The Assessment of Factors Preventing the Implementation of Total Quality Management Practices in Libyan Construction Industry

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Abstract
The core purpose of the thesis is to identify total quality management practices and areas with deficiencies in its implementation and to analyze the correlation that exist between total quality management implementation and factors that are essential for total quality management implementation such as Team work, management commitment, employee training and organization culture in Libya industries as it is one of the bottle neck that has posed a drastic down toll in industrial growth for Libya construction industries. A questionnaire were structured and distributed to 15 construction firms in Benghazi, Libya. The questionnaire consisted of six parts which took into consideration the following: Respondent's profile, Quality knowledge in the construction firm, Application of total quality management implementation and other quality management tools in the construction firm, Benefits of total quality management implementation, Barriers to total quality management implementation in the firm. Findings from the study revealed that there exist a relationship between lack of management commitment, lack of team work, lack of training for quality improvement and organizational culture in implementation of total quality management implementation practices in Libya's construction industry.

Keywords: *TQM, Quality Management, Libya Construction Industry, Implementation, deficiencies.*

1. INTRODUCTION

1.1. TOTAL QUALITY MANAGEMENT

TQM concept was first made known in some developed countries notably Great Britain, Japan and United States. Within the world, firms are persistently engaged in attaining quality levels that are internationally acceptable so as to solidify their existence/position in the competitive international market especially firms from emerging economies (Abbas, 2020); (Eniola et al., 2019); (Psomas and Antony, 2017); (Bajaj et al., 2018); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Khan et al., 2019); (Prestiadi et al., 2019); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Mukhopadhyay, 2020); (Alghamdi, 2018). Sadly, the construction companies/industries has been playing negligence towards the incorporation of total quality management (TQM) practices in their services as it's a tool which ensures continuous improvement in services and products, so as to make sure that user/customer satisfaction are always reached (Abbas, 2020); (Eniola et al., 2019); (Psomas and Antony, 2017); (Bajaj et al., 2018); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Khan et al., 2019); (Prestiadi et al., 2019); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Mukhopadhyay, 2020); (Alghamdi, 2018). One of the reasons for lack of TQM actualization in construction industries is the perception that TQM is for manufacturing industries (Almad and Mohammad, 2015). Lack of incorporation of operational quality template guides in the construction industry has always counted to the loss of work

completion time (Abbas, 2020); (Eniola et al., 2019); (Psomas and Antony, 2017); (Bajaj et al., 2018); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Khan et al., 2019); (Antunes et al., 2017); (Mukhopadhyay, 2020); (Alghamdi, 2018), money and resources including Human material resources (Abbas, 2020); (Eniola et al., 2019); (Psomas and Antony, 2017); (Bajaj et al., 2018); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Khan et al., 2019); (Prestiadi et al., 2019); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Mukhopadhyay, 2020); (Alghamdi, 2018). Nevertheless, there are numerous issues that must be overcome to ensure the successful implementation of TQM in construction industries as a result of its vast nature of operational activities, professions and different organizations (Abdussalam et al., 2010). The management of works involves the employment of skills, techniques and knowledge so as to carry out works effectively with respect to the given work execution time line, quality and cost (Abbas, 2020); (Eniola et al., 2019); (Psomas and Antony, 2017); (Bajaj et al., 2018); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Khan et al., 2019); (Prestiadi et al., 2019); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Mukhopadhyay, 2020); (Alghamdi, 2018).

1.2. LIBYAN CONSTRUCTION INDUSTRY

Quality management system is one of the prerequisite for steady organizational growth. Consistency in the provision of high quality products and services is paramount for construction companies in line with the use of added value to intrigue their clients and also secure a place in a competitive business platform. The industrial sector which the construction industry is part of, is the backbone of any countries economy (Oaklas and Marosszeky, 2006); nevertheless, construction industries are faced with the numerous challenges ranging from high fragmentation, absence of standard of operations (SOPs), economy, instabilities and poor execution of works.

Libya is a country in Africa with over 1,759,540 square kilometres landmass hence, becoming the 17th largest country in the world according to size. Radical changes has been witnessed in the last few years in quality implementation among construction industries in Libya as a result of ISO quality policy imposed on construction companies by Libyan government. Nevertheless, as a result of poor experience on implementation of ISO standards by these industries, there happen to be difficulties associated with performance and quality. Study by Sayeh, (2006), on quality managers of construction companies in Libya showed that Libyan construction industries is having several challenges such as employee non-acceptance to changes to previous SOP and often of interests in production quantity to quality and lastly, lack of skilled labour.

1.3 AIMS AND OBJECTIVES

- Identification of the critical success factors of TQM.
- Identification of factors that prevent construction industries in Libya from adopting TQM practices.
- Identification of factors that will encourage proper implementation of TQM in Libyan construction industries.

1.4. PROBLEM STATEMENT

Further studies in the application of TQM is required as it is projected that cost of structure nonconformity and construction deviation results in 9% and2.5% of total work cost respectively. Further often, a system that guarantees quality is vital in today's business as there are currently global increased competition both at the international level and local level. From this time, the study will address the failure of TQM implementation by relating it to answers to the following questions:

- Are contractors in Libyan construction industries implementing TQM practices?
- If they are not, what is the cause of the difficulties?
- How can these difficulties' be prevented?

1.5. SIGNIFICANCE OF THE STUDY ANDCONTRIBUTION TO KNOWLEDGE

- The study will identify TQM practices and areas where there are deficiencies in its implementation in Libyan industries.
- The study will fill the knowledge lapses to the practice of TQM in industries.
- Results/outcome from the study will be beneficiary to manufacturing and construction industries in identifying the various lapses to the implementation of TQM, make adjustments were necessary so as to meet customers' satisfaction which is the end goal.

1.6. RESEARCH HYPOTHESIS

- **HI**: lack of management commitment affects implementation of TQM practices in construction industry in Libya.
- **HO:** lack of management commitment doesn't affect the application of TQM practices in Libyan industries for construction..
- **HI:** lack of team work affects the implementation of TQM practices in Libyan construction industry.
- **HO:** lack of team work doesn't affect implementation of TQM practices in Libyan construction industry.
- **HI:** lack of training for quality improvement affects adoption of TQM practices in Libyan construction industry.
- **HO:** lack of training for quality improvement doesn't affects adoption of TQM practices in Libyan industry for construction purposes.
- **HI:** organizational culture can affect TQM adoption and practice by Libyan construction industry.
- **HO:** organizational culture does not affect TQM adoption and practice by Libyan construction industry.

2. LITERATURE REVIEW

For the sole purpose of companies to grow, there are two major questions that are often asked first one is what is the goal of the firm?, and second one is how will the firm achieve these goals. In a very competitive market for construction industries often contributing to a nation's development, the right part for maximum profit and development for the construction firm is to ascertain its business platform and develop a plan to attain a competitive advantage in the market.

This chapter will throw often emphasis, into the current status of construction industry in Libya with often emphasis on TQM management, its implementation and the vital success factors. Quality as defined by British standard institution is the ability of a product to supply the stated requires based on its characteristics and features, McCabe, (2015). It also defined as "fitness for use/purpose". The definition directly hints on customer's satisfaction hence, it is regarded as the main definition of quality with regards to manufacturing and service rendering industries, El-Sawah, (2015).

One of the forces that leads to organizational growth and national industrial growth at large is the successful implementation of TQM in industries, Abdussalam et al, (2010). There exist various challenges currently affecting construction industries in Libyan and majorly on the unsuccessful precise of TQM in industries in Libya which is a very critical issues because, if TQM is successfully implemented as study by Abdussalam et al, (2000), shows that it will

empower employees and boost the image of Libyan construction industries in the international market.

In line with the afore mentioned advantages of TQM implementation, the study will investigate challenges facing TQM implementation in construction industries in Libya as some other neighboring countries are affected by the economic cycle of Libya. TQM implementation is still required as losses incurred as a result of non-TQM implementation amounts to 9.6% of total work cost and2.5% to construction deviation (Abbas, 2020); (Eniola et al., 2019); (Psomas and Antony, 2017); (Bajaj et al., 2018); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Khan et al., 2019); (Antunes et al., 2017); (Mukhopadhyay, 2020); (Alghamdi, 2018). Mohamed, (2000); suggested that factors that affect TQM implementation in industries include: Inadequate training of staffs, inadequate management of labour force site and poor verification procedures of material, structures and workmanship. While Oaklas and Marosszeky, (2006); expressed the benefits of TQM implementation as reduction in quantity cost, client recognition, employee satisfaction and closer relationship with subcontracts and suppliers. The application of TQM is desperately needed in construction industries as millions of dollars that belongs to the public is invested in construction works with large amounts of same money lost as a result of poor construction management and shoddy works. Critical success factors (CSFs) of TQM represent those factors that are directly related to TQM successful implementation. Hence, these factors must be given adequate attention so as to ensure organizations high performance, Ganhinathan et al, (2007). CSFs ensures that organizations operations are in-line with its visions.

Koh et al, (2007) proposed that companies/organizational culture is somehow related to the level of its TQM implementation. TQM implementation requires understanding cultures of an organization as it is vital to know if quality is the state of mind of members of a particular Manufacturing/construction firm.

2.1 GENERAL OVERVIEW OF LIBYAN INDUSTRY FOR CONSTRUCTION

In Libya, the Ministry responsible for water resources housing and works and the ministry responsible for roads and transportation are in charge for the monitoring and issuance of certificate of operation to construction contractors. However, even though these ministries give certificate of operation to contractors, they don't go a step further to ensure development and sustainability of the various construction industry. There are two main departments in the ministry responsible for construction industries in Libya, one is in charge of construction for housing, civic works, factories and hospitals and infrastructures for adequate water supplies, irrigation, transportation and the generation of power. The other part deals with the construction of much lesser buildings that requires little skilled labour as this construction works does not need stipulated standard requirements. The former is charged with the responsibility of monitoring mostly government infrastructural works, having both the government and various public institutions as its clients. Construction and housing works are considered in Libya as one of the vital tools for speedy development however, it appears to be that young and local entrepreneurs are left out on undertaking major construction works. In general, the state of housing in Libya, is very poor in virtually all areas ranging from inadequate access to good water, poor drainage system with no clear-cut policy to rebuild these things by reconstructing the various aforementioned area.

Construction is a vital ingredient for an ever growing economy. It is understood that construction encourages national socio-economic development by making available appropriate employment avenue for both the non-skilled and skilled levels (Ahmet et al., 2007). Libya's economic historical records started when the economy was solely dependent on farm produce, trade and industry. Agriculture was the talk of the day as of the pre-colonial

era when individuals engage into some form of agriculture (which could be cultivating of crops or rearing of animals).

