Total Quality Management (TQM) Implementation and Competitive Advantage in Selected Manufacturing Firms: The Mediating Role of Organizational Culture

Thesis Submitted to:

Addis Ababa University, Addis Ababa

For the Degree of:

Master of Science in Management Specialization in Total Quality Management and Organizational Excellence

Submitted by:

Berhanu Mekonnen

Under the Supervision of:

Yitbarek Takele (PhD)

Date:

April, 2021

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DECLARATION

I, Berhanu Mekonnen, hereby declare that the thesis entitled ***Total Quality Management (TQM) Implementation and Competitive Advantage in selected Manufacturing firms: The Mediating Role of Organizational culture*** is my own original work and has not been submitted for any degree in any other University. It is offered for the award of the degree of Master of Science in Management Specialization in Total Quality Management and Organizational Excellence from Addis Ababa University.

Name: Berhanu Mekonnen *Advisor Name: Yitbarek Takele (PhD)*

Signature: _____ *Signature:* _____

Date: _____ *Date:* _____

STATEMENT OF CERTIFICATION

This is to certify that the thesis prepared by Berhanu Mekonnen entitled: ***Total Quality Management (TQM) Implementation and Competitive Advantage in selected Manufacturing firms: The Mediating Role of Organizational culture*** and submitted in partial fulfillment of the requirements for the degree of Master of Science in Management Specialization in Total Quality Management and Organizational Excellence compiles with the regulations of the university and meets the accepted standards with respect to originality and quality.

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TABLE OF CONTENT Page

List of Figures

List of Tables

Acronyms

CVF	**Competing Value Framework**
GOF	**Goodness of Fit**
HR	**Human Resource**
IT	**Information Technology**
MI	**Modification Index**
OC	**Organizational Culture**
OCAI	**Organizational Culture Assessment Instrument**
MBNQA	**Malcolm Belgrade National Quality Award**
ROI	**Return On Investment**
SEM	**Structural Equation Modeling**
SPSS	**Statistical Package for Social Science**
TQM	**Total Quality Management**

Abstract

The objective of this study was to assess the mediating role of organizational culture on the relationship between total quality management (TQM) implementation and competitive advantage in selected manufacturing firms. Previous empirical studies revealed that successful implementation of Total Quality Management practices benefited firms through improving organizational performance in many dimensions like improving product quality, customer satisfaction, lowering production cost, improving operational performance. However, to the researcher best of knowledge, there was no study that showed the mediating role of organizational culture in the relationship between Total Quality Management Practices and Competitive Advantage in manufacturing firms in Ethiopia as well as globally which in turn resulted knowledge gap. Therefore, this study aimed to bridge this gap in literature and knowledge .A total of 122 questionnaires were distributed to managers and supervisors from selected manufacturing firms. From the distributed questioners 98(80.3%) were collected and used in the data analysis. Likert scales were used for data collection which contains TQM implementation, organizational culture and competitive advantage questionnaires and to achieve the objective of the research the Structural Equation Model factor analysis called exploratory factor analysis was applied to reduce not producing useful factors. Internal consistency measure such as Cronbach alpha reliability, composite reliability, Discriminant validity, convergence validity, collinearly diagnostic, model fit and indices has adequately deal with. The result revealed that there is a significant correlation between TQM implementation, organizational culture and competitive advantage. The mediation analysis result of the study also shows that organizational culture partially (Complementary) mediates the relationship between TQM implementation and competitive advantage. Regulatory bodies and managers of the manufacturing firms should give emphasis on development of strong organizational culture while implementing TQM practices so that the firms' competitive advantage would be assured.

Key Words: *Total quality management (TQM), Organizational Culture (OC), Competitive Advantage, Manufacturing firms.*

CHAPTER 1 – INTRODUCTION

This section encompasses research background and discusses statement of the problem, basic research questions, objectives, significance, scope, limitation of the study, definition terms and finally organization of the study was presented.

1.1 Background of the study

Total Quality Management (TQM) is a firm-wide management thinking of continuously enhancing the quality of the products and services by pointing on the customers' needs and expectations to enhance their satisfaction and firm performance (Sadikoglu & Oclay, 2014). It is a technique which involves management and employees for constant improvement of products and services. **Organizational culture** is an outline of shared vital assumptions that the group learned as it alleviated its problems of external adaptation and internal integration that has worked well enough to be well thought-out valid and, therefore, to be learnt by new members as the correct way to see, think, and feel in relation to those problems Schein (1992)..

Competitive Advantage is the intensity to which an organization is able to form a defensible position over its competitors (Porter, 1985 and Barney, 1991). It includes capabilities that allow a firm to differentiate itself from its competitors and is an outcome of critical management decisions.

In the era of competitive business environment due to increase in global competition, total quality management (TQM) is viewed as a strategy to meet or exceed customer's requirements and expectations. Talib, F. and Rahman, Z.(2012) stated that TQM meets excellence in all parts of business through organization-wide constant improvement, dedication by all, and customer focus. The benefits of TQM can be achieved through identifying the sets of common TQM principles and practices as applicable to the manufacturing industries. These sets of TQM practices if implemented properly will result to successfully improve firm's performance (competitiveness). TQM practices are defined by several authors. Rockart (1979) defined TQM elements as the some degree of number of fields in which their combination results competitive performance for organization.

Also, Boynton and Zmud (1984) justified TQM elements as those few things that must go well to bring achievement. These definitions emphasize gaining a competitive edge and are applicable to all the sectors.

Currently, the thought of culture is the subject of stressed area in the research of total quality management. Total quality management and organizational culture are interrelated (Lukasova et al., 2004; Sousa-Poza et al., 2001).Many literatures also showed that organizational culture plays an important role in the success of business unit, and there has been ample evidence of positive correlation between organizational performance (competitiveness) and organizational culture. Therefore, in this study how organizational culture, which was assumed to be a mediating variable, could influence the relationship between TQM implementation and firm's competitive advantage has been examined thoroughly.

1.2 Problem Statement

In recent decades total quality management practice become very familiar concept and many firms are implementing it for continuous improvement and enhance their competitiveness both locally and globally. Empirical studies revealed that successful implementation of TQM benefited organization through improving organizational performance and competitiveness in many dimensions like product quality, customer satisfaction, financial performance, operational performance (Irfan & Kee, 2013; Psomas & Jaca, 2016; Samat et al., 2006).

Manufacturing companies in global competition today are focusing on quality. Emphasis to quality generates remarkable impact to business performance through two ways i.e. (1) the effect on production costs and; (2) the effect on earnings (Gaspersz, 2005). In general, an organization could have one or more of the following advantages when compared to its rivals: lower prices, higher quality, higher dependability, and shorter delivery time. These advantages will, in turn, enhance the organization's overall performance (Competitive advantage) (Mentzer et al., 2000). An organization giving superior quality products could charge higher prices and enlarge its profit range on sales and revenue.

Recent researchers have found total quality management implementation has a significant association with firms' performance (Al-Dhaafri et al., 2016; Sinha and Dhall, 2018). Though, other researchers found insignificant or negative association between TQM and performance (Duarte et al., 2011; Yeung and Chan, 1998). Certainly, a number of studies have identified that three-quarter of TQM implementations have problems and not succeed to achieve any results, causing considerable financial loss and threatening the organization's existence (Haffar et al., 2017).

These mixed results lead to the question about the compatibility of the TQM-Organizational performance (Competitive Advantage) relationship, as well as what elements can contribute to the success of this association.

The study in the field of TQM displays that the organizational culture (OC) is approved as one of the utmost significant elements for the success or failure of total quality management implementation in improving performance (Competitiveness) (Gimenez-Espin et al., 2013; Green, 2012). According to Al-Bourini et al. (2013), most managers found it is problematic to harmonize the exercise of organizational culture with their total quality management undertakings, largely because of the complex characteristics of organizational culture. In this case, TQM should focus on improving the spirit of managerial leadership among the members of the organization rather than on the process of long-term supervision and orientation, to support pride in workmanship, use of work groups, avoid fear and endorse participatory management (Abiola-Falemu et al., 2008). A change of organizational culture affects the attitudes of employees and is important to the successful implementation of TQM (Gimenez-Espin et al., 2013; Mohammad Mosadegh Rad, 2006) that leads to competitive advantage.

In fact, organizational culture can build a suitable environment which influences both operational performance and competitive advantage (Cadden et al., 2013). Many, even opposing, types of organizational culture has developed (Baird et al., 2011; Kanapathy et al., 2017), and these differences lead to the question of the effect of organizational culture (OC) on the link between TQM and competitive advantage (CA). Furthermore, there is no concurrent investigation on the relationship between these three variables, and there is literature gap. Therefore, this study contributed to fill the literature gap in this area, as it provides valuable empirical evidence on the mediating effect of organizational culture in the association between TQM implementation and competitive advantage in selected manufacturing firms.

1.3 Research Questions

From the statement of the problem the following research questions were raised. Therefore, the researcher was addressing the following research questions:-

1. To what extent do implementing TQM practices assure competitive advantage in manufacturing firms?

2. Is there a concurrent relationship between TQM implementation, Organizational culture and competitive advantage in manufacturing firms?

3. Does organizational culture mediate the relationship between TQM implementation and competitive advantage in manufacturing firms?

1.4 Objective of the Study

1.4.1 General Objective

- To assess the mediating effect of organizational culture in the relationship between Total Quality Management (TQM) implementation and Competitive Advantages in selected manufacturing firms.

1.4.2 Specific Objectives

1. To describe the extent of implementing Total Quality Management practices in assuring the competitive advantage in manufacturing firms.
2. To assess the concurrent relationship between TQM implementation, organizational culture and competitive advantage in manufacturing firms.
3. To determine the mediating effect of organizational culture in the relationship between Total Quality Management (TQM) implementation and competitive advantage in manufacturing firms.

1.5 Significance of the Research

Total quality management (TQM) implementation has been recognized as one of the important issues and has substantial amount of interest among managers and researchers. In this study, a TQM implementation was proposed as one of the effective ways for organizations to improve their competitiveness.

Competitiveness is the main goal of any organizations; the result of the study identified the extent of implementing TQM practices in assuring competitive advantage of manufacturing firms and the mediating effect of organizational cultures in the relationship between TQM implementation and Competitive advantage in manufacturing firms.

The study used Baron and Kenny (1986) to examine the mediating effect of organizational culture in the association between TQM implementation and competitive advantage in selected manufacturing firms in Ethiopia which was examined for the first time and filled the gaps in literature and knowledge. Hence, this study will create better understanding for readers on the subject matter and also serve as the ground for those who want to conduct further studies in the related area. Thus, it is expected to benefit both researchers and firms.

1.6 Scope of the Study

The concept of total quality management and competitive advantage with mediating role of organizational culture is very large and requires detail assessment of the implementation, usefulness and challenges of TQM. This study explained the extent of TQM practices in assuring competitive advantage and assessed the mediating role of organizational culture based on the review of literatures on selected manufacturing firms.

1.7 Limitation of the Study

The major constraints the researcher faced while conducting this study were: lack of empirical research on the related study area especially in our country, and also the non-availability of adequately published and documented data on the topic.

