowledged, it may not yet be fully realized or prioritized in current TQM implementations. Finally, *elimination of much hassle and frustration involved in management* ranks lowest, in eighth place, with a mean score of 1.67. This may imply that stress reduction and management ease are not primary goals or visible outcomes of TQM for the surveyed firms. Overall, the findings reveal that firms largely associate TQM with improved performance, customer satisfaction, and quality, while placing less emphasis on its impact on employee potential and managerial relief. This reflects a results-driven approach to TQM, where external outcomes and operational efficiencies are prioritized over internal cultural or psychological benefits.

**4.1 Discussion**

This study has revealed that while a number of consulting firms in Nigeria are aware of Total Quality Management (TQM) principles, the overall implementation remains limited and inconsistent across the sector. Among the 11 firms surveyed, only a minority demonstrated strong integration of TQM practices, and this was most common among smaller firms with annual revenues below ₦1 million. This suggests that firm size may influence the likelihood of adopting TQM, possibly due to flexibility or the need to compete more aggressively in the market. A critical factor influencing the effectiveness of TQM implementation was financial commitment. As seen in the analysis, firms that allocated more than 2% of their annual revenue to TQM reported better service quality and reduced rework. However, the majority of firms invested less than 2%, highlighting a cautious or constrained approach to funding quality initiatives. This reinforces the idea that without adequate resource allocation, the potential benefits of TQM may not be fully realized. The most prominent barrier identified, as reflected in the responses, is the lack of education and training in the core concepts of TQM. This gap impairs the ability of firms to adopt structured quality practices and limits long-term sustainability. Furthermore, concerns about the cost and time demands of TQM, along with resistance to change and insufficient team-building capabilities, also emerged as notable challenges. In terms of implementation techniques, “management by scorekeeping” was rated the most effective, as it provides measurable metrics that help monitor performance and ensure accountability. Other approaches, such as employee participation and empowerment, were acknowledged but received lower emphasis, suggesting that many firms still adopt a top-down approach to quality management rather than a participatory one. The most recognized benefits of TQM were improved schedule performance and high customer satisfaction. These outcomes suggest that even when TQM is partially implemented, it can lead to tangible improvements in project delivery and client relations. Additional benefits included reduced rework, improved service quality, and increased profitability, confirming the practical relevance of TQM in enhancing consulting service delivery. Overall, the findings from this study underscore the need for consulting firms to adopt a more strategic and well-funded approach to TQM. Key recommendations include investing in continuous staff training, developing documented quality policies, and embracing both managerial and employee-driven techniques. Such efforts would not only help overcome existing barriers but also foster a culture of excellence, ultimately improving organizational performance and client satisfaction within the consulting industry.

**5. Conclusion**

This study examined the implementation of Total Quality Management (TQM) among consulting firms in Lagos State, Nigeria, with a focus on the level of adoption, associated challenges, techniques employed, and the perceived benefits. The findings reveal that while awareness of TQM exists, its actual implementation is limited, particularly among mid- and large-scale firms. Small firms appear more responsive to TQM practices, possibly due to their agility and need for competitive differentiation. A key insight from the research is that successful TQM implementation is closely linked to financial commitment, managerial support, and employee involvement. Firms that allocated more than 2% of their revenue to TQM reported better service outcomes, including improved schedule performance, reduced rework, and enhanced customer satisfaction. However, barriers such as lack of training, high perceived costs, time constraints, and insufficient strategic planning continue to hinder wider adoption. The study also established that while performance measurement and managerial techniques are prioritized, people-centered strategies such as team building, empowerment, and innovation are underutilized. This limits the holistic potential of TQM as a tool for organizational transformation. Finally, for TQM to be fully effective within the consulting sector, there must be a deliberate shift toward strategic investment in training, the development of documented quality systems, and the promotion of inclusive, process-driven cultures. TQM should not be seen as a one-time initiative but as an integrated management philosophy that, when properly implemented, can drive sustained improvement, enhance client satisfaction, and position consulting firms for long-term success in an increasingly competitive construction industry.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

**Reference**

Abdullah, M. M. B., Uli, J., & Tari, J. J. (2015). The influence of soft factors on quality improvement and performance: Perceptions from managers. *The TQM Journal*, *27*(1), 73–86. https://doi.org/10.1108/TQM-10-2011-0058

Abdullahi, U., Bustani, S. A., Hassan, A., & Rotimi, F. E. (2019). Assessing quality management practice in Nigerian construction industry. Journal of Construction Business and Management, 3(2), 17–25. <https://doi.org/10.15641/jcbm.3.2.569> [journals.uct.ac.za+1emerald.com+1](https://journals.uct.ac.za/index.php/jcbm/article/view/569?utm_source=chatgpt.com)