During the post-colonial era, the industry was also booming in mining, making of clothes and carving activities. The industry manufactures products that attracted European trading gold trade, ornaments and cloth were vibrant as the Europeans very much involved in the trade activities within the region. The economy in the post-colonial era has grown rapidly with the respect to the various successive government economic orientation. Diverse policies proposed by the IMF, World Bank etc. have been incorporated to enlarge productivity and help skyrocket the economy of Libya.

2.2 TEAMS FOR CONSTRUCTION WORK FOR TQM: EXPLORING A FACTOR-ELEMENT ACTUALISATION CONCEPT.

The factor-element impact model is a regulative, theory-based eventuality model. It is associated with sporting out the various factors that affect the success of total quality management (TQM) initiatives in construction works. This model relies on organizational theory, making use of organizational structure. If TQM is to avail, construction work teams ought to be put in place with the mind-set of implementing TQM. The major crucial factors influencing the success of particular work crew configuration are work characteristics (Ahmet et al., 2007).

Organizational makeup of participating organizations are also crucial. The contingency models emphasized as proposed by Ganhinathan et al., (2007), involves a successive approach of reorienting construction work teams to curtail negative toll on TQM. Strategic guides are offered on how to implement the model, and two cases are presented to drive home its application.

2.3 RELEVANCE OF TQM IN INDUSTRIES FOR CONSTRUCTION

Total quality management (TQM) is currently a vital area of interest in construction industry. Various literary works have been done in relation to acceptance of TQM concept in the construction sector (Abdussalam et al., 2010, Ganhinathan et al., 2007, Ahmet et al., 2007). Workshops and various training programs are frequently established to elevate a greater knowledge of the TQM concept. However, due to the mount of efforts giving, most firms and businesses that are part of the industry see TQM as an inscrutable scheme. While certain firms, view it as buzzword, and to others also, a difficult thing to adopt. However, this focuses on the general perception that is witnessed in various literary works about TQM implementation.

Add up to quality administration is a vital and prominent administration idea for as far back as two decades. There are different definitions credited to TQM by various analysts. Oakland (2015), communicated that TQM is an apparatus for enhancing adaptability, measures and viability of business. While Zaire and Simintiras (2015), communicated the idea of TQM as a method for doing the fitting thing all the time with contemplations to financial reasonability constantly the time. Add up to quality administration (TQM) approach has been progressively brought into development associations in numerous nations as a change technique for accomplishing consumer loyalty and business greatness. TQM has been received in development ventures in Europe, United States Canada, Australia and Japan to help raise levels of value, efficiency and consumer loyalty. (Mohamed et al., 2014). Around the world, quality administration in for all intents and purposes all work areas has been given extraordinary consideration over the previous decades (Mohammed and Hiyassat, 2000). In any case, of despise, considerations is floating towards change of development works through the execution of TQM framework in development ventures.

A significant number of investigates has been direct in connection to TQM in development ventures with the point of pinpointing the issues and difficulties confronting TQM usage in businesses over the globe. And furthermore give answers for this issues. Mohammed and Salem, (2000), in their examination on the utilization of ISO principles to development organizations in Jordan with the point of knowing whether the ISO-9000 models is legitimately actualized in the organizations of contextual investigations and also to know whether the said worker of the organization comprehends what really matters to ISO framework. The investigation demonstrated that there was an expansion in the level of ignorance of ISO-9000 norms among the directors, field designers and foreman with rate ignorance of 22%, 22.2% and 20% separately. Likewise, 16.7% of the Surveyed experts and an amazing 42.8% of the stockroom guardians are uninformed of what ISO-9000 is about. Mohammed and Salem, (2015), deduced in their examination that the issue prompting greater part of staffs' being unconscious of the ISO-9000 could be credited to either the organization's correspondence framework or with the organization's example of executing standard framework. Thus, advantages of models are not completely executed and this will influence the nature of administrations rendered by these businesses and furthermore consumer loyalty could be hampered.

May be, the vital perception towards the matter in the industry could be as a result of TQM principles were brought into place in the manufacturing industry. Hence, difficulties may come-up if implementation models production process structure and are mostly infringed on construction industries. Currently, various steps have been taken towards reforming TQM models specifically to construction industry. These contributions entail establishing of quality markers alongside a quality weighing. Though, the factors that contributed to the progress or non-progress in the implementation of TQM practices are yet to been accurately pinpointed. The outcome of a study on 200 contracting firms with income of $30 million to over $400 million in yearly revenues showed that majority of the high managers have no knowledge or incorporate TQM practices (Anon, 2015). The study hence, concluded that majority of employees and subcontractors in construction firms are not considerate about quality and hence unable to improve in quality of services. When it comes to construction works, teamwork is very vital. Hence, achieving success in a construction work highly relies in the composition of the work executive team. The study will look into the issue of establishment of crew for construction work. The aim is to come up with a model that relies on recognized and established hypothetical ideas from previous literary work.

2.4 VITAL FEATURES RELEVANT TO CONSTRUCTION WORKS

Construction is a conglomeration of different processes starting with the structures, plans and specifications which is then transformed into visible facilities and structures. It entails harnessing and putting in place all the assets required for work execution ranging from: everlasting and impermanent materials, labour, provisions and services, construction equipment, finance, and period for work completion, along the specified financial plan, and with established quality measures of and enactment outlined by the producer. When compared to goods of manufacturing, services rendered by construction firm is on increasing pivot and differ in certain extent. Each goods or services has its own distinct structure, and a definite process of construction. Construction works could be difficult, and is mostly a difficult process that regularly gives rise to disputes and disagreement (Abdussalam et al., 2010). Compared to the manufacturing sector, construction services is not a monotonous progressive process, it is hard to adopt statistical quantifying programs in the course of construction as the results often witnessed during the course of construction is orchestrated by a high level of improbability.

Construction has a much higher value compared to the manufacturing processes in relation to external factors, for example, weather. In this season of business rivalries, development firms are additionally confronted with the test of remaining above water in the focused business condition by attempting to ensure that its venture are finished effectively with abnormal state of consumer loyalty.

Mohamed et al., (2014), in their assessment of level of TQM execution and appropriate utilization of value apparatuses by Saudi development firms, planned an overview survey with the point of sourcing information from administrators and staffs of development businesses on their perspectives towards TQM usage. The discoveries of their examination is spoken to in figure 1. From these outcomes, plainly development businesses in Saudi has a frail level of value learning with low level of Implementation of TQM devices. Mohamed et al., (2014), in their examination inferred that most development organizations don't site their change systems in finding the significant reasons for issues that overload the advance of the business in connection to cost overwhelms, extend delays and the nature of their last items. The idea of TQM is considered as a vital device for business change by numerous analysts. Ahmet et al., (2004), in their examination on TQM execution in Turkish bond ventures (TCI) and the level of fulfilment clients get from their administrations found the accompanying:

Majority of firms have what TQM is about with top need of meeting consumer loyalty Product/administrations of the organizations are better than expected. The firms however make them weakness identified with documentation of requests, rating and choice of provisions/sellers. This can be overwhelmed by compelling execution of TQM apparatuses. TQM however immensely utilized as a part of both assembling and different enterprises is not frequently actualized in development businesses. There are misguided judgment of TQM being only a combination of measurable apparatuses or strategies. Despite what might be expected, it is more probable a vital apparatus for sorting out the assets of an organization/industry to meet universal benchmarks with least expenses.

Low and Jasmine, (2003), analysed the availability and comprehension of development contractual workers towards TQM and its usage. From their discoveries, they found that a large portion of the respondents trust that ISO-9001:2000 is helpful however ignorant of TQM usage benefits. Also, a portion of the respondents know that TQM can acquire change in the range related with enhanced item quality through orderly adherence to customers/clients fulfilment. In conclusion, the most minimal worker mindfulness was on the region of being insensible that TQM instruments can make business more aggressive. Table 2.1 demonstrates the reaction the respondents towards ISO-9001:2000 as a device to help firms rehearse TQM. Low and Jasmine, (2003), in their examination reasoned that contractual workers perspective of TQM usage as an additional cost thing without understanding that non-execution of TQM guidelines straightforwardly or in a roundabout way causes more costs for the firm. The Acceptance and usage of TQM practices can be credit to an organization's work culture. Kow and Low, (2008), researched the conceivable relationship between the usage of TQM hone and social introduction among Singapore affirmed contractual workers. In their examination, four authoritative culture was set up quite: chain of command driven culture, family determined culture, Strong thorough culture and feeble complete culture. They presumed that organizations that has solid extensive culture apply abnormal state of TQM rehearses over the organization's hierarchy of leadership. Organizations that are driven by family culture apply top process administration while organizations that are driven by feeble societies and pecking order driven societies apply low level of TQM hones. Construction industry is a highly structured industries as Amenities is to be erected in accordance to the stipulated code. Adequate protection precautions must be adhered to from the start-up to the completion of construction work in

accordance with the government's stipulated acts and regulations. The industry has different subparts causing the implementation of TQM practices particularly difficult.

Diverse industrial norms ranging from the awarding of construction works to the very lowest bidder, is part of the barriers to effective TQM implementation in construction industry. Establishing of work teams is usually with individuals from diverse entities with common differences and to certain length, conflicting aspirations and benefits. Engineers' and Architects are part of the construction process for significantly period. Hence, the make-up of the construction crew is usually not static. It tends to change as the construction work progresses. This uncertainty in the individual composition of a work teams is part of the difficulties witness in the adoption of TQM practices

The idea in this thesis has to do with the core contributors of failure or progress of TQM practice originates from the firm. TQM is not restricted to just adopting a few procedures, it goes a long way to do with accepting a new ideology. Therefore, firm's attributes occupy a crucial part for adoption of this ideology by an organization. Notions from organizational model are however accepted to be relevant in TQM adoption. As earlier emphasized, every construction work own uniqueness. However, majority of the works is likened to establishment of a new company to establish a particular distinct product. Work organizations made-up of teams whose responsibilities must be coordinated in other for a combined action to be achieve with agreed objectives. Eccles (1981) in his terminology used the term `quasifirm' to explain a construction work team.

2.5 ELEMENTS OF TQM

As earlier discussed, TQM mean differently to individuals. This draw backs is not only associated to construction industry. Drastic investigation to the causes of this difficulties is above the scope of this study. TQM is a distinguishing ideology, with a centered shared perception, however executed through diverse ways. Implementation of TQM is often in contradiction with the principles established through initiators of the programmed. These principles are taken rather concisely by many. Oak, (2015), in one of this publication, explained TQM to be `the sum method to achieve originality in the various aspects of management'. E study further pinpointed culture of an organization and commitment as the vital structure for TQM.

TQM Techniques has been utilized in mechanical and fabricating with the point of checkmating generation process and evasion of imperfections earlier them happening. Consequently, sparing cash. One of the difficulties in TQM usage is difference among advancement organizations (Leslie Lahndt, 2015).