Lack of previous studies on the topic area of this study globally as well as in Ethiopia and lack of secondary data which measures TQM practice, organizational culture and competitive advantage enforced the researcher to depend on only primary data which was collected through structured questionnaire.

To carry out the research within the short time frame and to decrease cost of carrying out the study, the researcher was restricted the sample to few food and beverage processing manufacturing firms located in Addis Ababa and Oromiya special zone which is around Addis Ababa, Ethiopia. An in-depth study in all industries could not be conducted due to shortage of resource.

1.8 Definition of key terms

Total Quality Management (TQM): is a firm-wide management thinking of constantly improving the quality of the products and services by meeting on the customers' needs and expectations to enhance customer satisfaction and firm performance (Sadikoglu & Oclay, 2014).

Organizational culture is an outline of shared basic assumptions that the group learned as it alleviated its problems of external adaptation and internal incorporation that has worked well enough to be considered valid and, therefore, to be learnt by new members as the right way to perceive, think, and feel in relation to those problems Schein (1992).

Competitive Advantage is the level to which an organization is able to form a sound position over its competitors (Porter, 1985 and Barney, 1991).

Manufacturing firm is any industry that makes products from raw materials by the use of manual labor or machinery and that is usually carried out systematically with a division of labor.

1.9 Organization of the study

The study is arranged in five chapters. The first chapter contained introduction which includes background of the study, statement of the problem, research questions, objective of the study, significance of the study, scope of the study, limitation of the study, and structure of the study. Chapter two contained related literatures reviewed. Chapter three discussed about the research design and methodology that was used in the study. In the fourth chapter the research analysis i.e. finding, interpretations and discussion were presented. Finally, chapter five discussed about summary, conclusion and recommendation of the study.

CHAPTER 2 -LITERATURE REVIEW

This section encompasses the theoretical review on implementation of TQM practices which assures competitive advantage, Organizational culture traits and competitive advantage dimensions. It also includes empirical evidences on association between TQM implementation and competitive advantage, TQM implementation and organizational culture and organizational culture and competitive advantage of firms and finally conceptual frame work of the study and hypothesis were drawn from literature review.

2.1 Theoretical Literature Review

2.1.1 Total Quality Management (TQM)

Several quality gurus and philosophers defined TQM in a different way with respect to different perspectives. One of the most well-known features of the TQM literature is the absence of any homogeneous definition of TQM (Talib, 2012). According to Prajogo and McDermott (2005), TQM is a management form that used to meet customer wants and expectations within an organization through constant improvement of the quality of goods and services and by integrate all functions in an organization.

The impact of TQM on manufacturing sector was studied by many scholars particularly the TQM practices. The review of these literatures suggested that there are numerous TQM practices that can be identified as being crucial to the successful implementation of TQM in manufacturing industries. These TQM practices differ from one author to another, though there may be a collection of common core practices created which can be appropriate to this area. One of the earlier empirical studies in the TQM area that analyzed the TQM constructs in the manufacturing was conducted by Ahire et al. (1996). In this study, he had analyzed the detailed contemporary Quality Management literature and identified 12 constructs of integrated quality management strategies using a survey of 371 manufacturing firms. The constructs are empirically tested and validated. These are: top-management commitment (TMC), benchmarking, employee involvement (EI), internal quality information use, training, empowerment, supplier QM, statistical process control usage, design quality management, supplier performance, customer focus, and product quality.

More importantly, Demirbag et al. (2006) conducted an empirical study to discover factors critical to the achievement of TQM in the 500 Turkish manufacturing industries. They concluded that there are seven critical success factors of TQM: quality data reporting; role of top-management; employee relations; supplier quality management; training; quality policies; and process management. Samson and Terziovski (1999) examined the effect of TQM program on organizational performance of 1200 manufacturing industries in Australia. They reported 13 TQM practices followed by typical manufacturing organizations. They are: customer satisfaction; cost of quality; employee morale. delivery in full; warranty rates; defect rates; productivity; employee growth; cash flow; growth; sales growth; market share export growth; and innovation.

A new study by Salaheldin (2009), anticipated a model consists of 24 critical success factors in a research of 297 small to medium sized enterprises (SMEs) in the Qatar industrial sector. The results showed significant improvements in operational and organizational performance of the SMEs. Beside this, Dow et al. (1999) in their research on 698 manufacturing firms resulted in nine TQM factors which are liable for successful implementation of TQM: workforce commitment; customer focus; use of teams shared vision;; personnel training;; use of benchmarking; cooperative supplier relation use of advanced manufacturing systems; and use of JIT principles.

A study by Arumugam et al. (2008) explored the relationship between TQM practices and quality performance on 390 ISO 9001:2000 certified manufacturing organizations in Malaysia. They revealed eight TQM practices which were found to be partially correlated with quality performance of the Malaysian ISO 9001:2000 certified manufacturing organizations. The practices are: leadership; process management; information analysis; customer focus; supplier relationship; quality system improvement; continual improvement; and people involvement. Further, Sila and Ebrahimpour (2005) in their empirical study of relationship among critical TQM factors and business results in 220 manufacturing companies set up seven TQM factors as: leadership; strategic planning information and analysis; human resource management; process management; customer focus; and supplier management (SM).

A study in 2006 by Lakhal et al. explored the relationship between TQM practices and their impact on performance and reveals seven TQM practices which are responsible for enhanced performance of 133 manufacturing Tunisian companies from the plastic transforming sector.

The practices identified are: Top Management Commitment and support; organization for quality; employee training; employee participation; customer focus; information and analysis; and quality system improvement. Other similar studies by Zhang et al. (2000), Wilson and Collier (2000), Joseph et al. (1999), Dahlgaard et al. (1998) and Sohal and Terziovski (2000) are of interest and were covered in the above literature review.

After comprehensive review of the literature the researcher analyzed that most of researchers evaluate TQM through seven major dimensions as applicable to the manufacturing industry which were common and have highest frequency of occurrences. These are: Top management commitment, Customer focus, Continuous improvement, People Management, Information and Analysis System, Process Management and Supplier Management. Though there are many other practices found to be present but their frequency of occurrences were very low, this suggests that they are rarely used by the researchers in their studies. The current study used these seven most influential dimensions of TQM in order to investigate their relationship with competitive advantage.

To sum up, the researcher considered the followings to select these TQM dimension;-

- The relevance and importance of the practices to manufacturing industry that are mentioned in different literatures.
- The selected TQM dimensions were most influential predictors of performance in manufacturing industries as proved by many researchers.
- Several TQM dimensions were existed in manufacturing as well as in service sectors. But the researcher focused on TQM dimensions frequently applicable to manufacturing sectors.

2.1.1.1Top Management Commitment (TMC)

Top management commitment is a TQM factor that has been mentioned almost in all TQM literatures as a critical success factor of TQM. Top management commitment represents as an engine in mobilizing everyone in the organization and creates conducive environment for the successful implementation of TQM. According to Aletaiby, Kulatunga and Pathirage (2017), the essential task of the top management is to guarantee this transformation and ensure its commitment towards the TQM activities. In a TQM process, successful leadership should build up a clear mission statement and then build up strategies to maintain the mission. A sound establishment for initiating TQM activities is laid out by top management.

2.1.1.2 Customer Focus (CF)

Customer focus is the extent to which an enterprise constantly satisfies customer needs and expectations (Zhang, 2000). Organizations should understand customers' needs and wants work to meet their requirements to satisfy customers and at the same time attain organizational goal and missions. Thus, the fundamental concept of TQM, according to Juran (1999, p.391) is customer focus for improving and enhancing business performance. Conforming customer's needs and expectations is the essence for success in today's business (Yusuf et al., 2007). For continuous improvement, a customer's requirements must be consistently measured and satisfied, methods such as market research, enquiring sales staff, and comparing competitors can be used to collect information (Talib& Rahman, 2010; Yusuf et al., 2007).

2.1.1.3 People Management (Employee Involvement, PMGT)

The term total in TQM means that every organizational member is concerned in quality improvement processes, decision-making processes, problem solving, and the financial success of the organization. Hence, employee participation is an integral part of the TQM program and cannot be ignored, especially in manufacturing industries as quality product cannot be delivered to the target customers without the participation of all members of the organization (Talib& Rahman, 2010).
The emphasis throughout all stages of TQM implementation should be involving all employees in all aspects of the organizations. The basic idea is that everyone is responsible for producing quality products, meeting customer requirements, and achieving entire company TQM (Yusuf et al., 2007).

In the manufacturing sector, training and education means the training of employees and empowerment responsible for producing and delivering quality product. It is an important part of TQM implementation, especially in manufacturing as it explores the knowledge to employees about the principles and core concept of TQM to achieve desired goals. It also imparts knowledge of continuous improvement and innovation in product process to attain full benefits and business excellence. The core concept of training and education is to maintain high level of quality through the best use of talents and activities of an organizations' entire workforce (Talib& Rahman, 2010).

2.1.1.4 Process Management (PM)

The usefulness of process management realization has been cited as one of the major dimensions of in corporate quality efforts (Anderson et al., 1995). Process refers to an arrangement of machines, methodology, materials, and labors engaged in production. The aim of process management is to decrease process variation by building quality into the production process (Flynn et al., 1995; Anderson et al., 1994) that led to enlarge the quality of outputs as well as diminishing the costs such as rework costs and waste costs. The continuation of process capacity to meet production requirements is the vital matter in process control and enhancement (Feigenbaum, 1991; Juran & Gryna, 1993). Deming confirmed that improving product quality should not be dependent on group inspection. Quality emerges not from inspection, but from enhancement of the production process (Deming, 1986).

2.1.1.5Continuous Improvement (CI)

As stated based on MBNQA (Malcolm Baldrige National Quality Award) core values, the concept of continuous improvement includes both incremental and breakthrough improvement activities in every operation, function, and work process in the company. It stresses that improvements may be made through enhancing value to customers; reducing errors, defects, and waste; improving responsiveness and cycle-time performance; improving productivity and effectiveness in the use of all resources.
Thus, improving the company's performance and leadership position in fulfilling its public responsibilities and corporate citizenship (Juran, 1999, p. 405; Yusuf et al., 2007), this requires asking everyone to do their jobs and ensure processes that are more effective, efficient, and adaptable. The principle of continuous improvement is maintaining the never-ending perception in everyone's mind and in every career (Yusuf et al., 2007).

2.1.1.6 Information and Analysis (IA)

Successful realization of TQM can be achieved by supplying the employees with information regarding the process and the customers. Prompt, adequate and relevant data that are critical to the implementation and practice of TQM constitute information and analysis. In a TQM process people need to communicate across organizational levels, functions and locations to work out current problems, prevent new ones and implement change.

Measures for proactive prevention rather than reactive correction are employed to monitor quality in order to sustain a true customer focus (Sureshchandar, Rajendran & Anantharaman, 2010).