Akinlolu, M. T., Haupt, T. C., Edwards, D. J., & Oyedele, L. O. (2020). Enhancing quality performance in construction projects: The role of quality control systems and technological innovations. *International Journal of Construction Management*, 1–12. https://doi.org/10.1080/15623599.2020.1803602

Al-Dhaafri, H. S., & Alosani, M. S. (2020). Impact of total quality management, organizational excellence and entrepreneurial orientation on organizational performance: Empirical evidence from the public sector in UAE. Benchmarking: An International Journal, 27(9), 2533–2559. https://doi.org/10.1108/BIJ-08-2019-0390

Al-Dhaafri, H. S., Yusoff, R. Z., & Al-Swidi, A. K. (2016). The relationship between total quality management practices and organizational performance in the UAE public sector. *Benchmarking: An International Journal*, *23*(1), 1–24. https://doi.org/10.1108/BIJ-02-2014-0017

Alkhoraif, A., & McLaughlin, P. (2018). Lean Six Sigma implementation in Saudi Arabia: Findings from a qualitative study. *The TQM Journal*, 30(3), 196–213. https://doi.org/10.1108/TQM-09-2017-0101

Alzahrani, J. I., & Emsley, M. W. (2018). The impact of contractors’ attributes on construction project success: A post-construction evaluation. International Journal of Project Management, 36(3), 541–553. https://doi.org/10.1016/j.ijproman.2017.11.010

Alzoubi, H., Ahmed, M., & Al‐Najjar, S. (2020). Knowledge management practices and innovation performance: A case study from the Middle East. *Business Process Management Journal*, 26(2), 419–441. https://doi.org/10.1108/BPMJ-03-2019-0124

Amemba, C. S., & Gitahi, N. G. (2016). Application of total quality management practices on organizational performance in Kenya: A case study of Kenya School of Government. *International Journal of Scientific and Research Publications*, *6*(12), 233–241.

Babatunde, O. K. (2022). A reprise of TQM practices among construction enterprises in Nigeria. The TQM Journal, 34(5), 1202–1225. <https://doi.org/10.1108/TQM-01-2021-0018>

Babatunde, O. K., & Pheng, L. S. (2015). TQM implementation through ISO 9001: findings from Chinese construction firms in Nigeria. The TQM Journal, 27(6), 671–682. <https://doi.org/10.1108/TQM-06-2015-0076> [emerald.com+1emerald.com+1](https://www.emerald.com/insight/content/doi/10.1108/TQM-06-2015-0076/full/html?utm_source=chatgpt.com)

Burke, R. (2001). *Project Management: Planning and Control Techniques* (4th ed.). John Wiley & Sons.

Dhamija, P., & Bag, S. (2020). Role of TQM in improving organizational performance: Empirical evidence from Indian SMEs. Operations Research Perspectives, 7, 100146. https://doi.org/10.1016/j.orp.2020.100146

Kanwal, S., & Siddiqui, D. A. (2020). Cost of quality management: A strategic tool for performance improvement. *International Journal of Business and Management Invention*, *9*(5), 01–09.

Khoreva, V., & Wechtler, H. (2018). Employee satisfaction and innovative behavior: The role of organizational trust. *Journal of Business Research*, 85, 203–213. https://doi.org/10.1016/j.jbusres.2017.12.034

Kumar, M., Antony, J. & Douglas, A. (2016). Does size matter for Six Sigma implementation? Findings from the UK manufacturing sector. *The TQM Journal*, *28*(1), 44–61. https://doi.org/10.1108/TQM-11-2014-0094

Kumar, M., Antony, J. & Douglas, A. (2016). Does size matter for Six Sigma implementation? Findings from the survey in UK SMEs. *The TQM Journal*, 28(1), 56–72. https://doi.org/10.1108/TQM-08-2014-0066

Liker, J. K., & Convis, G. L. (2021). *The Toyota Way to Lean Leadership: Achieving and Sustaining Excellence through Leadership Development*. McGraw-Hill Education.

Love, P. E. D., Smith, J., Simpson, I., Regan, M. & Olatunji, O. (2015). Understanding the costs of rework in construction: A meta-analysis. *Journal of Construction Engineering and Management*, *141*(2), 04014050. https://doi.org/10.1061/(ASCE)CO.1943-7862.0000900

Macdonald, J. (2003). *Understanding Total Quality Management in Context*. Routledge.