Leslie Lahndt, (2015), examined the utilization of TQM in development industry, with more accentuation on which administration instruments are most fundamental for TQM application in development enterprises. The discoveries pinpointed three noteworthy ranges that need consideration for effective TQM usage. This include: the advancement of both delicate products and hard products that would help TQM execution in development organizations. The second is the predictable checking of value and amount to spending plans in-accordance with determinations and plans. What's more, in conclusion, the need to institutionalize, decipher and actualize development archives as the absence of this can prompt extensive variety of report understandings, authorization and testing models.

TQM frameworks help businesses in ceaseless change and along these lines accomplish universal gauges in territories of giving quality administrations to clients. It additionally outfits associations with the capacity to give great quality administration. Karuppusamii and Gandhinathan, (2007), in their examination utilized an online estimation strategy to evaluate the level of TQM execution in Indian enterprises. They found that there was abnormal state of duty towards quality administration in assembling enterprises working in India. Likewise,

the examination uncovered theta there was work preparing for representatives in quality administration hones. Sanir and Mohamed, (2003), explored the execution of TQM in the Palestinian modern challenge with the point of developing a casing work for TQM usage along these lines help firms in Palestine to actualize TQM activities viably.

Sanur and Mohamed, (2003), in their examination on assessment of TQM execution in Palestine with the point of distinguishing the fundamental and essential quality elements for fitting usage and to have an unmistakable seeing how the components are embraced and along these lines set in motion by associations in Palestine. Sanur and Mohammed, (2013), set out in these work in light of their view quality as a key thought for the accomplishment of any association. The soaring mindfulness by association's senior officials, who have come to realize that quality is a toll for key issues, henceforth, fundamental for all stages and progressive system's in an association.

A portion of the different components basic for TQM execution in any association as communicated by Sanur and Mohammed, (2013), include: the inclusion and duty of best administration, culture of the association, worker strengthening, devices and strategies for development. As per Sanur and Mohammed, (2013), it is frequently certain that in the western world, TQM execution needs hypothetical premise while it is completely ailing in creating nations because of little/no considerations to inquires about focused on these creating nations; in this manner can likewise be credited to national limits. Indeed, even till date, there exist restricted writing chip away at TQM usage in creating countries. The textures for execution of TQM as indicated by the Palestinian setting was determined by Sanur and Mohammed, (2013), in view of the examination disclosures of TQM rehearses in Palestine. The textures grandstands the imperative quality factor and how they connect to each other. In any case, Sanur and Mohammed, (2013), deduced in their examination that authoritative culture has no impact on the usage of TQM rehearses in any association

Hamzah et al., (2014) in their examination, on the effect of expert morals on nature of development organizations in creating economies found that unscrupulous demonstrations, represents a risk/undermines nature of development and subsequently driving low levels of clients/customers. He additionally repeated the requirement for development labourers to withstand to hard working attitudes and the requirement for the authorization of laws and standard codes of morals. He proffered answer for deceptive direct of development labourers by beginning that genuine initiative is the most ideal approach to upgrade demonstrable skill. Low and Jasmine, (2003), in their investigation on the usage of TQM in development firms through ISO-9001:200. Emphasized that temporary workers dependably observe usage of TQM as superfluous additional costs without realizing that the inverse is the situation as its non-execution will prompt non-adherence/consistence to quality which is more costly.

Kow Tas and Low, (2008), broke down authoritative culture and level of value selection in development firms working in Singapore recommended that a solid and adjust hierarchical culture is fit for guaranteeing quick usage of TQM in the firm. Thus there is requirement for that development to checkmate its social introduction and make changes were important to fortify process administration. Leslie Haldnt (2015) examined the utilization of TQM apparatuses by development firms with the point of deciding the imperative criteria for actualizing TQM development firms. The discoveries proposed to current status and bearing for ventures. The first is the requirement for breakthrough programming and equipment. The second is satisfactory contract observing. Mohamed et al., (2014), portrayed how operational states of the development organizations resembles; it's really a brutal circumstance and focused condition which is synonymous to survival of the fittest when discussing the consummation of the development extends in the best quality; even in the period of commonness difficulties of high cost material and constrained. The Saudi development was assessed utilizing the level of responsiveness of actualizing TQM. It was uncovered that there

is a misconception of value control administration, methodologies, instruments and procedures in development organizations, and that authoritative structure is a string obstruction for the usage of value administration framework.

2.6 ARCHETYPE OF DEMING

TQM CONCEPT is incessant progress characterized by a cycle (do + check, + plan, and+ act). This model remains continuously portrayed to be a model with a never-ending course. The make-up are:

1. *Plan* what ought to be executed (for instant, recognize very important, purposes and quality gauges).

2. *Do it* + progress with the arrangement (spot out goals, construct regulator systems, and apply on a lighter scale).

3. *Check* the eventuality (whatever occurs? Any positive result? What knowledge was gained?).

4. *Act* to avoid mistake or elevate the course (accept alteration, restraint if possible, try the sequence often). Visibly, this ideal is vital to a progressive procedure, such as production. Structure works have precise expectancy and cannot be a progressive steps. From this time, the PDCA concept might not be adopted for construction works. The ethics of this ideal is often useful for any work crew for construction works. Often, a huge connection exist between the developments of software and construction works. As both adopt divers work crew make-up, hire a flexible and include works of diverse length of risk, doubt and size. Notwithstanding, as PADRE may be adopted for managing a work crew for TQM, it however doesn't make provision for guidelines on methodology to be adopted in forming the work crew (Abdussalam et al., 2010). A significant number of looks into has been led in connection to TQM usage with the point of pinpointing the issue and difficulties confronting TQM execution in businesses over the globe, and also give answers for these issues. The following are a portion of the components important and critical for making progress in usage of TQM instruments. Administration in light of meeting consumer loyalty is the fundamental component for TQM. This is a circumstance where clients set the objective for TQM (Sayor, 2015). The capacity to stir certainty and bolster expected to achieve hierarchical objective is the premise of authority. The idea of administration is the empowering capacity of the administration of a firm or association to organize guidelines and long haul vision for the firm.

For achieving the progressive destinations, the gathering is basic. It has for a long while been by and large recognized that working individuals together in a gathering or assembling having typical targets is by a wide margin more convincing than individuals working alone. TQM execution requests that the gathering approach should not to be compelled to within affiliation aggregate just, but instead it should be utilized to cover dealers and take outside customers under their umbrella.

Repairing is an essential component for any viable quality organization program (Burati and Oswald, 2015; Chase, 2015a; Oakland, 2000). Chiefs and quality masters have successfully executed these in their affiliations. Undertakings to be executed must be investigated by individuals in the relationship as accomplishing quality under TQM is the obligation of everyone in the affiliation. The agents from the best organization of the firm ought to have the capacity to grasp the techniques for knowledge of TQM. Participation is crucial to upgrade each one of the strategies in which the approach for TQM is required. As communicated by Chase, (2015b), incredible correspondence will achieve decreasing the fear. Incredible correspondence is basic in fulfilling TQM. All sentiments of fear which can shield the delegates from being incorporated. Deming, (2015), urges to 'drive out fear' this needs to occur for organization to change. TQM is a mindful system of progress.

Extraordinary correspondence and a tolerable information structure are fundamental in passing on considerations to the organization and to meld the basic change required.
Productive execution of a TQM space requires a grave and skilled workforce to totally participate in the activities did to improve the quality. Every one of the labourers at all levels inside the affiliation should be asked to take commitment and pass on feasibly toward upgrading the quality by any methods creation stages. Heads and chiefs must consider the agents as being astute and having capable musings (Prakash and Smith, 2004). As communicated by Sayeh et al., (2005), and Yang, (2004), all agents inside the affiliation are considered as internal customers and should be all around satisfied if the affiliation is yearnings to finish a full satisfaction for its outside customers, this situation shows to a chain of suppliers and customers associations including both inside and external customers. Thusly TQM ventures are unequivocally fixated on the hugeness of the association between both inside and external customers and suppliers. This relationship is known as a quality affix which should not to be broken at any stage (Oakland, 2000).
A hierarchical culture as communicated by Jeffries, (2015), is the collaboration that happens among delegates/staffs of an affiliation/firm nearby the associations caused by this lead. As per this, Schein, (2015), expressed that the lifestyle can be depicted as the feelings which swarm the relationship as for the frameworks method for driving the business and how the agents should continue and the way they get a kick out of the chance to be managed. For TQM culture, an accommodating and open culture must be made by the affiliation organization in which each one of the labourers must be made to feel that every one of them are responsible for meeting customer's fulfilment. The staffs ought to likewise be made to feel incorporated into the change of the vision, orchestrates and frameworks of the affiliation. It is crucial for the relationship to finish a viable utilization of TQM to ask the specialists to share in each one of these activities.

2.7 COMPONENTS OF TQM

In other for TQM practices to be positive, diverse components ought to be represented. Such components are classified as: *platform*, *organization*, *system*, *knowledge and ability*.

2.7.1 Platform

Creation of amenable setting all over the work institute is vital to the progress of TQM. Major components that are vital for building a platform as this are *obligation*, *cognizance* and *acknowledgement*. Organization's endeavour in the area of quality apart from been crucial, it ought to be keenly articulated. Every affiliate of the crew is meant to know of this commitment and be alarmed about quality. To attain high efficiency level in this, management must adopt motivational activities, ranging from: acknowledging and gratifying crew members for their inputs and hard work in other to ensure progress in TQM process.

2.7.2 Knowledge and Skill

All staffs of construction firms ought to have an adequate knowledge and skill. In addition to their knowledge of their own discipline or trade, they also ought to be knowledgeable of the fundamental concepts of TQM. The main components within this group are *preparation*, *learning*, *good ideologies* and *difficulties-cracking ability*.
All worker ought to be availed the privilege to acquire knowledge and offered adequate training in other to partake efficiently in TQM practices.

2.7.3 Organization

The vital notion for the TQM concept is that working bridges are of no use, due to difficulties cross active tracks. Groups and teams ought to be established, majorly by the cross-active diversity, in other to organize activities of diverse individuals in diverse parts, and ought to be given duty and power to carry out TQM practices. The main components in this part comprises *quality-steering groups* and *quality elevating crews*. Strategies ought to be put in place, imports set out, assets labelled, variations transferred, and growth assessed. Haphazard implementation of these duties by certain groups or teams, working on their own accord, will cause conflicting objectives, similarity, lost information, time loss and wasted effort.

2.7.4. System

Firms are required to establish approaches for quantification, to focus emphasis on growth matters, and to come up with ideas to act on. *Remedial action*, *quantification* and *aim setting* are regarded as the vital factors of systems. Remedial actions ought to provide logical ways of treating unending issues that are spotted out. Quantification ought to show current and possible difficulties in a way that lets objective assessment and remedial achievement; achievement of aims should convert pledges alongside obligations into achievement, by cheering people to come up with enhancement aims for their groups and for themselves.