2.1.1.7 Supplier Management (SM)

The supplier quality is vital element of quality management in the organization because materials and purchased parts are a major cause of quality problems (Kaynak, 2003; Flynn et al., 1994).Supplier association focus on or depend on a small number of suppliers; engage suppliers in product development; assess suppliers based on quality; provide training and technical assistance to suppliers (Sarapha et al., 1989; Kaynak, 2003; Sila & Ebrahimpour, 2005;Andersen et al., 1995; Powell, 1995; Ahire et al., 1996; Flynn et al., 1994, 1995; Black & Porter, 1996).Researchers recommended the organizations selected their suppliers on the basis of quality, rather than only on price (Feigenbaum, 1991; Ishikawa, 1985).

According to Deming (1986) the price has no important without an assessment of the quality that is being purchased. Supplier quality management enhances the alliance between suppliers and firms by agreeing on participation in the design and production process (Flynn et al., 1995; Kaynak, 2003). Suppliers' management used to assist tasks such as following cooperating with suppliers to ensure meeting the customers' expectations, involving suppliers in the product development process, developing strategic alliances with suppliers, and improving the process management (Flynn et al., 1995; Anderson et al., 1995).

Several kinds of research have done on TQM and there is no general agreement on the elements that construct TQM (Corredor & Goni, 2011), the elements applied are varied depending on the objective of the research (Munizu, 2013). As such few researches focused on the technical part, while others on only general management philosophy of TQM.

As previous studies revealed in various countries in the world that competitive advantages and organizational performance improvements can be obtained and sustained through the adoption of the TQM implementation (Martínez-Lorente et al., 1998; Gupta, 2005; Yusuf et al., 2007; Irfan & Kee, 2013; Al-Sabi et al., 2017), it also proposed in this study that competitive advantage in manufacturing firm can be improved through the successful implementation of TQM along with incorporation of strong organizational culture within manufacturing industries.

2.1.2 Competitive Advantage (CA)

According to Kuo (2017), competitive advantage is the implementation of strategies that cannot be used straight by other companies that can overwhelm cost reduction, increase market opportunities; reduce competition levels, so as to advance the execution capacity of the company (Kuo et al., 2017). The concept of competitive advantage was initiated by Ansoff in 1965 and Uyterhoeven et al. in 1973, which defines it as a means for companies to use their capabilities and wealth to generate superior returns in competitive markets, and lead in their business sector.

Raturi et al. (2005) and Li et al. (2006) also stated in their research competitive advantage as a thing that an organization is able to make a defensible action against its competitors and incorporate a characteristic that helps an organization to differentiate itself from its rivals. Other research work by Somuyiwa et al (2012) explained competitive advantage metrics in five dimensions: Price/Cost, Quality, Delivery dependability, Product Innovation, and Time to market.

According to the reviewed literatures above, competitive advantage is a resource or capabilities in a firm that made it excel among its competitors and can be measurable using certain dimensions. Hence, in this study the researcher adopted Cost, Quality, Delivery dependability, Product innovation, and Time to market competitive advantage metrics developed by Somuyiwa et al (2012) to assess competitive advantage in studying the mediating effect of organizational culture in the association between TQM implementation and competitive advantage in manufacturing firms.

2.1.3 Organizational Culture (OC)

Organizational culture is a generally used term but one that seems to give rise to a degree of ambiguity. According to Watson (2006), the concept of culture was originally derived from a metaphor of the organization as ‘something developed’. For the long-ago, most academics and practitioners exploring organizations recommend the concept of culture as the climate and practices that organizations constructed around their management of people, or to the developed values and statement of values of an organization (Schein, 2004). Culture, therefore, gives organizations a sense of uniqueness and determines, through the organization’s legends, rituals, beliefs, meanings, values, norms and language, the way in which ‘things are done around here’. An organizations’ culture sum up what it has been good at and what has worked in the past.

Types of Organizational Culture

Many literatures explained that there is no just one organizational culture. It is broadly known by the academic literature that different organizations have unique cultures. Also, there is a possibility to exist a number of cultures within organizations. One categorization of culture types is projected in Bradley and Parker's (2006) Competing Values Framework (CVF), based on effort by Quinn and Rohrbaugh (1983).

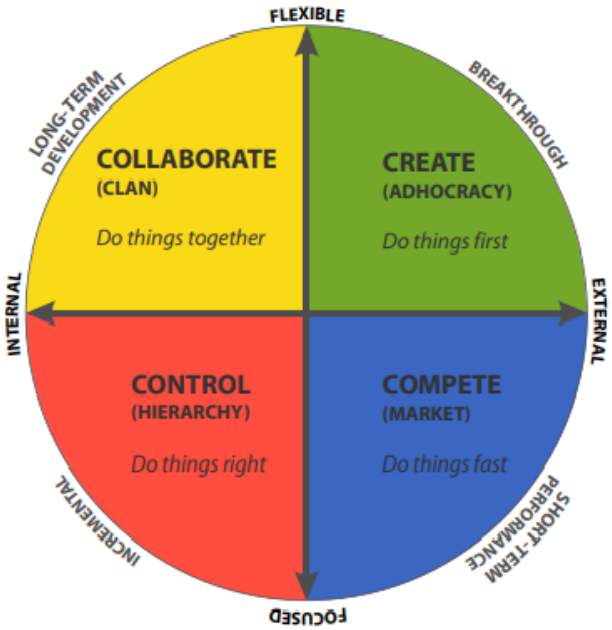


Figure 1. Competing value framework of Organizational Culture

According to Quinn and Rohrbaugh (1983), the Competing value framework include four types of organizational culture; namely, clan culture, adhocracy culture, hierarchy culture, and market culture (Fiordelisi, 2014; Sok et al., 2014;Wiewiora et al., 2014). Clan or supportive culture holds an employee-oriented leadership, cohesiveness, participation, and teamwork (Han, 2012). Adhocracy or an entrepreneurial culture consists of innovative, inventive, and elastic characteristics (Veiseh et al., 2014). Sok et al. (2014) defined hierarchy culture as a grouping of rules and regulations to manage activities in the organization. Market culture holds contest and organizational goal achievement (Pinho et al., 2014). Each component in the framework underlines a core value that is opposite from the value on the other end of the continuum -i.e., flexibility versus stability, internal versus external. These elements, therefore, produce sections that are also contradictory or competing on the diagonal.

The upper left section identifies values that emphasize an internal, organic focus, whereas the lower right section identifies values that emphasize external, control focus. Similarly, the upper right section classifies values that emphasize external, organic focus whereas the lower left section emphasizes internal, control values. These competing or opposite values in each section give rise the name for the model, the Competing Values Framework. These four cultures are proposed as archetype. In actuality, organizations are expected to reveal all four cultures to some degree. According to CVF, there is a dominant culture (manifesting itself in the views of employees at all levels of the organization), but in actuality there is no one best organizational culture instead all four cultures can work in a given organization and with relative steadiness over time.

Another type or framework for culture is, based on Denison's framework of organizational culture. The center of Denison's model is the underlying beliefs and assumptions that stand for the deepest levels of organizational culture. According to Denison, these basic assumptions offer the base from which (1) more surface-level cultural elements such as values and observable artifacts – symbols, heroes, rituals, etc. – are resulted, and (2) conduct and action spring Denison (2000).

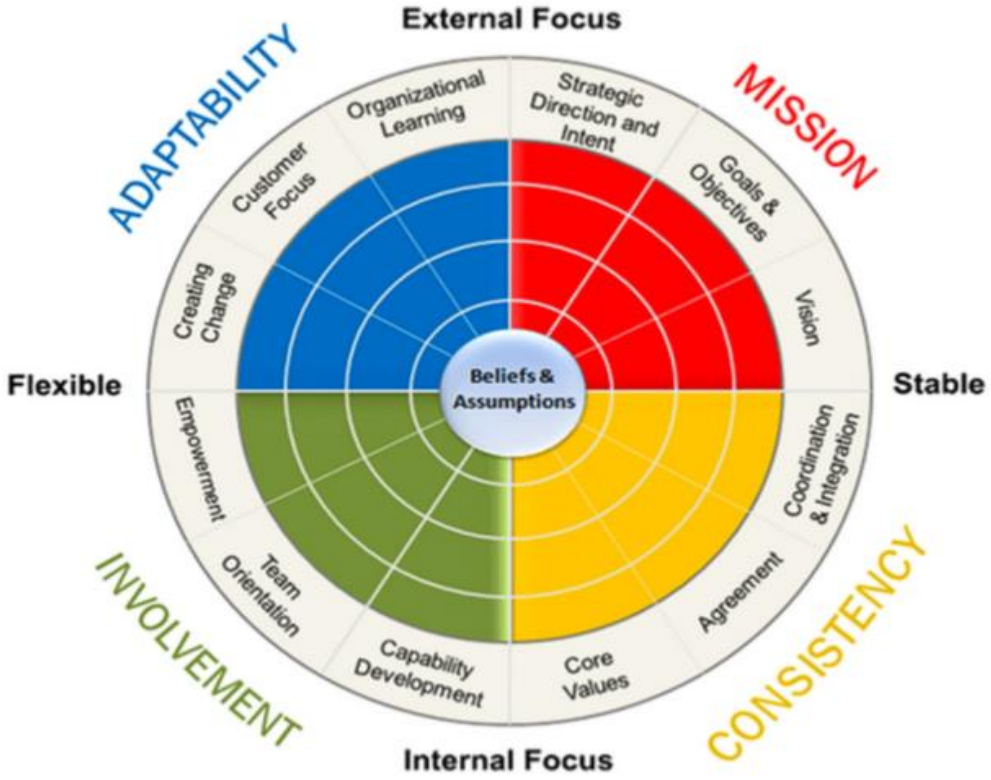


Figure 2. Denison's Organizational culture Model

Denison's organizational culture model holds four cultural traits. The four traits of organizational culture in Denison's structure are as follows:

Involvement: Effective organizations authorize their people; build their organizations around teams, and build up human capability at all levels (Lawler, 1996). All people of the organization are dedicated to their work and think that they own a piece of the institute. Workers at all level fills that they have at least some assistance into decisions that will affect their work and that directly linked to the objective of the organization.

Consistency: Organizations also be likely to be effective because they have "strong" cultures that are extremely consistent, well synchronized, and well-integrated. Behavior is entrenched in a set of core values, and leaders and followers are experienced at reaching agreement even when there are varied points of view (Block, 1991). This type of consistency is a powerful source of stability and internal integration that drives from a common mindset and a high degree of conformity.

Adaptability: Ironically, organizations that are well incorporated are often the most challenge ones to change. Internal integration and external adaptation can often be at opposite dimensions. Adaptable organizations are motivated by their customers, take risks and learn from their mistakes, and have capability and experience at creating change (Nadler, 1998). They are constantly changing the system so that they are improving the organizations' combined abilities to give value for their customers (Stalk, 1988).

Mission: flourishing organizations have a clear sense of purpose and where to go that clearly put organizational objectives and strategic plans and states a vision of how the business will look in the opportunity (Ohmae, 1982; Hamel &Prahalad, 1994). When an organization's primary mission changes, changes also happen in other portions of the organization's culture.