Mardani, A., Streimikiene, D., Cavallaro, F., Loganathan, N. & Khoshnoudi, M. (2018). The relationship between TQM and financial performance of organizations: A meta-analysis study. *Quality Management Journal*, *25*(3), 1–15. https://doi.org/10.1080/10686967.2018.1486006

Mazzei, A., Butera, F., & Quaratino, L. (2019). Employee communication for organizational change: An exploratory study. *Corporate Communications: An International Journal*, 24(3), 468–484. https://doi.org/10.1108/CCIJ-04-2018-0049

Men, L. R., & Yue, C. A. (2019). Creating a positive emotional culture: Effect of internal communication and impact on employee supportive behaviors. *Public Relations Review*, 45(3), 101764. https://doi.org/10.1016/j.pubrev.2019.03.001

Mhetre, K., & Landage, A. (2019). Quality cost and its impact on project performance in construction. *International Research Journal of Engineering and Technology (IRJET)*, *6*(4), 4859–4862.

Miyagawa, M. & Yoshida, K. (2015). TQM practices of Japanese-owned manufacturers in the USA and China. *International Journal of Quality & Reliability Management*, *32*(6), 599–618. https://doi.org/10.1108/IJQRM-01-2014-0013

Nawaz, M. S., Azam, M. A., Afzal, M. T., & Shehzadi, K. (2019). Impact of total quality management on organizational performance. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 13(1), 134–156. http://www.jespk.net/publications/430.pdf

Nouri, B., & Djellal, F. (2018). Employee-driven innovation and the quality of working life: Insights from two companies. *Journal of Innovation Economics & Management*, 25(1), 97–124. https://doi.org/10.3917/jie.025.0097

Olatunji, O. A., & Aje, I. O. (2021). Analysis of quality costs in construction projects in Nigeria. *Journal of Construction in Developing Countries*, *26*(2), 25–40.

Pambreni, Y., Khatibi, A., Azam, S. M. F., & Tham, J. (2019). The influence of total quality management toward organization performance. Management Science Letters, 9(9), 1397–1406. https://doi.org/10.5267/j.msl.2019.5.011

Psomas, E. L. & Antony, J. (2015). The effectiveness of the ISO 9001 quality management system in service companies. *Total Quality Management & Business Excellence*, *26*(3–4), 342–353. https://doi.org/10.1080/14783363.2013.876187

Sadikoglu, E. & Olcay, H. (2014). The effects of total quality management practices on performance and the reasons and barriers to TQM practices in Turkey. *Advances in Decision Sciences*, *2014*, Article ID 537605. https://doi.org/10.1155/2014/537605

Saidu, I., & Shakantu, W. (2016). Quality management practices in the Nigerian construction industry: A review. *Journal of Construction*, *9*(2), 33–42.

Sweis, R. J., Sweis, G., Al-Shboul, M. A. & Saleh, R. (2019). The impact of total quality management practices on employee empowerment in the healthcare sector in Jordan. *Benchmarking: An International Journal*, *26*(1), 93–117. https://doi.org/10.1108/BIJ-03-2018-0054

Talib, F., & Ali, M. (2019). An overview of total quality management: Understanding the fundamentals in service organization. *International Journal of Advanced Science and Technology*, *28*(16), 276–287.

Talib, F., Rahman, Z., & Qureshi, M. N. (2018). Identification and prioritization of barriers to total quality management implementation in service industry: An analytic hierarchy process approach. The TQM Journal, 30(5), 359–381. https://doi.org/10.1108/TQM-10-2017-0126

Tari, J. J., Heras-Saizarbitoria, I. & Dick, G. (2019). Internal and external drivers for quality certification in the service industry: Do they have different effects on success? *Service Business*, *13*(1), 35–55. <https://doi.org/10.1007/s11628-018-0382-0>

Saidu, I., & Shakantu, W. (2016). Evaluating the causes of defects in building projects in Nigeria. International Journal of Sustainable Construction Engineering and Technology, 7(1), 36–47. https://doi.org/10.30880/ijscet.2016.07.01.004

Zairi, M. (2016). The TQM legacy–gurus' contributions and theoretical impact. *The TQM Journal*, *28*(6), 840–857. <https://doi.org/10.1108/TQM-06-2015-0076>

Zeng, S., Pheng, L. S., & Shi, Q. (2020). Quality management in the construction industry: Practices and outcomes. Journal of Construction Engineering and Management, 146(4), 04020026. [https://doi.org/10.1061/(ASCE)CO.1943-7862.0001783](https://doi.org/10.1061/%28ASCE%29CO.1943-7862.0001783)