2.8. ORGANIZATIONAL FACTORS

2.8.1 Ideologies of Organization Concept

Though contended in the introduction part, TQM processes requires a first step of erecting the appropriate construction work crew. This difficulties happen to be part of the organizational structure, which is a multifaceted process. Traditional structures that relied on active specialization and ranked control, doesn't meet today's requires; an often supple and holistic approach, commonly known as *interactionism view*, is often suitable.

The last view establishes that structure of an organizational ought to spring-out so as to react to changes in the platform. Particular way to establish a developing firms involves initially concentrating on its doings and methodologies. The frame ought to evolve within those processes. The setting of a construction work is usually docile to this ideology of organizational structure, due to a construction work entails multiple establishments, all been challenged by varying degrees of uncertainty. Today's understanding doesn't give way for best work establishments to be calculated. There are chances, however, to spot out steady links among work types and three perfect patterns of work organizations. The three patterns as proposed by Bennett include: established firms that relay to upright construction work; expert establishment, which cuts across foremost works and difficulties-resolving establishment that is associated with creative work. hence, this study relates not only to classification of work organization established according to Bennett, the concept of owing diverse work firms to line different in design of works is a core purpose for this study

In whatever is left of this range, the various leveled components that are critical in this perspective are exhibited and delineated. These components are amassed under two packs. Initial group packs amplify assemble plausibility reasons, notably the ones that provide choices for confining an advancement expand gathering. The second group packs TQM accomplishment influence segments, notably the ones composed of indispensable repercussions about TQM accomplishment, yet don't rely upon the substitute selections for the likelihood factors.

Saraph et al. (1989) in their investigation of TQM execution communicated basic components for TQM as "imperative zones of administrative arranging of "do's and don'ts" that must be actualized to accomplish fruitful quality administration in specialty unit". There are different actually works identified with CSFs including distinctive approaches, for example, Ramirez and Loney (2015), Ahire et al. (2016), Badri et al. (2015) and Tamimi and

Gershon (2016), utilizing an alternate arrangement of elements. These creators has endeavour to research the CSFs in the TQM in various arrangement of elements. Rendering undertakings of high calibre is a test to development organizations working in Libya. This could be ascribed to non/little spread and usage of value related data to this enterprises.

Sandholm, (2015), Expressed that various issues identified with quality usage has confuse development organizations in Libya. Despite the fact that there is starting to some look at light related with progression of Libyan development ventures towards rendering of value administrations. Sandholm, (2015), in his investigation on development enterprises around Libya found that more than 65% of the ventures are private possessed while 65% of the businesses are government claimed. Abdussalam, et al., (2010), in their examination on the execution of TQM in businesses working in Libya, concentrated their exploration on the level of administration responsibility, representative's improvement and preparing, work culture and condition, correspondence and worker acknowledgment and inclusion. Their discoveries proffered arrangements that will help development enterprises in Libya accomplish TQM. They include:

•It is exceptionally indispensable for foundation of clear correspondence framework that will associate diverse offices/parties inside the firm and outside of the firm.

•There is by all accounts less/low correspondences between top administration and representatives. Subsequently, there is requirement for effective and reliable correspondence framework between these levels of administration. They additionally communicated that there is requirement for endeavors of best administration towards understanding and tolerating great contemplations and sentiments of the workers as this would help the firm achieve its objectives.

Booked/arranged preparing programs on TQM ought to be given to workers towards TQM with ultimate objective of conveying quality administrations and consequently meet clients/client/customer fulfillment. One of the strengths that prompts authoritative development and national modern development everywhere is the effective usage of TQM in enterprises, Abdussalam et al, (2010). There exist different difficulties at present influencing development businesses in Libyan and significantly on the unsuccessful exact of TQM in enterprises in Libya which is an extremely basic issues on the grounds that, if TQM is effectively actualized as concentrate by Abdussalam et al, (2000), demonstrates that it will engage representatives and lift the picture of Libyan development ventures in the universal market. In accordance with the in advance of said focal points of TQM usage, the examination will research challenges confronting TQM execution in development businesses in Libya as some other neighboring nations are influenced by the financial cycle of Libya. Additionally examine into TQM execution is as yet required as misfortunes brought about because of non-TQM usage adds up to 9.6% of aggregate venture cost and 2.5% to development deviation. Mohamed, (2000); proposed that factors that influence TQM usage in enterprises include: Inadequate preparing of staffs, deficient administration of work drive site and poor check methods of material, plans and workmanship. While Oakland and Marosszeky, (2006); communicated the advantages of TQM execution as decrease in amount cost, customer acknowledgment, worker fulfillment and nearer association with subcontracts and providers.

The use of TQM is urgently required in development ventures as a huge number of dollars that has a place with people in general is put resources into development ventures with a lot of same cash lost because of poor development administration and terrible works. Basic achievement factors (CSFs) of TQM speak to those variables that are specifically identified with TQM effective usage.

2.9.1. Framework

Study on complex frame work set up for organization work are established on a plausibility structure for examination of definitive frame work (Bresnen, 2015). Affiliations are non-realistic nor characteristic. For non-realistic kind of affiliation often portrayed by occupations with tight scope, fixed as well as specific parts, clear lane of master, well-known fundamentals and systems, an excess and programmable essential initiative and masterminding process, and an objective compensate structure. A characteristic relationship, by separate, has exhaustively defined businesses, flexible and dynamic parts, diffuse channels of master, couple of fundamentals and techniques, altering, flexible and essential administration and orchestrating method, as well as a particular reward structure. Generally, improvement develop bunches have been mechanical in nature and have required specific and fixed parts. For example, an electrical legally binding laborer plays out a specific set of standard assignments and that is it. While this energizes specialization and efficiency, it may often over incite a thin point of view of the target. Inventive basic deduction may be altered with these specific as well as fixed parts. Alongside sway antagonistically for TQM segments. Along these lines, in an improvement bunch that executes TQM, parts need to progress and be flexible mostly legitimate in cross-helpful gatherings. Utilization of TQM thusly demands a progressive way beginning in a non-realistic across an often common shape. In any case, characteristic structures result in lost master and control. Thus the assembly are brought up in two ways, first coordinating regulation while the other overseeing suitability in realizing TQM. Studies by Robey outlines shakiness to be plausibility for choosing on fitting sort. Referring to ask about findings, he prescribes that an all the often negligent frame work is suitable with regards to small errand defenselessness, while under high undertaking flimsiness, a characteristic structure is reasonable.

2.9.2 Control Structures

To agree to definitive standards and needed lead, regulator arrangements are completed by affiliations. Such arrangement regulators might be proper (for administrative precepts (utility costs in inside business parts) or group. Improvement inside business areas (subcontractors get paid legally binding specialists), control of the market are at its best (for instance, concealing portion to alter direct or yield). Inside very sub-group, control of formal structures are used. In any case, to realize TQM, an often common perception is required among the sub-groups, subsequently a unit regulation is ideal. Since it's the most flexible regulation scheme, mindful assurance of gathering and after that true blue communicability of the partners in the gathering's targets for qualities are vital (Robey, 2015). It's especially substantial being developed endeavours, since associates may change in the midst of the life of expectancy. Toward the day's end, errand shakiness makes sense of which control system is often appropriate

2.9.3 Organization Style

Organization styles can keep running from imperious, task oriented and driven with favour for confirmation at one over the top to law based, relationship orchestrated with an abnormal state of flexibility for obscurity at the other phenomenal. This variable impacts the essential authority has particularly basis in conflict assurance. Conflict can without quite a bit of an extend rise in an advancement stretch out in light of the way that couple of particular affiliations are incorporated. These affiliations have unmistakable and as often as possible dissimilar to goals, use differing developments, and may have assorted time presentations, (without a moment's hesitation versus whole deal).

Whichever overhaul are realize impedance with someone's ambitions by the other. Surely, do there seems to be by far and large free, for instance, those of electrical and circulating air through and cooling brief specialists, pooled relationship exists, in light of the fact that the

whole work can't be done if only everyone finishes its section. TQM needs much cross useful work, this can result in conflict. Thus conflict assurance transforms into a basic figure the achievement of TQM. One guide requires toward be underscored; conflict does not have absolutely negative pith. It allows to deliberate on issues which could be honest. An adequate activity pattern is vital. At first look, a vote based pattern might appear, in every way, very appropriate.

2.9.4. Qualities

An affiliation's regard set can stretch out from one uncommon of robustness and peril evasion to the following incredible of improvement and risk taking. In an advancement broaden, the closeness of various affiliations achieves different regards. An organizer may be often danger taking than a fundamental expert; electrical brief labourers may regard efficiency over practicality, while within modeller may have the converse regard. Unmistakable affiliations may have contrasting degrees of affinity to improvement. These targets and qualities will along these lines impact the TQM segments. For example, an innovative and danger searching for gathering will most likely execute TQM than a peril unwilling gathering that regards quality and tradition (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Khan et al., 2019); (Prestiadi et al., 2019); (Mukhopadhyay, 2020); (Alghamdi, 2018).

2.9.5 TQM Accomplishment Influence Factors.

These parts of culture, organization feelings about TQM and organization attitude towards reinforcing to identify with advancement broaden gatherings and have basic repercussions for the accomplishment of TQM. In any case, they don't have recommendations for the improvement of was well as gatherings. In a manner of speaking, whatever choices are made with respect to broaden gatherings, these components will influence the accomplishment of TQM. Culture is `the case of shared assumptions that guide a social occasion in overseeing basic issues of inside operation and external change'. For instant, the Japanese firm models are portrayed as a forever work, total essential initiative and commitment and comprehensive distress. By separate, the USA commercial culture adopts very moment work, particular essential initiative and commitment and administered concern. Culture is reflected in traditions, for instance, update (affirmation of accomplishments) and restoration (learning programs). Robey proceeds to express that various levelled social orders apply huge influence over their people and impact other legitimate strategies. For example, they impact regulatory attempts to change definitive climate, coordinate direct of new people, empower correspondence, and help in the joining of various sub-units. Clearly the lifestyle and gathering will impact the TQM segments. For example, certain sorts of culture may be often productive in developing a climate for applying TQM. A culture that spots importance on restructure traditions will most likely complete respects and affirmation adequately to a key TQM part. At first look, a culture that joins the Japanese and American models [Theory Z, proposed by Ouichi (2015)] may appear to have an often constructive outcome on these parts.