Each trait breaks down into three indexes. For example, Adaptability is classified into Creating Change, Customer Focus and Organizational Learning. Each of the four traits is marked by a color on the circumflex model. This color-coding helps to cluster the related constructs into the four traits and also helps provide visual and intuitive feedback in the reports. Denison's research has confirmed that successful organizations have high culture scores in all four traits. Thus, successful organizations are likely to have cultures that are adaptive, yet highly consistent and predictable, and that promote high involvement, but do so within the context of a shared sense of mission.

This vigorous model also splits into hemispheres: Internal/External and Flexible/Stable.

EXTERNAL FOCUS: Adaptability + Mission

An organization with tough external focus is committed to adapting and changing in response to the external environment. It has a regular eye on the marketplace and a strong sense of where it is headed. A tough external focus typically impacts revenue, sales growth, and market share.

INTERNAL FOCUS: Involvement + Consistency

An organization with a strong internal focus is dedicated to the dynamics of the internal integration of systems, structures, and processes. It recognized its people and prides itself on the quality of its products or services.

FLEXIBILITY: Adaptability + Involvement

A flexible organization has the potential to modify in response to the environment with a strong focus on its customers and its people.

STABILITY: Mission + Consistency

A steady organization has the capacity to stay focused and predictable over time. A steady organization is typically associated to high return on assets, investments and sales growth, as well as strong business operations.

Denison's culture model has two important dynamic tensions that a flourishing organization must negotiate. The first, tension between Top-Down and Bottom-Up Management, marked by the Mission and Involvement traits, is important for organizations to understand. To be flourishing, an organization must be able to association the mission, purpose and goals of the organization to make a shared sense of ownership, commitment and responsibility for its employees. The second significant dynamic tension is the association between Adaptability and Consistency. Flourishing organizations learn how to balance the dual challenges of external adaptation and internal integration and consistency. In all situations, it is not an either/or proposition. Previous practice shows that the most flourishing organizations have a reasonable profile.

The present research intended to assess the mediating effect of organizational culture in the association between TQM implementation and competitive Advantage in selected manufacturing firms. Based on the reviewed literature the researcher has selected the Denison's Organizational Culture model in the research for the following reasons:

1. It provides organizations with an easy-to-interpret, business-friendly approach to performance improvement based on sound research principles.
2. It links organizational culture to organizational performance (Competitive) metrics such as Sales Growth, Return on Equity (ROE), Return on Investment (ROI), Customer Satisfaction, Innovation, Employee Satisfaction, Quality and more

2.2 Empirical Literature Review

2.2.1 TQM and Competitive Advantage

Several researches (like Seawright &Younog, 1996; Powell, 1995; Hewitti, 1994; Reichi, 1994; and Feigenbaum, 1990) points that the implementation of TQM can be used to assure competitive advantage and other researches (Flynni et al., 1995; Hendricks & Tripilett, 1989; Spitizer, 1993) also proved that TQM able to assure sustainable competitive advantage. Competitive advantage is generally evaluated either by financial means (Kaynak, 2003) or Non-financial means, "product quality" (Ahire and O'Shaughnessy, 1998) and customer fulfillment or enhanced market share (Anderson et al., 1995, Curkovic et al., 2000).

Research by(Porter, 1985 and Campbell-Hunit, 2000) on competitive strategy recommended that a firms can possess' either reduced cost or differentiation as competitive advantage. To achieve above average result a cost leader firm needs to have a product with a price at or near the industry's average at the same time seeming as greater to its competitors (Porter, 1985). To attain marking out, an organization must be unique in its competitors along with some dimensions that are widely appreciated by customers (Porter, 1985). Reed et al. (1996) showed that TQM support to make low cost or differentiation based competitive advantage. TQM help firms to achieve firms' desired efficiency which leads to competitive advantage (Deming, 1982).

Samson and Terziovski (1999) revealed that the association between TQM implementation and organizational performance is significant in a general sense, but not all elements of TQM were high predictors of performance.

The categories of the TQM implementation that were most frequently seen in manufacturing firms were top management commitment, continuous improvement, customer focus, information and analysis, people management, process management, and supplier management. These TQM dimensions have stake in ensuring competitive advantage of firms as summarized as below.

Organization must be aware the customers' requirement as their success depends on how they retain them for long time. People management is another useful element as most of firms cost advantage results from its productive and motivated worker. Top management commitment also brings comfortable work environment in order to foster collaboration upgrading skills of the employee.

The result is accomplished by process management, as more capable process, is preferred when the wealth are managed. Continues improvement makes balance among them and close association with the suppliers as it equally useful would enhance the capacity to make value.

According to Ali Bakhit Jaafreh (2013), the correlation analysis of all quality management variables are positive correlation but the results show that the four out of six variables (top management commitment, strategic planning, customer focus, and employee relation) are positively correlated with the performance but process management and supplier quality are a weak positive correlation and not significant with performance. The correlation value suggests the four out of the six quality management dimensions are significantly correlated to the performance and the rest supplier quality and process management is not significantly correlated to performance. Furthermore, the result showed the quality management overall is a positive and significant correlation with performance. The regression result of the research indicated that the top management, strategic planning, employee relation, and customer focus, have a significant direct impact on performance and asserts that there is a strong trend among the individuals in the sample for the impact of top management, strategic planning, employee relation, and customer focus on performance.

In the reviewed literatures above, it is stated that TQM implementation has significant factor in assuring competitive advantage and improve performance in firms but not explicitly addressed the mediating effect of an organizational culture. Hence, in this study, the researcher examined the influencing role of organizational culture in the relationship between TQM implementation and competitive advantage in selected manufacturing firms.

2.2.2 TQM and Organizational culture

In recent times, the idea of organizational culture is the center of interest in research on total quality management. The cultural effect on quality management and combined association between TQM and organizational culture were discussed from the start of the 1990´s (Hildebrandti et al., 1991; Westbrook, 1993).

Total quality management and organizational culture are related (Lukasovai et al., 2004; Sousa-Pooza et al., 2001). According to Lukasova (2004), the arrangement of quality management controls the substance of the organizational culture. On the other hand, the substance of the organizational culture controls the quality system implementation and its operation (Lukasova et al., 2004).
A few empirical researches support that culture show an effect on TQM implementation but many researches focus only on conventional classification of organizational culture. It is stated in some literatures in the field of TQM that there is an increasing acknowledgment of the influence of four organizational culture types of the Competing Values Framework (CVF) on the success or failure of TQM executions (Zu et al., 2010; Baird et al., Al-Karaghouli & Ghoneim, 2013). Several studies have assessed the result of the four culture types of CVF model and its harmonized scale (OCAI), namely group, adhocracy, hierarchical and market/rational cultures, on the implementation of TQM practices (e.g. Dellana & Hauseer, 1999; Al-Khalifaa &Aspinwall, 2001; Prajogoo & McDermott, 2005; Gimeenez-Espin et al., 2013).For example, Douglass and Judge (2001) identified empirical support that the adhocracy culture has a positive association with TQM implementation and achievement. Also, adhocracy facilitates continuous innovation, a highly skilled workforce, great independence and availability of useful information (Flynn et al., 1994; Lo, 2002; ORelly et al., 1991).

Another model of organizational culture where its influence on TQM practices determination is based on characteristics: Involvement, consistency, mission and adaptability, developed by Denison (2000). The Denison model continues to divide each characteristic into three sub-dimensions. These are: Involvement consists of team orientation, empowerment, and capability development; consistency holds core values, agreements, and coordination and integration; adaptability trait consists of creating change, customer focus and organizational learning, and the last Mission holds vision, strategic direction and intent, and goals and objectives.

In section 2.1.1 above, we selected the TQM elements to be used in this study as top management commitment, continuous improvement, customer focus, information and analysis, people management, process management, and supplier management which would assure the competitive advantage of firms.

There viewed literatures showed that TQM implementation and organizational cultures have strong relationships but it is not explicitly expressed their effect in assuring the competitive advantage of firms. Hence, in this study, the researcher has adopted the Denison organizational culture model in studying the influencing role of organizational culture in the relationship with implementation of TQM practices and competitive advantage of firms.

2.2.3 Organizational culture and Competitive Advantage

The role of culture is reflected on many works examining cultural aspects and valuable organization outcomes. The function of organizational culture on business success is explained by Calori and Sarnin (1991), Linnen luecke and Griffiths (2009), Sadri and Lees (2001), Klein (2011), Flamholtz and Yvonne (2012), Jofreh and Masoumi (2013), Vitel et al. (2009). The literatures showed that organizational culture plays an important role in the success of business unit, and there has been ample evidence of positive correlation between organizational performance (competitiveness) and organizational culture. Several of Japanese corporations get achievement through organizational culture development and subsequent employees' commitment (Jofreh & Masoumi, 2013).

Studies focused on assessing the influence of organizational culture on performance have reported mixed findings. Based on Tseng (2010) research, there is significant positive influence of adhocracy and hierarchical cultures on performance. However, according to Fekete and Bocskei (2011) findings, clan and adhocracy cultures were significant positive predictors of performance. They show that hierarchical culture has negative effect on financial performance. Zhang and Zhu (2012) commence contrary evidence with regard to hierarchical culture, but reported significant positive impact of both adhocracy and market cultures on performance.

Another research by Morgan and Vorhies (2018) revealed the indirect positive link between market culture and market performance through customer satisfaction. However, they clarify that market culture has direct positive effect on financial performance and indirect influence in the course of

innovation. In consistent with Choi et al. (2010), who argue that all types of culture are vital predictors of performance, Chatman et al. (2014) argued that all the four types of organizational culture based on CVF has significant positive influence on performance. For business organizations that are in stiff competition, the role of organizational culture is considered essential as it has influence on performance of firms.

Organizational culture as a collective identity and stick between members serves to mitigate any differences in attitudes, values; behaviors resulted from varied cultural backgrounds. Denison et al. (2003) put forward an organizational culture model with its effect on business effectiveness. In this model, Denison explains internal and external factors. Organizations with market focus and opportunistic nature often have problems with internal integration.

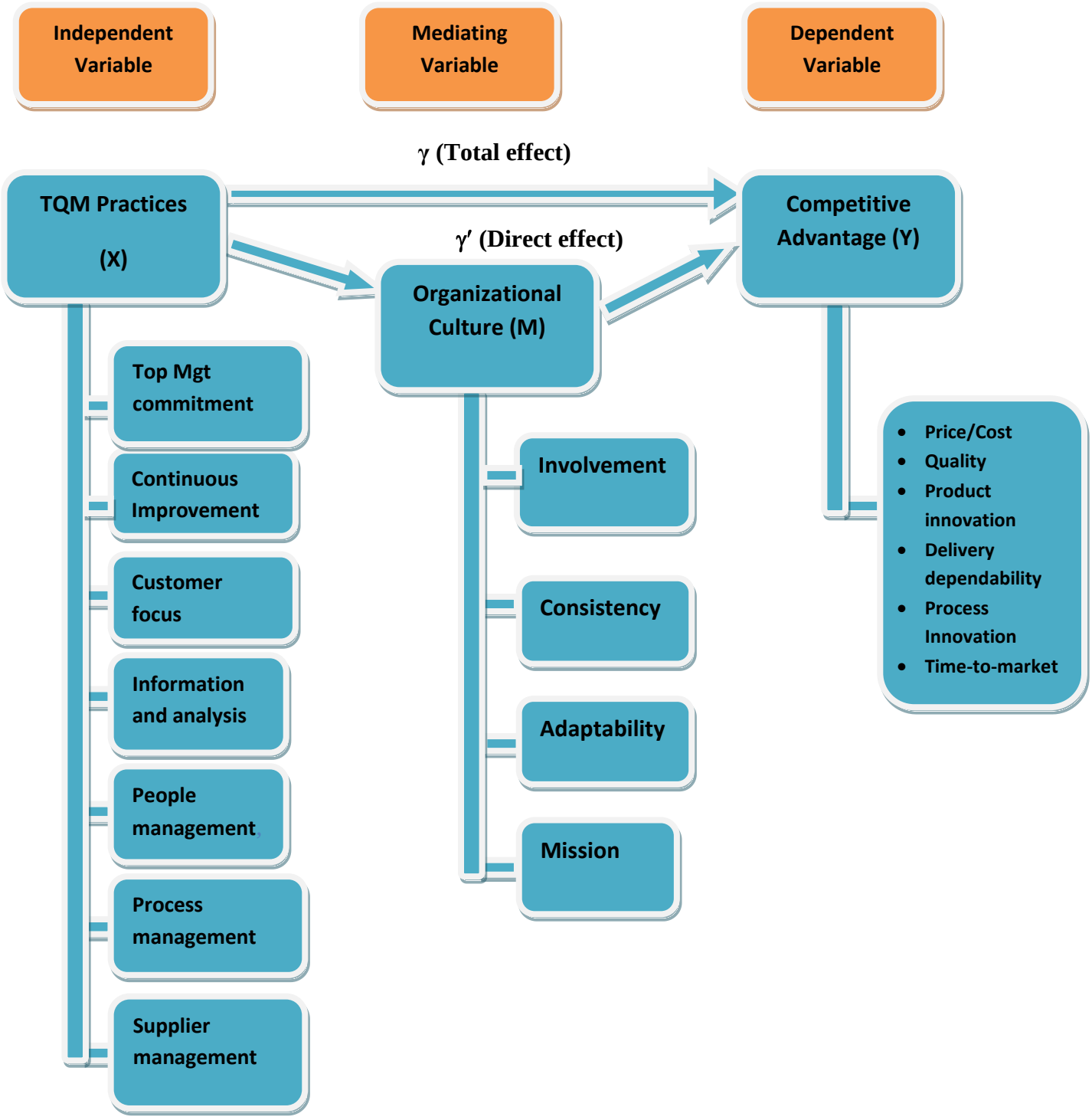
On the other hand, organizations with capability of integration and control might have difficulty in adaptation to their environments. Organizations with top-down vision often find trouble in focus on empowerment and "bottom-up" movement, while organizations driving for wide participation often find difficulty in determining direction. The effective organizations are those that are able to settle these contradictions without relying on a simple trade-off.

According to Denison & Mishra, (1995), the Denison's organizational culture has tested with effectiveness criteria and found that profitability was more correlated with "typical mission" and "consistence". Organizational innovation was correlated with "involvement" and "adaptation ability", and selling growth was found to have the strongest correlation with "adaptation" and "mission" as studied on the service giving firm.

As stated in the literatures reviewed above, organizational culture could enhance competitive advantage in service giving firms, but it not explicitly expressed its influence while it integrated with implementation of TQM practices that leads to competitive advantage in manufacturing firms. Hence, in this study the researcher has adopted Denison's organization culture model, in identifying the mediating effects of organizational culture in the association between TQM implementation and competitive advantage in selected manufacturing firms.

2.3 Conceptual Framework of the Research

Conceptual framework is a visual or written product that explains the main things to be studied the key factors, concepts, or variables—and the presumed relationships among them. In these regards, after assessing extensive literature review, conceptual framework was developed. This framework consists of three general constructs comprising of TQM practices as independent variables, organizational culture as mediating variable, and competitive advantage as dependent variable. Figure 3below shows that the direct relationship between TQM implementation and Competitive Advantage. Moreover, it indicates the relationship between TQM implementation and Competitive Advantage through Organizational culture. Organizational culture is considered as mediating variable and that mediates TQM and Competitive advantage. Bearing this idea in thought the conceptual frame work of the study is developed as follows.



Where: γ = represents the path from X to Y (Total Effect) α = represents the path from X to M

γ' = represents the path from X to Y(Direct Effect) β = represents the path from M to Y

Figure 3. Conceptual framework of the research

Source: Adopted based on reviewed literature, 2021

2.4 Hypothesis of the study

Based on literature review, the hypotheses that were tested in the study are as follows:

H1: There is a positive and significant relationship between Total Quality Management (TQM) implementation and competitive advantage in manufacturing firms.

H2: Organizational Culture does significantly mediate the relationship between TQM implementation and competitive advantage in manufacturing firms.

H3: Total Quality Management (TQM) is a second order factor of seven elements.

H3a: Total Quality Management (TQM) has positive and significant influence on Top Management Commitment (TMC).

H3b: Total Quality Management (TQM) has positive and significant influence on Customer Focus (CF).

H3c: Total Quality Management (TQM) has positive and significant influence on People Management (PMGT).

H3d: Total Quality Management (TQM) has positive and significant influence on Process Management (PM).

H3e: Total Quality Management (TQM) has positive and significant influence on Continuous Improvement (CI).

H3f: Total Quality Management (TQM) has positive and significant influence on Information and Analysis System (IA).

H3g: Total Quality Management (TQM) has positive and significant influence on Supplier Management (SM).

H4: Competitive Advantage (CA) is a second order factor of six elements.

H4a: Competitive Advantage (CA) has positive and significant influence on price (P).

H4b: Competitive Advantage (CA) has positive and significant influence on Quality (Q).

H4c: Competitive Advantage (CA) has positive and significant influence on Delivery Dependability (DD).

H4d: Competitive Advantage (CA) has positive and significant influence on Product Innovation (PI).

H4e: Competitive Advantage (CA) has positive and significant influence on Process Flexibility/Innovation (PF).

H4f: Competitive Advantage (CA) has positive and significant influence on Time-to-Market (TTM).

CHAPTER 3 - RESEARCH APPROACH and METHODOLOGY

This chapter discusses the research design and methodology in detail so as to have a clear picture on the processes and techniques that was used in conducting the study. The research design shows the general plan how to answer the research questions. It also gives information on how sample respondents drawn from the population and gave description on the number of respondents and how they will be selected. Reliability and validity test of the research instrument, model specification of the study is discussed and finally ethical consideration of the study.

3.1 Research approach

There are three types of testing methods: qualitative, quantitative, and mixed Creswell (2009). The researcher employed a quantitative approach in this study. This study used a descriptive research design (to illustrate the degree of TQM practice implementation and organizational culture components in ensuring manufacturing firms' competitive advantage) as well as an explanatory research design (to explain why manufacturing firms have a competitive advantage). Style of analysis (to examine the relationship between TQM practice, Organizational culture and Competitive advantage in manufacturing firms as well as to examine the mediating role of Organizational culture in the association between TQM implementation and Competitive advantage of firms). Data was collected from respondents using a cross-sectional survey.

3.2 The Research Method

The aim of this study is to see whether Organizational Culture plays a mediating role in the relationship between TQM implementation and Competitive Advantage in manufacturing firms. For this analysis, both explanatory and descriptive designs were used to address the research questions and fulfill the research objectives. Cause-and-effect relationships between variables were discovered in explanatory studies(Saunders, Lewis & Thornhill, 2009).According to Saunders et al. (2009), descriptive researches are those studies whose aim is to create an accurate description of individuals, events, or circumstances. The primary goal of descriptive research is to describe the characteristics of a specific person or community. In order to investigate the phenomenon, both descriptive and explanatory methods were used to assess the mediating effect of Organizational Culture in TQM implementation and Competitive Advantages of manufacturing firm.

3.3 Source and Instruments of Data Collection

Data collection methods can be classified in two; namely, Primary and secondary data collection. The primary data are those which are collected from main source and considered to be novel and collected through observation, interview method, through questionnaires (Kothari, 2004) while secondary data refer to the data which have already been collected and analyzed by someone else, it is either be published data or unpublished data (Kothari, 2004).Kothari (2004) further explained that each method of data collection has its own uses and none is superior in all situations, selecting the appropriate method depends on the nature, scope and objective of the study, the availability of time for the study.

The study was depending on primary source of data. Primary data were collected through quantitative method by using close ended questionnaires. In order to assess the mediating effect of organizational culture in the association between TQM implementation and Competitive Advantage in selected manufacturing firms, the study took a total of seven dimensions of TQM practices which were considered as important for TQM implementation, Denison's Model four cultural traits and competitive advantage dimensions which were best fit to form a questionnaire. Closed ended questionnaire was developed based on tested previous empirical literatures. The Likert scale which is developed by Rensis Likert was utilized in order to simplify the questions to respondents and enhance their cooperation. The questionnaire statements were constructed and evaluated on a 5-point likert scale, where "1" indicates "strongly disagree" with the statement, "2" "disagree", "3" neutral, "4" "agree" and "5" refers to "strongly agree".

3.4 Sampling Methods

The purpose of this research is to assess the mediating effect Organizational Culture in the association between TQM implementation and Competitive Advantage in selected manufacturing firms in Ethiopia. Due to time and cost constraints, it is not possible for the researcher to cover all manufacturing industries in Ethiopia. So, this study focused on specific manufacturing industries namely; Food and Beverage Manufacturing Industries.

In Food and Beverage Manufacturing Industries, there are five subsectors; namely, Cereal food processing, Beverage processing, Edible Oil, Confectionery processing and Vegetable and Fruit processing.

Due to time and cost constraints and the samples to be selected were from the same sector, the researcher considered food and beverage manufacturing industries which are operating in Addis Ababa and in Oromiya Regional state special zones around Addis Ababa as population of the research shown in Table 1.

Table 3.1 Number of Food and Beverage manufacturing firms in AA and its round

R.No.	Manufacture type	Quantity
1	Cereal	20
2.	Edible oil	37
3.	Vegetable and fruit	14
4.	Confectionery	51
5.	Beverage	53
Total		**175**

Source: **Ethiopian Food, Beverage and Pharmaceutical Industries Development Institute (2020)**

To select an appropriate sample frame that represented the whole population, the researcher used stratified sampling where factory type was used for stratification. Then, the food and beverage processing manufacturing industries that were included in the sample were selected using purposing sampling technique.

Table 3.2Samples Selected from manufacturing firms in AA and its round

R.No.	Factory type	Number of sectors	Selected Factory
1	Cereal	20	4
2.	Edible oil	37	3
3.	Vegetable and fruit	14	2
4.	Confectionery	51	4
5.	Beverage	53	4
Total		**175**	**17**

Source: **Ethiopian Food, Beverage and Pharmaceutical Industries Development Institute (2020)**

3.4.1 Target Population

The study's goal is to determine whether organizational culture plays a mediating role in the relationship between TQM implementation and competitive advantage in manufacturing firms. However, Ethiopia has a strong manufacturing sector. As a result, the researcher used the type of manufacturing firm, proximity to data collection (location), and production capability as filtering criteria to select study population.