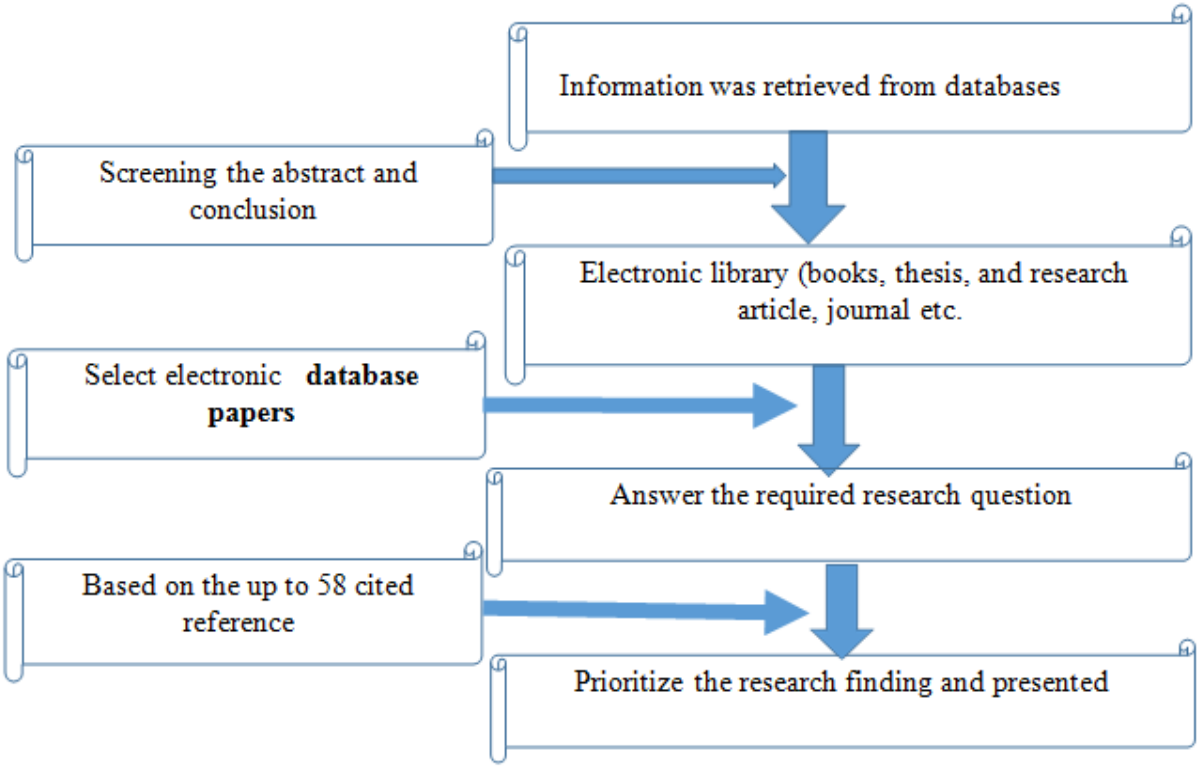

Figure.1.3. the research procedure for observing the research result that utilized in this research adapted from (Shlibak and Dalla, 2020); (Dalla, 2020).

2.9.6. Organization Feelings on TQM

Various TQM exercises have failed, or have fail to keep up interminable change, since organization's failed to understand the TQM objectivity, Hayden, (2015). Or, on the other hand perhaps, a couple of models were exhibited, bunches formed and procedures completed, just to be surrendered after a measure of advance had been refined. Hayden (2015) records a couple of `untrue starts' adopted by well-intentioned high boss, hence provoked the mistake of TQM exercises. TQM need tenacious alteration, therefore it's a non-ending technique. It is likely recently using high organization duty. Correspondingly, focus organization requires to clutch TQM guidelines too. If they don't wind up noticeably tied up with it, utilization of such radical thoughts as cross-helpful gatherings is unimaginable.

Need for navigating in breaking point among for instant, subcontractors, is oftentimes regarded by top management.

2.10. TOTAL QUALITY MANAGEMENT SYSTEM

Total quality management is a very important and popular management concept for the past two decades. There are various definitions ascribed to TQM by different researchers. Oakland (2015), expressed that TQM is a tool for improving flexibility, standards and effectiveness of business. While Zaire and Simintiras (2015), expressed the concept of TQM as a way of doing the appropriate thing all the time with considerations to economic viability all the time. Total quality management (TQM) approach has been increasingly introduced into construction organizations in many countries as an improvement strategy for achieving customer satisfaction and business excellence. TQM has been adopted in construction industries in Europe, United States Canada, Australia and Japan to help raise levels of quality, productivity and customer satisfaction. (Mohamed et al., 2014).

Worldwide, quality management in virtually all work sectors has been given great attention over the past decades (Mohammed and Hiyassat, 2000). Nevertheless, of resent, attentions is drifting towards improvement of construction works through the implementation of TQM system in construction industries. Quite a number of researches has been conduct in relation to TQM in construction industries with the aim of pinpointing the difficulties and challenges facing TQM implementation in industries across the globe. And also provide solutions to this difficulties

Mohammed and Salem, (2000), in their study on the application of ISO standards to construction companies in Jordan with the aim of knowing if the ISO-9000 standards is properly implemented in the companies of case studies and to know if the said employee of the company understanding what ISO system is all about. The study showed that there was an increase in the level of unawareness of ISO-9000 standards among the superintendents, field engineers and foreman with percentage unawareness of 22%, 22.2% and20% respectively. Also, 16.7% of the Surveyed technicians and a surprising 42.8% of the warehouse keepers are ignorant of what ISO-9000 is all about. Mohammed and Salem, (2000), concluded in their study that the difficulties leading to majority of staffs' being unaware of the ISO-9000 could be attributed to either the company's communication system or with the company's pattern of implementing standard system. Hence, benefits of standards are not fully implemented and this will affect the quality of services rendered by these industries and also customer satisfaction could be hampered. Mohamed et al., (2014), in their evaluation of level of TQM implementation and proper use of quality tools by Saudi construction firms, structured a survey questionnaire with the aim of sourcing data from managers and staffs of construction industries on their views towards TQM implementation. Mohamed et al., (2014), in their study concluded that most construction companies do not site their improvement strategies in discovering the major causes of difficulties that weigh-down the progress of the business in relation to cost overruns, work delays and the quality of their final products

The concept of TQM is considered as an important tool for business improvement by many researchers. Ahmet et al., (2004), in their study on TQM implementation in Turkish cement industries (TCI) and the level of satisfaction customers get from their services discovered the following:

1. Majority of firms have the idea of what TQM is all about with top priority of meeting customer's satisfaction.

2. Product/services of the firms are above average

3. The firms however have some shortcoming related to documentation of demands well ass, rating and selection of supplies/vendors. All this can be overcome by effective implementation of TQM tools.

TQM though vastly used in both manufacturing and other industries is not often implemented in construction industries. There are misconception of TQM being just a conglomerate of statistical tools or methods. On the contrary, it is often likely a strategic tool for organizing the resources of a company/industry to meet international standards with minimum costs. Low and Jasmine, (2003), examined the readiness and understanding of construction contractors towards TQM and its implementation. From their findings, they discovered that most of the respondents believe that ISO-9001:2000 is beneficial but unaware of TQM implementation benefits. Secondly, some of the respondents are aware that TQM can bring in improvement in the area related with improved product quality through systematic adherence to clients/customers satisfaction. Lastly, the lowest employee awareness was on the area of being ignorant that TQM tools can make business often competitive. Table 2.1 shows the response the respondents towards ISO-9001:2000 as a tool to aid firms practice TQM.

Table 2.1 Respondent response on ISO-9001:2000 as a tool to attain TQM practices (Low & Jasmine 2003).

Responses	Frequency	Percentages
Least aware	1	2.8%
Less aware	1	2.8%
Aware	14	38.9%
More aware	14	38.9%
Most aware	6	16.7%
Total	36	100.0%

Low and Jasmine, (2003), in their study concluded that contractors view of TQM implementation as an extra cost item without realizing that non-implementation of TQM standards directly or indirectly incurs often expenses for the firm. The Acceptance and implementation of TQM practices can be attribute to a company's work culture. Kow and Low, (2008), investigated the possible correlation between the implementation of TQM practice and cultural orientation among Singapore certified contractors. In their study, four organizational culture was established notably: hierarchy-driven culture, clan-driven culture, Strong comprehensive culture and weak comprehensive culture. They concluded that firms that has strong comprehensive culture apply high level of TQM practices across the company's chain of commas well as. Companies that are driven by clan culture apply top process management while companies that are driven by weak cultures and hierarchy-driven cultures apply low level of TQM practices. TQM Techniques has been employed in industrial and manufacturing with the aim of checkmating production process and avoidance of defects prior them happening. Hence, saving money. One of the challenges in TQM implementation is dissimilarity among construction industries (Leslie Lahndt, 2015).

Hamzah et al., (2014) in their study, on the impact of professional ethics on quality of construction companies in developing economies discovered that unethical acts, poses a threat/undermines quality of construction and hence leading low levels of users/clients. He further reiterated the need for construction workers to abide to work ethics and the need for the enforcement of laws and standard codes of ethics. He proffered solution to unethical conduct of construction workers by starting that true leadership is the best way to enhance professionalism.

Tas and Low, (2008), analyzed organizational culture and level of quality adoption in construction firms operating in Singapore proposed that a strong and balance organizational culture is capable of ensuring fast implementation of TQM in the firm. Hence there is need for that construction to checkmate its cultural orientation and make adjustments were necessary to strengthen process management. Haldnt (1999) studied the use of TQM tools by construction firms with the aim of determining the vital criteria for implementing TQM construction firms. The findings proposed to current status and direction for industries. The first is the need for up-to-date software and hardware. The second is adequate contract monitoring. Mohamed et al., (2014), described how operational conditions of the construction companies looks like; it's actually a harsh situation and competitive platform which is synonymous to survival of the fittest when talking about the completion of the construction

works in the best quality; even in the phase of prevalence challenges of high cost material and limited. The Saudi construction was evaluated using the degree of receptiveness of implementing TQM. It was revealed that there is a misunderstanding within quality control management, strategies, tools and techniques in construction companies, and that organizational structure is a string barrier for the implementation of quality management system.

2.11 FACTORS THAT ARE ESSENTIAL FOR TQM IMPLEMENTATION

Quite a number of researches has been conducted in relation to TQM implementation with the aim of pinpointing the difficulties and challenges facing TQM implementation in industries across the globe, and provide solutions to these difficulties. Below are some of the factors necessary and crucial for achieving success in implementation of TQM tools

2.11.1. High Level of Commitment among Top Managements and Leadership

Leadership based on meeting customer satisfaction is the basic element for TQM. This is a situation where customers set the target for TQM (Sayor, 2015). The ability to arouse confidence and support needed to attain organizational goal is the basis of leadership. The concept of leadership is the enabling ability of the management of a firm or organization to institute standards and long term vision for the firm.

2.11.3 Training and Instruction

Training is a fundamental element for any effective quality administration program (Burati and Oswald, 1992; Chase, 1993a; Oaklas well as, 2000). CEOs and quality specialists have effectively executed these in their associations. Works to be executed must be scrutinized by people in the association as attaining quality under TQM is the duty of everybody in the association. The representatives from the top administration of the firm ought to be able to comprehend the methods of insight of TQM. Cooperation is vital to enhance every one of the procedures in which the approach for TQM is required(Saffar and Obeidat, 2020); (Antunes et al., 2017); (Khan et al., 2019); (Prestiadi et al., 2019); (Mukhopadhyay, 2020); (Alghamdi, 2018).