As a result, the study focused on the food and beverage processing manufacturing industries in Addis Ababa and the Ormoya zone around the city. There are 175 of them, according to the Ethiopian Food, Beverage, and Pharmaceutical Industries Development Institute such industries where respondents, mainly managers and supervisors could be selected and the researcher considered it as population of the research also called target population.

3.4.2 Sample Size

The sample size of the study was using Slovin's formula, which was developed by Robert Slovin, with confidence level 95% and confidence interval 5%. The Slovin's formula is applicable only when estimating a population proportion using a confidence coefficient of 95% (Tejada &Punzalan, 2012)

Thus, $n = \frac{N}{1+ Ne^2}$ where n= sample size

$= \frac{175}{1 + 175(0.05)^2}$ N = is the population size (175) and e = error tolerance (0.05)

$= \underline{\underline{122}}$

Applying Slovin's formula, 122 respondents was drawn as a sample from randomly selected 17 Food and Beverage processing firms. These 122 respondents were proportionally computed to make them fairly distributed to five sectors in food and beverage manufacturing firms as shown in the table below.

Table 3.3 Number of respondents from sample selected factories

R.No.	Factory type	Selected Factory	Number of respondents
1	Cereal	4	4/17*122 = 29
2.	Edible oil	3	3/17*122 = 21
3.	Vegetable and fruit	2	2/17 *122 = 14
4.	Confectionery	4	4/17*122 = 29
5.	Beverage	4	4/17*122 = 29
Total		**17**	**= 122**

Source: **Ethiopian Food, Beverage and Pharmaceutical Industries Development Institute (2020) and researcher**

Thus, the sample size of this study was 122 respondents and in selecting the individual respondents the researcher used certain practical criterion that was availability at a given time. Due to the nature of the study, the target population which was mainly managers and supervisors, practically it was unattainable to use random sampling and address each individual for the questionnaire within specific time and resource. Thus, availability at a given time which is type of convenience sample was used to select individual respondents for this study. Convenience sampling is non-probability sampling procedure in which cases are selected on the basis that they are easiest to obtain (Saunders et al., 2009).

3.5 Variable of the study

The followings were the variables studied in the research:

- Independent Variable: TQM Implementation
- Dependent Variable: Competitive Advantage
- Mediating variable: Organizational Culture

3.6 Methods of Data Analysis

The analysis and summary of data collected were done using descriptive and different inferential statistics and Statistical Package for the Social Sciences (SPSS V20) and IBM AMOS 24 software tools were used for such purpose.

Descriptive statistics for instance frequencies, percentage were used to analyze the demographic information of the study sample. Different tables were included to make ease of understanding and facilitate easy comparison of the result.

The researcher used inferential statistics to show the concurrent relationship that may be existed among TQM implementation, organizational culture and competitive advantage also used AMOS 26 Regression weight output to test hypothesis. Furthermore, structural Equation Model (SEM) factor analysis called exploratory factor analysis was applied to condense not producing useful factors. Structural Equation Model (SEM) a familiar method to analyze a survey data. It is a statistical methodology that takes a confirmatory approach to the analysis of a structural theory bearing on some phenomenon (Byrne, 2001) and a comprehensive statistical approach to testing hypotheses about relations among observed and latent variables (Hoyle, 1996).

Internal consistency measure such as Cronbach alpha reliability, composite reliability, discriminant validity, convergence validity, collinearly diagnostic, model fit and indices have sufficiently deal to increase the reliability instruments. When analyzing the data, TQM implementation is considered as independent variables, organizational culture is considered as the mediating variables whereas competitive advantage is the dependent variable. This study followed the assumption proposed by Baron and Kenny, (1986) to assess the mediation effect of a mediator on the relationship between the independent and dependent variables.

3.7 Ethical Consideration

The researcher has followed some ethical guidelines while conducting the research. The first guideline is assuring to get complete permission from the participants. The second guideline was briefing the objective of the research so that the respondents were able to provide useful input to the research.

The other ethical guideline applied was showing respect and courtesy. This helps the respondents to provide honest responses to the questionnaire. The last but not the least guideline was keeping the privacy of the respondents. The data collected from respondents were used for its primary purpose with full of confidentiality.

CHAPTER 4 - DATA ANALYSIS and INTERPRITATION

Introduction

This chapter presents the analysis of the research findings obtained from the data collected through questionnaire using Descriptive and Inferential statistics in order to assess the relationship between TQM implementation and competitive advantage in manufacturing firms and also assessing the mediating effect of organizational culture. The researcher presents analysis and interprets the collected data by using SPSS 20 and AMOS 24 software and detail discussion of findings and the hypothesis testing is also presented.

4.1 Response rate

The researcher distributed 122 questionnaires for respondents from selected manufacturing firms and 104 questionnaires were collected. In order to make the raw data that was collected through questionnaire ready for conducting statistical analysis, the researcher conducted data checking for completeness. Thus, out of the collected 104 questionnaires, 6 questionnaires were rejected due to incompleteness of some part of the survey sections. Thus, a total of 98 questionnaires were used for this study with a return rate of 80.3% which is acceptable.

Table 4.1 Response Rate

Total Questionnaires Distributed	Questionnaires Returned	Questionnaires rejected	Usable Questionnaires	Response Rate
122	104	6	98	80.3 %

Source: Researcher SPSS v20 output

4.2. Descriptive Analysis on Demographic Characteristics of Respondents

Under this section, the selected demographic characteristics of the study respondents such as Sex, Age, Highest Education Level, Work Experience, Current position and Length on current position were presented. The purpose of the demographic analysis in this research was to describe the characteristics and background of the sample managers and supervisors such as the proportion of male and female managers and supervisors in the sample so that the analysis could be more meaningful. The results obtained from the collected structured questionnaire were presented on the below table.

Table 4.2: Descriptive Analysis on Demographic Characteristics of respondents

Demographic Characteristics					
Group	**Variable**	**Frequency**	**Percent**	**Valid percent**	**Cumulative Percent**
Sex	Male	65	66.3	66.3	66.3
	Female	33	33.7	33.7	100
	Total	98	100	100	
Age	Below 25	0	0	0	0
	25 -35	19	19.4	19.4	19.4
	36 – 50	46	46.9	46.9	66.3
	Above 50	33	33.7	33.7	100
	Total	98	100	100	
Highest level of Education	Diploma	7	7.1	7.1	7.1
	Degree	62	63.3	63.3	70.4
	MA/MSc Degree	26	26.5	26.5	96.9
	Above MA/MSc	4	3.1	3.1	100
	Total	98	100	100	
Work Experience	2- 4 years	6	6.1	6.1	6.1
	5 -7 years	19	19.3	19.4	25.5
	8 – 10 years	28	28.5	28.6	54.1
	11 – 15 years	33	33.6	33.6	87.7
	16 – 20 years	8	8.1	8.1	95.8
	Above 20 years	4	4.2	4.2	100
	Total	98	100	100	
Current Position	Manager	35	35.7	35.7	35.7
	Supervisor	63	64.3	64.3	100
	Total	98	100	100	

Length in Current Position	2 – 3 years	26	26.5	26.5	26.5
	4- 6 years	39	39.8	39.8	66.3
	Above 6 years	33	33.7	33.7	100
	Total	98	100	100	
Factory Type	Cereal	28	28.6	28.6	28.6
	Beverage	24	24.5	24.5	53.1
	Edible Oil	12	12.2	12.2	65.3
	Fruits & Vegetable	15	15.3	15.3	80.6
	Confectionery	19	19.4	19.4	100
	Total	98	100	100	

Source: Researcher SPSS V20 output

Regarding the sex composition, according to table 4.2above, majority of the sampled respondents 66.3% were male, while the remaining 33.7% were female. The age composition of the respondents, the majority of the sampled respondents' age group falls between the ages of 36 up to 50 which account 66.3 % of the total number of sampled respondents. The percentage of ages below 25, 26-35 and above 50 is 0%, 19.4% and 33.7% respectively. In this demographic composition the sampled respondents taken from the factories are well matured to manage and can apply better use of methods so as to improve firm's competitiveness.

According to table 4.2 above, the educational level of the sample respondents indicates that 17.3% of the respondents are Diploma holders while BA/BSc Degree, MA/MSc and above MA/MSc holders are 53%, 26.5% and 3.1% respectively. This shows that the majority of factories were managed by well qualified managers and supervisors that can work for the organizational productivity and this can ensure us the response for the questionnaire is filled with good educational background to be valid.

From 98 valid respondents from five categories of food and beverage manufacturing factories, 28.6% of respondents were from Cereal, 24.5% of respondents were from Beverage, 12.2 % of the respondents were from Edible Oil, 15.3 % of the respondents were from Fruit and Vegetable and the remaining 19.4% were from Confectionery factory.

Regarding the respondents' service year in manufacturing firms, table 4.2 indicates that 6.1% of respondents were between 2 and 4 years while 19.4%, 28.5%, 33.6%, 8.1% and 4.2% of respondents were between 5 and 7, between 8 and 10, between 11 and 15, between 16 and 20, and 21 and above years, respectively, and current working position of the respondents, 35.7% were Managers while 64.3 % were Supervisors, and 26.5% of sampled respondents stayed between 2 and 3 years in their current position while 39.8% and 33.7% of respondents stayed between 4 and 6 and above 6 years respectively, in their current position.

In this demographic profile the service year of the respondents in the manufacturing firms as well as in their current position ensures that validity of questionnaire responses that respondents stay enough in factories as well as in their current position to know about the manufacturing firms and to give valid response on the items described on the questionnaire.

4.3 Structural and Measurement Model

4.3.1 Reliability

The survey instrument's reliability was also examined. According to Hair et al. (2007), reliability refers to how reliable certain variables or sets of variables are in measuring what they are supposed to measure. The internal accuracy of a questionnaire is measured using reliability analysis. There are many types of reliability tests, but Cronbach's alpha was chosen for this analysis. The most popular indicator of internal consistency or reliability is Cronbach's alpha. A Cronbach's alpha value of 0.9 or higher indicates excellent reliability, 0.7 to 0.9 indicates high reliability, and 0.5 or lower indicates poor reliability. Thus, the Cronbach's alpha value is excellent (>0.9), the variables can be used for further analysis. No absolute rule on internal consistency but majority agreed on minimum consistency of 0.7 (Robinson, 2009) whereas inter-item correlation a value of more than 0.8 of all pairs were not acceptable. Table 4 3 shown below the summary of Items dropped and retain in each construct as their correlated and inter correlated items values are below 0.35. From 17 items 10 items retain all their constructs as they meet criteria.

Table 4.3Reliability test (Cronbach's alpha)

Variables	No. of Item Proposed	No. of Items Dropped	No. of Items Retained	Cronbach's Alpha for pilot data
TQM practice				**0.896**
Top Management Commitment	5	1	4	0.714
Customer Focus	6	2	4	0.814
People Management	6	2	4	0.738
Process Management	4	-	4	0.860
Continuous Improvement	3	-	3	0.786
Information and Analysis System	5	-	5	0.768
Supplier Management	7	2	5	0.874
Organizational Culture (OC)				**0.943**
Involvement	9	-	9	0.753
Consistency	9	-	9	0.758
Adaptability	9	-	9	0.871
Mission	9	-	9	0.888
Competitive Advantage (CA)				**0.804**
Price	3	-	3	0.822
Quality	4	1	3	0.772
Delivery Dependability	3	-	3	0.859
Process Flexibility	5	3	3	0.827
Product Innovation	3	-	3	0.943
Time to Market	4	1	3	0.781
Total	**94**	**12**	**82**	**0.952**

Source: Researcher SPSS reliability test output

4.3.2 Validity of major construct

The data collection instrument which was developed from the literature has been checked for their validity by the researcher. Then, the questionnaire has been checked for internal consistency and establishes reliability. Validity explains the degree to which a question measures what it is planned to measure. To assure the validity of the study, the researcher took the comment from the advisor and also discussed with Firm's staffs about the questionnaires before it was distributed.

The questionnaire prepared includes standard questions for Total Quality Management implementation by kwame Owsukwateng and Justice Eric Darko(2017); questions on organizational culture by Denison's Cultural Model (Denison and Neale 2011) and questions on Competitive Advantage by Jitpaiboon, Thawatchai (2014).

The questionnaire was evaluated by examining feasibility during questionnaire pre-testing. Feasibility of the questions was evaluated by examining study participant acceptability, and the time and ease of administration

To reduce the capacity of sampling error and increase questionnaire response rates pilot survey was carried out on 15 respondents from two food and beverage manufacturing firms and necessary modification on items was done after the questionnaires were returned. In addition to this, internal reliability was checked by using Cronbach's alpha coefficient. Since the acceptable level (>0.7) was achieved the final questionnaires were prepared and distributed to respondents Wilson (2010)

4.4 Data Analysis

4.4.1 Assessing missing data

Although the data were collected from a probability sample, the missing data procedure was conducted for more accurate and statistically valid data, even though the findings are ignorable according to Hair et al. (1998). The reasons were; first, a probability sample approach is likely to cause missing data. Second, with likert scale rated items it is quite possible to have missing data issues, but missing data were not considered as a vital problem, especially with 10% of missing values (Coleman, 2011). On the other hand, missing data may cause the following two negative s on the research results: (1) it may produce biased estimates' and (2) it reduces the model's fit (Ahmed 2014). With the above being stated, the result of the missing data analysis in SPSS 20 revealed that there were no missing data in this study. This can be explained by the hard, careful work and time put into collecting usable questionnaires.

4.4.2 Assessing sample size

The researcher adopted Exploratory Factor Analysis (EFA); Confirmatory Factor Analysis (CFA) to reach the final research results. The sample size affected the accuracy of all the statistical estimates. Many researchers suggested rules of thumb for sample size minimums which relied on the number of measured variables. For example, the cases/parameter ratio should be 5:1 (Bentler and Chou, 1987; Kline, 2011), 10 or 15: 1 (Garson, 2009). The sample size should involve at least 100 to 200 cases in order to conduct structural equation modeling (Loehlin, 2004). The sample size used for this study was 122 which are suitable for performing the EFA; the CFA; and the structural model.

4.4.3 Assessing common method Bias

Common method bias assumes that a single factor explains the majority of variance. Researchers depend on the same respondent who provides information about all the variables (Podsakoff et al, 2012). Common method bias is a problem because it is considered to be a main source of measurement error which has a negative on the validity of the measure (Podsakoff et al, 2003). Due to the method bias, correlations are inflated (Meadeet al, 2007). This study investigated this method because of using one questionnaire to measure all constructs. The unrotated factor analysis showed that the first factor accounted for 49.2% of the total variance. Therefore, the results suggested that there was no common variable since its value was not above 50 % (Podsakoff et al, 2012) to threaten the data to be analyzed further.

Table 4.4Total Variance Explained

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	15.774	49.293	49.293	15.774	49.293	49.293	4.712	14.723	14.723
2	2.054	6.418	55.712	2.054	6.418	55.712	4.064	12.700	27.423
3	1.801	5.629	61.341	1.801	5.629	61.341	4.064	12.699	40.122
4	1.406	4.395	65.735	1.406	4.395	65.735	3.799	11.872	51.995
5	1.159	3.622	69.357	1.159	3.622	69.357	3.410	10.655	62.650
6	1.069	3.342	72.699	1.069	3.342	72.699	3.216	10.049	72.699
7	.850	2.655	75.354						
8	.772	2.411	77.765						
9	.631	1.971	79.736						
10	.571	1.785	81.521						
11	.546	1.706	83.228						
12	.513	1.604	84.832						
13	.467	1.458	86.289						
14	.423	1.321	87.611						
15	.392	1.226	88.837						
16	.361	1.129	89.966						
17	.357	1.116	91.082						
18	.321	1.004	92.086						
19	.304	.950	93.036						
20	.272	.850	93.886						
21	.248	.775	94.661						
22	.242	.755	95.416						
23	.215	.673	96.089						
24	.185	.579	96.668						
25	.180	.561	97.229						
26	.170	.531	97.761						
27	.147	.459	98.220						
28	.137	.429	98.649						
29	.129	.405	99.054						
30	.110	.345	99.398						
31	.104	.325	99.723						
32	.088	.277	100.000						
Extraction Method: Principal Component Analysis.									
Extraction Method: Principal Component Analysis.									

Source: Researcher SPSS V20 output

4.4.4 Assessing Outlier

Outliers are extreme values which are either on one or a set of variables (Tinsley and Brown, 2000). Outliers can cause negative s on data analysis. For example, data can contain collinearities and non-normality which can lead to negative variance estimates (Brown, 2006). These s can deform statistical results which cannot be generalized. Outliers can occur as "a result of an error in the data file (e.g., entry of an incorrect value), a programming error (e.g., an error in recoding or transforming variables or a failure to identify missing data values correctly), or the presence of a valid but exceptional data point" (Tinsley and Brown, 2000).

Outliers' findings are categorized into two types; first, outliers that have cases with unusual values for only one variable, called univariate outliers; second, outliers that have cases with an unusual mix of values for more than one variable, called multivariate outliers (Field, 2009; Pallant, 2010).
In order to find univariate outliers, the researcher used the frequency distributions of z scores. If the Z score is greater than 3.29 with $p < .001$, it indicates that there is a univariate outlier (Tinsley and Brown, 2000). Accordingly, based on this rule, there were no outlier cases (Max. Z- Score is 1.03) in this study.

4.4.5 Assessing Multicolinearity assumption

Multicollinearity is shown if there is a strong correlation between two or more predictors in a regression model. Multicollinearity bears a problem only for multiple regressions because it exists in more than two predictors. Collinearity diagnostic can be performed with the use of SPSS, and one of which is the Variance Inflating Factor (VIF). The VIF points whether a predictor has strong linear relationship with the other predictor(s). Although there are no hard and fast rules about what value of the VIF should be a cause for concern, (Gujarati, 2004) suggests that value greater than 1 and less than 10 is good and he suggest that there is no multicollinearity in the regression model.

Table 4.5statistics of Multicollinearity Test

		Collinearity Statistics	
		Tolerance	VIF
	(Constant)		
	TopManagement People Management (TMPMGT)	.360	2.775
	Customer Focus (TCF)	.308	3.243
	Supplier Management (TSM)	.340	2.943
	Information Analysis Process Management (TINPM)	.398	2.515
	Organizational Culture (OC)	.607	1.646

a. Dependent Variable: ACA

Source: Researcher SPSS V20 output

4.4.6 Assessing Normality Assumption

Normality test is used to settle on if sample data has been drawn from a normally distributed population. It also shows if the data set is well modeled by a normal distribution and to compute how likely it is for a random variable underlying the data set to be normally distributed. (Brown, 2016).

Since multiple regression require independent variables in the analysis to be normally distributed normality was checked by using Kurtosis, which measures if the data is heavily tailed or lightly tailed to the normal distribution and Skewness, which is a measure of symmetry, before running the regression.

As a rule of thumb, if the data is normally distributed the skewness and kurtosis should be fall within the range of -2 and 2. Therefore, the analysis for all the variables, as can be seen below, is normally distributed. (Hair et al, 2006)

Table 4.6 Normality of Data Distribution

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Supplier Management (TSM)	98	-.857	.244	.140	.483
Customer Focus (TCF)	98	-.840	.244	.054	.483
TopManagementPeople Management (TMPPMGT)	98	-.778	.244	-.106	.483
Informantion Analysis Process Management (TINPM)	98	-.948	.244	-.042	.483
Organizational Culture (TOC)	98	-.990	.244	.162	.483
Valid N (listwise)	98				

Source: Researcher SPSS V20 output

4.4.7 Assessing Linearity Assumption

Linearity defines the dependent variable as a linear function of the predictor (independent) variables. Standard multiple regression can only accurately estimate the relationship between dependent and independent variables if the relationships are linear in nature. If the relationship between independent variables and the dependent variable is not linear, the results of the regression analysis will under-estimate the true relationship. This under- estimation carries two risks: increased chance of a Type II error for that independent variables, and in the case of multiple regression, an increased risk of Type I errors (over- estimation) for other independent variables that share variance with that independent variables. If linearity is violated all the estimates of the regression including regression coefficients, standard errors, and tests of statistical significance may be biased (Keith, 2006).

The study conducted curve estimation for all the relationships in the model and all the relationships were sufficiently linear to be tested using a covariance based structural equation modeling algorism.

4.5 Factor Analysis

Factor analysis is the oldest and best-known statistical technique for explaining the relationship between a set of observed and construct variables (Tinsley and Brown, 2000; Byrne, 2010). Factor analysis can be used for different purposes. Firstly, through calculating the factor loading, factor analysis can be employed for evaluating the validity of measurements. Secondly, factor analysis can be used to confirm or develop a theory through investigating the observed variables which belong to latent ones (unobserved variables). Thirdly, factor analysis is used to produce a smaller group of latent variables which consist of a larger set of observed variables (manifest variables) (Thompson, 2004; Albright and Park, 2009; Field, 2009).

Factor analyses are divided into two types. Firstly, Exploratory Factor Analysis (EFA) is described as the early stages of research to discover the interrelationships between a set of observed variables (Carrington, 2009).

EFA is designed to explore the relationship between observed and latent variables when this relationship is uncertain or unknown. Therefore, it aims to determine the degree to which the observed variables are linked to their fundamental factors (latent variables). It is designed only to suggest and not to confirm groups or dimensions. Secondly, Confirmatory Factor Analysis (CFA) is a more complex set of techniques than EFA which is used to confirm specific hypotheses when the researcher knows that these measures correlate with the latent variable (Carrington, 2009). Based on a theory, the researcher suggests relationships (hypothesized structure) between the observed items and their factors which are tested statistically (Byrne, 2010).

4.5.1 Exploratory Factor Analysis

EFA aims to obtain a set of dimensions (factors) which explain the structure of the interrelationships (correlations) between items which should relate to each other for the purpose of producing an appropriate structure model (Hair et al., 2010). The EFA's primary objectives are to find the factors, which consist of a set of measures; to discover the strength of the relationship between each factor and each observed measure; and to reduce a data set to a more manageable size whilst retaining as much of the original information as possible (Field, 2009). Using SPSS version 20.00, this study performed EFA and reliability analysis.