2.11.4 Communication

As expressed by Chase, (2015b), great correspondence will bring about diminishing the dread. Great correspondence is imperative in accomplishing TQM. All feelings of dread which can keep the representatives from being included. Deming, (1986), encourages to 'drive out dread' this requires to happen for administration to change. TQM is a cognizant procedure of change. Great correspondence and a decent input framework are essential in passing on thoughts to the administration and to fuse the essential change required.

2.11.5 Employees Inclusion and Interest

Fruitful execution of a TQM domain requires a conferred and talented workforce to completely take part in the exercises did to enhance the quality. All the workers at all levels inside the association ought to be urged to take obligation and convey viably toward enhancing the quality by any means establishing stages. Administrators and directors must consider the representatives as being wise and having powerful thoughts (Prakash and Smith, 2004). As expressed by Sayeh et al., (2005), and Yang, (2004), all representatives inside the association are considered as inward clients and ought to be all within fulfilled if the association is cravings to accomplish a full fulfilment for its outside clients, this circumstance shows to a chain of providers and clients connections including both inside and outer clients. Along these lines TQM works are unequivocally centred on the significance of the

connection between both inside and outer clients and providers. This relationship is known as a quality chain which ought not to be broken at any stage (Oaklas well as, 2000).

2.11.6 Organizational Culture

An organizational culture as expressed by Jeffries, (2015), is the cooperation that occurs among representatives/staffs of an association/firm alongside the connections caused by this conduct. In accordance with this, Schein, (2015), stated that the way of life can be portrayed as the convictions which swarm the association with respect to the systems way of leading the business and how the representatives ought to carry on and the way they like to be dealt with. For TQM culture, a helpful and open culture must be made by the association administration in which every one of the workers must be made to feel that all of them are in charge of meeting client's satisfaction. The staffs ought to also be made to feel included in the improvement of the vision, arranges and systems of the association. It is vital for the association to accomplish an effective usage of TQM to urge the workers to partake in every one of these exercises.

2.12 CRITICAL SUCCESS FACTORS FOR TQM IMPLEMENTATION

Saraph et al. (2015) in their study of TQM implementation expressed critical factors for TQM as "vital areas of managerial planning of "do's and don'ts" that must be implemented to achieve successful quality management in business unit". There are various literally works related to CSFs involving different methodologies such as Ramirez and Loney (1993), Ahire et al. (2015), Badri et al. (2015) and Tamimi and Gershon (2015), using a different set of factors. These authors has attempt to investigate the CSFs in the TQM in different set of factors.

2.13 TECHNOLOGICAL STRENGTH OF LIBYAN CONSTRUCTION COMPANIES

Rendering works of high quality is a challenge to construction companies operating in Libya. This could be attributed to non/little dissemination and implementation of quality related information to this industries. holm, (2015), Expressed that a number of difficulties related to quality implementation has bewilder construction companies in Libya. Though there is beginning to some glimpse of light related with liberalization of Libyan construction industries towards rendering of quality services. holm, (2015), in his study on construction industries within Libya discovered that over 65% of the industries are private owned while 65% of the industries are government owned. Abdussalam, et al., (2010), in their study on the implementation of TQM in industries operating in Libya, focused their research on the level of management commitment, employee's development and training, work culture and platform, communication and employee recognition and involvement. Their findings proffered solutions that will help construction industries in Libya attain TQM. They include:

- It is very vital for establishment of clear communication system that will connect different departments/parties within the firm and outside of the firm.
- There seems to be less/low communications between top management and employees. Hence, there is need for efficient and consistent communication system between these levels of management. They further expressed that there is need for efforts of top management towards understanding and accepting good thoughts and opinions of the employees as this would aid the firm attain its goals.
- Team works ought to be encouraged as it help solve difficulties and foster understanding among employees.
- Scheduled/planned training programs on TQM ought to be provided to employees towards TQM with end goal of delivering quality services and hence meet users/customer/client satisfaction.

3. RESEARCH METHODOLOGY

This segment scrutinizes the study structure and method adopted. First with the study structure which adopts the employee's opinions, followed by evaluating instruments for data compilation and analysis of data. The part shows the accurate strategies adopted for the analysis. It illustrates the procedures and methodologies adopted for data gathering and analysis. It includes a definite explanation of the sample size, analysis structure and the method. Also, this part elaborates the procedures adopted and instruments used for gathering of information and also, the various field difficulties experienced and moral contemplations. The part also involves the statistical assessment of Factors Preventing the Implementation of Total Quality management practices in Libyan Construction Industry.

3.1 RESEARCH STRUCTURE

The structure of the study adopts a method that is based on a quantitative approach (Statistical analysis of the data collected through questionnaires), where a quantitative method were employed to determine total quality management evaluation of TQM adoption and practices in Libyan construction industries, Hypothesis and research questions were formulated and evaluated based on the objectives of the study and what the research intend to achieve.

3.2 SAMPLE SIZE ANDSAMPLING PROCEDURE

A simple indiscriminate sampling method was adopted as a part of which everybody in the chosen industrial firm was dealt with just as equal. The response of both the managerial and technical staff toward this issue were investigated. The sum total of the data set is 200 respondents from 15 companies

3.3 DATA SOURCE

A survey questionnaires were structured and distributed to 15 construction companies in Benghazi, Libya. This companies were chosen as they are fully registered construction companies operating in Libya with certificate of operation from the Ministry for Power and industry Libya.

Table 3.1. Categories of workers from the different companies (Study Area)

Company	White-collar workers	Low Level workers	Total number of Staff
A	3	4	7
B	6	10	16
C	3	9	12
D	3	7	10
E	6	19	25
F	5	12	17
G	4	11	15
H	4	10	14
I	2	6	8
J	4	13	17
K	3	7	10
L	3	13	16
M	3	7	10
N	4	7	11

O	3	9	12
TOTAL	**56**	**144**	**200**

Table 3.1 above summarizes the kind of workers from the different companies where data was sourced from (Company A- Company O).

The questionnaire adopted for this study consisted of six parts:

Part 1: Respondent's profile.

Part 2: Quality knowledge in the construction firm.

Part 3: Application of TQM and other quality management tools in the construction firm.

Part 4: Benefits of TQM implementation.

Part 5: Barriers to TQM implementation in the firm.

Part 6: Additional information number of resources that are accessible.

Sequel to the above reasons and owing to the financial constraint of the study, three hundred (300) comprehensive questionnaires were made available but eventually two hundred (200) questionnaires were usable for the analysis as some staffs in the various firms visited, opted out in filling out the questionnaires, while some questionnaires were in appropriately filled by respondents.

3.4 RESEARCH INSTRUMENT

The methodology for this thesis work was adopted from Mohamed et al., (2014), with the title "An empirical study of quality management systems in the Saudi construction industry". 45 questions were adopted from the study questionnaire. These questions were considered appropriate for this research due to the ease in understanding of the questions. Hence respondents won't find it difficult responding to the questions. The distribution of the questionnaires to the various construction firms were done in person and its retrieval. This method of questionnaire distribution was chosen so as to ensure clarifications to any question that the respondents is having trouble understanding

3.5 VALIDATION OF THE INSTRUMENTS

Internal consistency is usually adopted in survey analysis. It is a gage of how proper the diverse items measure the same notion in the survey. Internal consistency is analyzed by calculating for the Cronbach alpha statistical factor.

Cronbach alpha analyses internal consistency between a groups of items joined to form a one scale. It is a statistic concept that showcases the sameness of the scale. In general, reliability coefficients of 0.70 and above are regarded acceptable. In the present study, the Cronbach alpha coefficients of the components of the survey were calculated and the result is shown in Table 3.1. From the table, it can be deduced that Cronbach coefficients is 0.996, which shows the reliability of the scales in giving accurate and reliable results for this study.

4. RESULT ANDDISCUSSIONS

This chapter deals with the data analysis and presentation of results and would look at descriptive statistics for the demographic variables, correlation analysis, and regression analysis to test the stated hypothesis. This segment forms an integral part of this research study in that it helps in deducing conclusions and formulating recommendations.

4.1.1 Gender Distribution of Respondents

It can be seen from table 4.1 below that the Gender distribution of respondents shows that 87.5% of the respondents were male, while 12.5% are female. This implies that males participated often in the survey than females.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	175	87.5	87.5	87.5
	Female	25	12.5	12.5	100.0
	Total	200	100.0	100.0	

Table 4.1 Gender Distribution of Respondents

4.1.2 Age Distribution of Respondents

It can be seen from table 4.2 below that the Age distribution of respondent's shows that 23.0% of the respondents are within the age bracket of 20-25 years, 39.5% are within 25-30 years, while 37.5% are 30 years and above.

Table 4.2 Age Distribution of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-25	46	23.0	23.0	23.0
	25-30	79	39.5	39.5	62.5
	30 and above	75	37.5	37.5	100.0
	Total	200	100.0	100.0	

4.1.3 Marital Status of Respondents

It can be seen from table 4.3 that the marital status distribution of respondent's shows that 33.3% of the respondents were single, 59.5% are married, while 7.5% are divorces.

Table 4.3 Marital Status Distribution of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	66	33.0	33.0	33.0
	Married	119	59.5	59.5	92.5
	Divorced	15	7.5	7.5	100.0
	Total	200	100.0	100.0	

4.1.4 Educational Levels Distribution of Respondents

It can be seen from table 4.4 that the Educational qualification of respondents shows the literacy level of the respondents, it could be deduced that 26.5% of the respondents are high school certificate holders, 22.5% are diploma holders, 36% are BSc. holders, 3% are MBA/MSc holders, while 12.0% are PhD holders. This implies that the respondents are well educated.

Table 4.4 Educational Level Distribution of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School	53	26.5	26.5	26.5
	Diploma	45	22.5	22.5	49.0
	BSc	72	36.0	36.0	85.0
	MA/MSc	6	3.0	3.0	88.0
	PhD	24	12.0	12.0	100.0
	Total	200	100.0	100.0	

4.1.5. Distribution of Number of Years in the Construction Industry

It can be seen from table 4.5 that the Respondents distribution of number of years in the construction industry shows that 33.5% of the respondents have been working in the Libyan construction industry for less than 5years, 39.5% have been in the industry between 5-10 years, while 27.% of the respondents have worked 10 years and above in Libyan construction industry

Table 4.5 Distribution of Number of Years in the Construction Industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	67	33.5	33.5	33.5
	5-10 yrs.	79	39.5	39.5	73.0
	10 & above	54	27.0	27.0	100.0
	Total	200	100.0	100.0	

4.1.6 Position Distribution of Respondents

It can be seen from table 4.6, the position distribution of respondents. It could be deduced that 4% are of the position of CEO/Top management, 10.0% were middle level managers, 9% were supervisors, 35.5% were foremen, 35% were artisans, while 6.5% occupied other positions in their various companies.

Table 4.6 Position Distribution of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Top Mgt./ CEO	8	4.0	4.0	4.0
	Middle Level Manager	20	10.0	10.0	14.0
	Supervisor	18	9.0	9.0	23.0
	Foreman	71	35.5	35.5	58.5
	Artisan	70	35.0	35.0	93.5

	Others	13	6.5	6.5	100.0
	Total	200	100.0	100.0	

4.1.7 Distribution of Company's Line of Business

Table 4.7 shows the company's line of business distribution. It is clear that 20% of the companies in Libyan construction industry were in the business of residential construction, 21.0% were into industrial construction, 22% were into roads and highway construction, 6.5% were work management companies, 11% were producers of construction bye products and materials, while 19.5% were into general construction.

Table 4.7 Distribution of Respondent's Companies Line of Business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Residential Constructions	40	20.0	20.0	20.0
	Industrial Constructions	42	21.0	21.0	41.0
	Roads and Highways	44	22.0	22.0	63.0
	Works Mgt.	13	6.5	6.5	69.5
	Construction Materials Producer	22	11.0	11.0	80.5
	General Construction	39	19.5	19.5	100.0
	Total	200	100.0	100.0	

Figure 4.7 Distribution of Companies line of Buisness.

4.1.8 Distribution of Company's Adopted Type of quality Management

Table 4.8, shows the company's distribution of adopted model of quality management practices. It is clear that 4.5% of the companies in Libyan construction industry adopted ISO 9001 model of quality management practice, 14.0% adopted TQM practices, 21% uses six sigma methodologies, 38.5% of the companies does not practice a specific model of quality management practice rather they structured an firm's fit kind of quality management approach and systems. 22% of the companies adopted lean management practice.

Table 4.8 Distribution of Company's Adopted Model of quality Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ISO 9001	9	4.5	4.5	4.5
	TQM	28	14.0	14.0	18.5
	Six Sigma Methodology	42	21.0	21.0	39.5
	No specific model (Locally adapted methods)	77	38.5	38.5	78.0
	Lean Management	44	22.0	22.0	100.0
	Total	200	100.0	100.0	

Figure 4.8 Distribution of companies Adopted Type of quality management.

4.2 RELIABILITY ANALYSIS

Table 4.9 shows the result of analysis of the response to the questionnaire using Cronbach Alpha. The result showed a reliability score of 0.966 meaning that all the thirty eight items are reliable and valid to measure the opinion of respondents towards the assessment of factors preventing the implementation of total quality management practice in Libyan construction industry. Also the Cronbach Alpha result of this study is in line with study by Abdussalam Shibani et al., (2010), as their calculated value of Cronbach alpha was discovered to be 0.970. Also, According to Pallant (2007), Cronbach's alpha coefficient of 0.070 or above is regarded appropriate for ascertaining the reliability of the entire questionnaire. Hence we have proven that the questionnaires adopted for the present survey is reliable for the used sample.

As long as quality knowledge constituent is concerned, the analysis for validity and reliability spotted a total of 38 items, which were categorized under four factors or constructs. The general Cronbach alpha was 0.966, which shows that the scale was internally dependable and reliable. Likewise, for the application of quality tools, the analysis for validity and reliability spotted a total of 38 items, which were categorized under four factors or constructs with a Cronbach alpha equal to 0.966.

Table 4.9 Reliability Statistics

Cronbach's Alpha	N of Items
.966	38

4.3 CORRELATION ANALYSIS

A correlation analysis was carried out to find out the degree of association and dependency between the independent variables (Lack of Management Commitment, Lack of Teamwork and People Involvement, Lack of Training for Process Improvement, Organization Culture,) and the dependent variable (Total Quality Management Practice). The tables below shows the correlation matrix between the independent variables and the dependent variable as presented in this study.

4.3.1 Correlation between Lack of Management Commitment and Implementation of Total Quality Management Practice

Table 4.10 Correlation between Lack of Management Commitment and Implementation of TQM Practice.

		Lack of Management Commitment	Implementation of TQM Practice
Lack of Management Commitment	Pearson Correlation	1	.966**
	Sig. (2-tailed)		.000
	N	200	200
Implementation of TQM Practice	Pearson Correlation	.966**	1
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

4.3.2 Correlation between Lack of Teamwork and People involvement and Implementation of Total Quality Management Practice

It can be seen from table 4.11 that there is a statistical significant relationship between lack of management commitment and the implementation of total quality management practice as the correlation coefficient is 0.966, which is significant at the 0.01 level. This implies that lack of management commitment is one of the factors that prevent the implementation of total quality management practice. This is in line with study by Saraph et al., (1989), as they proposed that TQM implementation involves "vital areas of managerial planning of "do's and don'ts" that must be implemented to achieve successful quality management in business unit". There are also various literally works in support of managerial commitment as one of the factors that contribute to TQM implementation such as: Ramirez and Loney (1993), Ahire et al. (1996), Badri et al. (1995) and Tamimi and Gershon (1995).

Table 4.11 Correlation between Lack of Teamwork and People involvement and Implementation of Total Quality Management Practice

		Lack of Teamwork and People Involvement	Implementation of TQM Practice
Lack of Teamwork and People Involvement	Pearson Correlation	1	.765**
	Sig. (2-tailed)		.000
	N	200	200
Implementation of TQM Practice	Pearson Correlation	.765**	1
	Sig. (2-tailed)	.000	
	N	200	200
** Correlation is significant at the 0.01 level (2-tailed).			

It can be seen from the table above that there is a statistical significant relationship between lack of teamwork and people's involvement, and implementation of total quality management practice. The correlation coefficient is 0.765, which is significant at the 0.01 level. This indication further means that when lack of teamwork and people's involvement increases; it directly affects the implementation of total quality management practices. This is in line with studies by Chase, (1993b), hence, leading to his proposition that great team work will bring about diminished dread.

4.3.3 Correlation between Lack of Training for Process Improvement and Implementation of Total Quality Management Practice

It can be seen from the table 4.12 that there is a statistical significant relationship between lack of training for process improvement and implementation of total quality management practice. The correlation coefficient is 0.895, which is significant at the 0.01 level. This is an indication that there is also a positive relationship between the two variables, meaning that when training for process improvement is inadequate it tends to affect the implementation of TQM. In line with previous studies: (Burati and Oswald, 1992; Chase, 1993a; Oak, 2000). Adequate employee training is vital for full implementation of TQM practises in any firm. Karuppusamii and Gahinathan, (2007), in their study used a web-based measurement methodology to assess the level of TQM implementation in Indian industries. They discovered that there was high level of commitment towards quality management in manufacturing industries operating in India. Also, the study revealed theta there was job training for employees in quality management practices.

• Also, Hanzah et al., (2014), proposed that training to improve the work ethics of employees is vital as professional ethics play a crucial role in quality of construction works, most especially with local construction industries.

Table 4.12 Correlation between Lack of Training for Process Improvement and Implementation of Total Quality Management Practice

		Lack of Training for Process Improvement	Implementation of TQM Practice
Lack of Training for Process Improvement	Pearson Correlation	1	.895**
	Sig. (2-tailed)		.000
	N	200	200
Implementation of TQM Practice	Pearson Correlation	.895**	1
	Sig. (2-tailed)	.000	
	N	200	200
**. Correlation is significant at the 0.01 level (2-tailed).			

4.3.4 Correlation between Organization Culture and Implementation of Total Quality Management Practice.

It can be seen from the table 4.13 that there is a statistical significant relationship between organisational culture and the implementation of total quality management practice. The correlation coefficient is 0.887, which is significant at the 0.01 level. This implies that organizational culture is also a factor that affects the implementation of total quality management practice. This proposition is in Line with study by Jeffries, (1997), as their study proposed that firm culture can affect positive or negative TQM implementation. In accordance with this also, Schein, (1992), for TQM culture, a helpful and open culture must be made by the association administration in which every one of the workers must be made to feel that all of them are in charge of meeting client's satisfaction. The staffs ought to also be made to feel included in the improvement of the vision, arranges and systems of the association. It is vital for the association to accomplish an effective usage of TQM to urge the workers to partake in every one of these exercises. Kow Tas and Low, (2008), analyzed organizational culture and level of quality adoption in construction firms operating in Singapore and they proposed that a strong and balance organizational culture is capable of ensuring fast implementation of TQM in the firm. Hence there is need for construction companies in Libya to checkmate its cultural orientation and make adjustments were necessary to strengthen process management. Kow and Low, (2008), investigated the possible correlation between the implementation of TQM practice and cultural orientation among Singapore certified contractors. In their study they concluded that firms that has strong comprehensive culture apply high level of TQM practices across the company's chain of commas well as.

Table 4.13 Correlation between Organization Culture and Implementation of Total Quality Management Practice

	Organization Culture	Implementation of TQM Practice

Organization Culture	Pearson Correlation	1	.887**
	Sig. (2-tailed)		.000
	N	200	200
Implementation of TQM Practice	Pearson Correlation	.887**	1
	Sig. (2-tailed)	.000	
	N	200	200
**. Correlation is significant at the 0.01 level (2-tailed).			

4.4 REGRESSION ANALYSIS

Linear regression analysis was carried out to test the stated hypothesis in other to find out the correlation between the independent and the dependent variables.

4.4.1 Hypothesis 1

H_1: There is a relationship between lack of management commitment and implementation of TQM practices in Libyan construction industry

H_0: There is no relationship between lacks of management commitment and implementation of TQM practices in Libyan construction industry.

4.4.1.1 Model Summary of Variables

Table 4.14 Model Summary of Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.821[a]	.674	.673	.50274	
a. Predictors: (Constant), Lack of Management Commitment					
b. Dependent Variable: Implementation of TQM Practice					

The R Square (R^2) coefficient of determination is 0.674, it shows the exploratory power of the regression equation. This implies that lack of management commitment accounts for 67.4% impact on the factors preventing the implementation of total quality management in Libyan construction industry.

4.4.1.2 Results of Regression Analysis (ANOVA)

Table 4.15 reveals an F-statistic of 2785.662 with a significance value of 0.000 which indicates $p < .05$ is significant at the .05 significance level. Therefore, this study rejects H0 and accepts H1, affirming that lack of management commitment is statistically significant in predicting the factors that prevent the implementation of TQM practices in Libyan construction industry.

Table 4.15: Results of Regression Analysis (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	134.613	1	134.613	2785.662	.000[a]
	Residual	9.568	198	.048		
	Total	144.181	199			
a. Predictors: (Constant), Lack of Management Commitment						
b. Dependent Variable: Implementation of TQM Practice						

4.4.1.3 Coefficients (Lack of Mgt commitment & TQM implementation)

Table 4.16 reveals a Beta value of 0.996 which confirms the positive relationship that exist between lack of management commitment as predicting factor preventing the implementation

of TQM practices in Libyan construction industry as earlier stated in the rejection of the null hypothesis. The T- test value is 52.779 with a significance of .000 which is less than 0.05. The unstandardized coefficients for the constant value is .181, while lack of management commitment is .899, the constant value implies that a unit increase in lack of management commitment leads to .899 increase on the constant value as part of the factors preventing the implementation of TQM practices in Libyan construction industry (Albaraesi, 2020).

Table 4.16 Coefficients (Lack of Mgt commitment and TQM implementation)

Model		unstandardized Coefficients		standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.181	.047		3.868	.000
	Lack of Mgt commitment	.899	.017	.966	52.779	.000
a. Dependent Variable: Implementation of TQM Practice						

4.4.2 Hypothesis 2

H0: There is no relationship between lack of team work and implementation of TQM practices in Libyan construction industry

H1: There is a relationship between lack of team work and implementation of TQM practices in Libyan construction industry

4.4.2.1 Model Summary of Variables

Table 4.17 shows an R Square (R^2) coefficient of determination of 0.585 it explains the exploratory power of the regression equation. This implies that lack of teamwork and people's involvement accounts for 58.5% impact on the factors preventing the implementation of total quality management in Libyan construction industry.

Table 4.17 Model Summary of Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.765[a]	.585	.582	.55004	
a. Predictors: (Constant), Lack of Teamwork and People involvement					
b. Dependent Variable: Implementation of TQM Practice					

4.4.2.2 Results of Regression Analysis (ANOVA)

Table 4.18 reveals an F-statistic of 278.558 with a significance value of 0.000 which indicates $p < .05$ is significant at the .05 significance level. Therefore, this study rejects H0 and accepts H1, affirming that lack of teamwork and people's involvement is statistically significant in predicting the factors that prevents the implementation of TQM practices in Libyan construction industry.

Table 4.18 Results of Regression Analysis (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	84.277	1	84.277	278.558	.000[a]
	Residual	59.904	198	.303		

	Total	144.181	199			
a. Predictors: (Constant), Lack of Teamwork and People involvement						
b. Dependent Variable: Implementation of TQM Practice						

4.4.2.3. Coefficients (Lack of Teamwork & TQM implementation)

Table 4.19 (Coefficient table) below reveals a Beta value of 0.765 which confirms the positive relationship that exists between lack of teamwork and people's involvement as one of the predicting factors preventing the implementation of TQM practices in Libyan construction industry as earlier stated in the rejection of the null hypothesis. The T- test value is 16.690 with a significance value of .000 which is less than 0.05. the unstandardized coefficients for the constant value is .364, while lack of teamwork and people's involvement is .845, the constant value implies that a unit increase in lack of teamwork and people's involvement leads to .845 increase on the constant value as part of the factors preventing the implementation of TQM practices in Libyan construction industry.

Table 4.19 Coefficients (Lack of Teamwork and TQM implementation)

Model		unstandardized Coefficients		Standardized Coefficients	t	Sig.	
		B	Std. Error	Beta			
1	(Constant)	.364	.135		2.699	.008	
	Lack of Teamwork and People involvement	.845	.051	.765	16.690	.000	
a. Dependent Variable: Implementation of TQM Practice							

4.4.3 Hypothesis 3

H1: There is a relationship between lack of training for quality improvement and implementation of TQM practices in Libyan construction industry

H0: There is no relationship between lack of training for quality improvement and implementation of TQM practices in Libyan construction industry

4.4.3.1 Model Summary of Variables

As can be seen in the table 20, an R Square (R^2) coefficient of determination of 0.800. This shows the exploratory power of the regression equation. This implies that lack of training for process improvement could contribute 80% in non-implementation of TQM.

Table 4.20 Model Summary of Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.895a	.800	.799	.38144	
a. Predictors: (Constant), Lack of Training for Process Improvement					
b. Dependent Variable: Implementation of TQM Practice					

4.4.3.2 Results of Regression Analysis (ANOVA)

Table 4.21 reveals an F-statistic of 792.934 with a significance value of 0.000 which indicates $p < .05$ is significant at the .05 significance level. Therefore, this study rejects H0 and accepts H1, affirming that lack of training for process improvement is statistically

significant in predicting the factors that prevents the implementation of TQM practices in Libyan construction industry (Albaraesi, 2020).

Table 4.21 Results of Regression Analysis (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	115.372	1	115.372	792.934	.000[a]
	Residual	28.809	198	.146		
	Total	144.181	199			
a. Predictors: (Constant), Lack of Training for Process Improvement						
b. Dependent Variable: Implementation of TQM Practice						

4.4.3.3 Coefficients (Lack of Training for Process Improvement & TQM Implementation) The coefficient table above reveals a Beta value of 0.895 which confirms the positive relationship that exists between lack of training for process improvement as one of the predicting factors preventing the implementation of TQM practices in Libyan construction industry as earlier stated in the rejection of the null hypothesis. The T- test value is 28.159 with a significance value of .000 which is less than 0.05. The unstandardized coefficients for the constant value is -.134, while lack of training for process improvement is 1.045, the constant value implies that a unit increase in lack of training for process improvement leads to 1.045 increase on the constant value as part of the factors preventing the implementation of TQM practices in Libyan construction industry.

Table 4.22: Coefficients (Lack of Training for Process Improvement & TQM Implementation)

Model		unstandardized Coefficients		standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.134	.098		-1.366	.174
	Lack of Training for Process Improvement	1.045	.037	.895	28.159	.000
a. Dependent Variable: Implementation of TQM Practice						

4.4.4. Hypothesis 4

H0: There is no relationship between organizational culture and implementation of TQM practices in Libyan construction industry

H1: There is a relationship between organizational culture and implementation of TQM practices in Libyan construction industry

4.5.4.1 Model Summary of Variables

Table 4.23 shows an R Square (R^2) coefficient of determination of 0.786 it explains the exploratory power of the regression equation. This implies that organizational culture could contribute 78.6% impact on the factors preventing the implementation of total quality management in Libyan construction industry

Table 4.23 Model Summary of Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.887a	.786	.785	.39460	
a. Predictors: (Constant), Organizational Culture					
b. Dependent Variable: Implementation of TQM Practice					

4.4.4.2. Results of Regression Analysis (ANOVA)

Table 4.24 reveals an F-statistic of 727.979 with a significance value of 0.000 which indicates $p < .05$ is significant at the .05 significance level. Therefore, this study rejects H0 and accepts H1, affirming that organizational culture is statistically significant in predicting the factors that prevents the implementation of TQM practices in Libyan construction industry.

Table. 4.24 Results of Regression Analysis (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	113.351	1	113.351	727.979	.000[a]
	Residual	30.830	198	.156		
	Total	144.181	199			
a. Predictors: (Constant), Organizational Culture						
b. Dependent Variable: Implementation of TQM Practice						

4.4.4.3 Coefficients (Organizational Culture and TQM Implementation)

Table 4.25 reveals a Beta value of 0.887 which confirms the positive relationship that exists between organizational culture as one of the predicting factors preventing the implementation of TQM practices in Libyan construction industry as earlier stated in the rejection of the null hypothesis. The T- test value is 26.981 with a significance value of .000 which is less than 0.05. The unstandardized coefficients for the constant value is -.417, while organizational culture is 1.140, the constant value implies that a unit increase in organizational culture leads to 1.140 increase on the constant value as part of the factors preventing the implementation of TQM practices in Libyan construction industry.

Table 4.25 Coefficients (Organizational Culture and TQM Implementation)

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.

1	(Constant)	-.417	.112		-3.710	.000
	Organizational Culture	1.140	.042	.887	26.981	.000
a. Dependent Variable: Implementation of TQM Practice						

4.4.5 Result Summary of Tested Hypothesis

Table 4.26 Result summary of tested hypothesis

S/N	Hypothesis	Result
H1	There is a relationship between lack of management commitment and implementation of TQM practices in Libyan construction industry	**Significant**
H2	There is a relationship between lack of team work and implementation of TQM practices in Libyan construction industry	**Significant**
H3	There is a relationship between lack of training for quality improvement and implementation of TQM practices in Libyan construction industry	**Significant**
H4	There is a relationship between organizational culture and implementation of TQM practices in Libyan construction industry	**Significant**

5. CONCLUSSION

Total quality management practices applies to all areas of human endeavor cutting across every works of life(Abbas, 2020); (Eniola et al., 2019); (Psomas and Antony, 2017); (Bajaj et al., 2018); (Saffar and Obeidat, 2020); (Antunes et al., 2017); (Khan et al., 2019); (Prestiadi et al., 2019); (Mukhopadhyay, 2020); (Alghamdi, 2018). Total quality management (TQM) approach has been increasingly introduced into construction organizations in many countries as an improvement strategy for achieving customer satisfaction and business excellence. The concept has been increasingly introduced into construction organizations in many countries as an improvement strategy for achieving customer satisfaction and business excellence but it is not fully adopted in many countries which Libya is one of them. One of the challenges facing Libyan construction industries is the effective adoption of quality management systems hence there is need to ensure quality in Libyan construction industries as it is the structured approach to business management. Hence the driving force that prompted the reason for this research include investigations to know if contractors in Libyan construction industries implementing TQM practices?, If they are not, what is the cause of the problem? And lastly, how can these problems be prevented. Also, the study tried to identify the critical success factors of TQM ranging from factors that prevent construction industries in Libya from adopting TQM practices as well as Identification of factors that will encourage proper implementation of TQM in Libyan construction industries.

One of the challenges facing Libyan construction industries is the ineffective adoption of quality management systems (QMS) such as ISO and total quality management (TQM). The need to ensure quality in Libyan construction industries which requires structured approach to business management and control that enhance the ability to provide consistent product and services according to a specified quality is obvious for Libya construction industries. Hence,

the study tried to identify TQM practices and areas where there are deficiencies in its implementation in Libyan industries, and the knowledge lapses to the practice of TQM in industries. A survey questionnaires were structured and distributed to 15 construction companies in Benghazi, Libya. The questionnaire consisted of six parts which took into consideration the following: Respondents profile, Quality knowledge in the construction firm, Application of TQM and other quality management tools in the construction firm, Benefits of TQM implementation, Barriers to TQM implementation in the firm and Additional information number of resources that are accessible. Results of the study showed a statistical correlation of 0.966, 0.765, 0.895, 0.887 for the effect of lack of management commitment, Lack of team work, lack of training for quality improvement and organizational culture respectively on implementation of TQM practices in Libyan construction industry. The Results of the study is beneficiary to manufacturing and construction industries in identifying the various lapses to the implementation of TQM, make adjustments were necessary so as to meet customers' satisfaction which is the end goal.

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