According to the results of the univariate analysis, which mentioned all univariate kurtosis and skewness values and supported the univariate normality, the researcher used the principal components method for factor extraction and used Variamax rotation to carry out factor interpretation. There were, also, two SPSS generated statistical measures to evaluate the factorability of the data. These were: Kaiser-Meyer-Olkin (KMO); and Bartlett's test of Sphericity (Pallant, 2003). The KMO measure of overall sampling adequacy assesses the degree to which indicators are valid or appropriate for factor analysis. A KMO value is between 0 (Factor analysis is likely to be inappropriate) and 1 (Factor analysis yield reliable factors). Kaiser (1974) recommended that the KMO value might be excellent, great, good, middling and unacceptable (above 0.9, between 0.8 and 0.9, between 0.7 and 0.8, between 0.5 and 0.7 and less 0.5, respectively). In this study, Table 4.6 showed that KMO was 0.928 (excellent) indicating that this data was suitable for conducting factor analysis or this sample was factorable. Moreover, Bartlett's test of Sphericity tests a null hypothesis; this supposed that the population correlation matrix was an identity matrix.

This test depended on the assumption of normality which was proved above. Table 4.7 reported that Chi-Square was 2453.173 with ($df = 496$, $p<0.001$) which means that variables were related to one another. Therefore, the study was able to continue to complete the remaining steps of the factor analysis.

Table 4.7 KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.928
Bartlett's Test of Sphericity	Approx. Chi-Square	2453.173
	Df	496
	Sig.	.000

Source: Researcher SPSS V20 output

4.5.1.1 Factor Extraction

Factor extraction is concerned with finding “the smallest numbers of factors that can be used to best represent the inter-relations among the set of variables” (Pallant, 2003). The two methods for this issue are as follows.

4.5.1.1.1 Communality

For any variables, the variances can be divided into two components. These are called common variances which are shared with other variables and the unique variance which is specific to that measure. The communality was interested in common variances (Field, 2009). Therefore, the communality related to how much of the variance in the variables had been explained or was accounted for by the extracted factors. Through the common source with others, the communality estimates a part of the variance in a variable. Low communality (below .5) may lead to its variable being omitted (Thompson, 2004). Principal component analysis starts with variables and common factors. Initially, it assumes that all variances are common. Hence, the communalities equal 1 before extraction. This means that there are common factors which, after extraction, represent the common variance in the data structure. The communalities after extraction represented the amount of variance in each variable which could be explained by the retained factors. All the variables of in the data were above 0.5 indicating high communality as shown in the table below.

Table 4.8 Communalities

Communalities		
	Initial	Extraction
CF5	1.000	.791
CF4	1.000	.753
CF3	1.000	.660
CF2	1.000	.670
CF1	1.000	.766
SM5	1.000	.806
SM4	1.000	.712
SM3	1.000	.732
SM2	1.000	.679
SM1	1.000	.717
TMPMG1	1.000	.744
TMPMG2	1.000	.775
TMPMG3	1.000	.734
TMPMG4	1.000	.718
IMPMG5	1.000	.782
INPM5	1.000	.686
INPM4	1.000	.727
INPM3	1.000	.713
INPM2	1.000	.741
INPM1	1.000	.787
MISN	1.000	.787
ADPT	1.000	.724
CONS	1.000	.805
INVL	1.000	.734
CAP	1.000	.630
CAQ	1.000	.638
CATTM	1.000	.711
CADD	1.000	.676
Extraction Method: Principal Component Analysis.		

Source: Researcher SPSS V20 output

4.5.1.1.2 Total Variance Explained

Total variance sets out by using Eigen values (Kim and Mueller, 1978), the aims in determining the number of factors which explain most variances in the data. Eigen values indicate the amount of variance explained by each factor.

Eigenvectors are the weights which can be used to calculate factor scores which are called loads. Initially they were 50 variables with 50 Eigen values and eight factors explained 78.80% of the variance but later on these variables were reduced in to 30 with six factors because some variables which were unrelated to any of the factors and/or have low loadings were dropped. These six factors explained 72.669% variance using Varimax rotation to conduct this analysis (see table 4.4).

4.5.1.2 Factor Rotation

Factor rotation is used to test and progress the interpretability of factors. Rotation used to increase the loadings of each variable on one of the extracted factors at the same time it reduces the loading on all other factors. The three methods for orthogonal rotation are Varimax, quartimax and equamax. The varimax method is the most accepted among these techniques and is often used to make factor analysis FA

As can be seen Table 4.9 below the rotated factor loadings which related to the correlations between each item and its construct. The loadings reflect the strength of the relationship between a scale item and a particular construct or factor. The higher the loading, the better the depiction that particular item has on the factor. Hair et al., (2006) recommended that factor loadings greater than 0.30 are the minimum requirement; loadings of 0.40 are considered more important; and loadings of 0.50 or greater are considered significant. Based on this guideline, items that have factor loadings of lower than 0.50 should be discarded to get items more representatives for their respective factor. The researcher used the option blank (0.50) in order to let SPSS to print only the values greater than 0.50 (Field, 2005). In order to increase the significance of items to their respective factor the researcher used 0.50 as cutoff. Moreover, this technique initially divided the factors into eight factors but later they were reduced in to six when some variables were dropped because they were unrelated to any of the factors and/or have low loadings (loadings below 0.5). The analysis was carried out in an iterative way, until factor extraction rules were fulfilled.

As can be seen Table 4.10 below, under the first factor there are five questions representing SM. Under the second factor there are five questions of INPM. Under the third and fourth factors there are five questions each on CF and TMPM, fifth and six there are four questions each respectively which belong to CA and OC.

Table 4.9 Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
SM1	.797					
SM2	.703					
SM3	.675					
SM4	.662					
SM5	.561					
INPM1		.724				
INPM2		.699				
INPM3		.681				
INPM4		.648				
INPM5		.574				
CF1			.733			
CF2			.700			
CF3			.581			
CF4			.557			
CF5			.544			
TMPMG1				.767		
TMPMG2				.700		
TMPMG3				.680		
TMPMG4				.654		
TMPMG5				.627		
CAP					.811	
CAQ					.683	
CADD					.670	
CATTM					.553	
INVL						.846
CONS						.818
ADPT						.576
MISN						.573
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.						
a. Rotation converged in 8 iterations.						

Source: Researcher SPSS V20 output

After the rotation and reduction Top Management Commitment (TMC) and People Management (PMGT), Information Analysis (IA) and Process Management (PM) dimestions were found to be represented by one variable each, namely, TMPM and INPM respectively. While Continuous Improvement (CI) subscale was dropped from independent variable, the researcher believed that remaining question are sufficient to address in measuring TQM dimensions. Similarly, Process flexibility (PF) and Product Innovation (PI) subscales were dropped from dependent variable (Competitive Advantage). The remaining questions are sufficient to address in measuring competitive Advantage dimensions.

4.5.2 Confirmatory Factor Analysis

There are many categories of analytical tools used to analyze quantitative research results. As a second-generation data analysis technique, structural equation modeling (SEM) stands out by offering benefits not provided by first generation statistical techniques such as correlation analysis, exploratory factor analysis, multiple regression, discriminant analysis, analysis of variance or logistic regression (Bagozzi and Yi 2012; Haenlein and Kaplan 2004). SEM has the ability to evaluate latent variables in the measurement model and simultaneously test multiple relationships of latent variables in the structural model. Factor analysis and hypotheses are tested in the same analysis, hence providing a more rigorous analysis of the proposed research model (Gefen et al, 2000).

After discovering the underlying structure using exploratory factor analysis with a method of principal component analysis, confirmatory factor analysis (CFA) through structural equation modeling (SEM) was used to assess construct validity using model fit indices (Tabachnick and Fidell, 2007). CFA demands the presence of a theoretical framework, and a priori theory based assumption that defines how each variable load on each factor and vice versa (Byrne 2001). CFA inspects the link between factors and their measured variables. Hence, CFA represents what is termed a measurement model (Byrne, 2001). The measurement model is then evaluated for its ‘goodness of fit’ to the sample data by statistical means (Byrne, 2001).

4.5.2.1 Measurement Model

The main purpose of using SEM is to assess the measurement model and to find the most parsimonious model which is well fitting and valid. A measurement model is employed to evaluate construct validity in terms of convergent and discriminant validity to discover the extent to which the measures have adequate internal consistency by carrying out the necessary tests and the acceptance levels for goodness of fit. The full structural model will then only be valid and reliable when the measurement model is founded on theory and well-defined constructs, so that the subsequent structural model is relay on a solid theoretical foundation (Paschke, 2009).

4.5.2.2 Construct Validity

Once the factor structure underlying each of the theorized research constructs was determined through EFA, it was necessary to assess construct validity further through CFA before assessing the structural model and validating the research hypotheses (Byrne, 2010; Hair et al, 2010). A serious consideration in using the CFA is sample size. The sample size should involve at least 100 to 200 cases in order to conduct structural equation modeling (Loehlin, 2004). A sample size above 200 is normally considered 'good'. Since the sample size for this study is 122, it meets the requirement.

Construct validity assesses the extent to which a set of measured items essentially reflect the essential factor model that those items are intended to measure (Hair et al, 2010). The construct validity aims on the measurement of individual constructs. Two classes of construct validity evaluations are convergent and discriminant was tested. The tests were undertaken for the full measurement model (Lewis et al, 2005). This section presents an overview of convergent and discriminant validity and reports the results of the construct validity of the measurement model.

4.5.2.3 Convergent Validity

Convergent validity measures whether items of the same variable or construct measure the same thing and, therefore, reveal correlations to each other. In CFA, convergent validity measures whether items of the same latent factor share a proportion of variance (Hair et al, 2006). Convergent validity is, therefore, a direct measure of the extent of the relationship between an observed variable and a latent construct. According to Holmes- Smith (2007), convergent validity is achieved when this relationship, represented by factor loadings, is significantly different from zero.

To assess the statistical significance of the factor loading, critical ratios and p-values were calculated for each factor loading. Critical ratios outside the -1.96 to +1.96 z-value range and p-values below $p<0.05$ indicate factor loadings that are significantly different from zero. This statistical test of the significant factor loading is the key criterion in assessing factor validity (Holmes-Smith, 2007). Furthermore, regression weights, standardized regression weights and squared multiple correlations (SMC) can be calculated to assess convergent validity.

Standardized regression weights should be above 0.5, with values of above 0.7 optimal (Hair et al, 2006). SMC are squared standardized factor loadings and represent the extent to which a measured variable's variance is explained by a latent factor (Hair et al, 2006). SMC can also be used to assess item reliability. An SMC between 0.3 and 0.5 indicates that the item is a weak but adequate measure of the construct (Holmes-Smith, 2007). An SMC of 0.5 calculates to a standardized loading of 0.7, which indicates that the item reflects the construct very well (Hair et al, 2006; HolmesSmith, 2007).

In sum, convergent validity is assessed through a variety of measures: firstly, with standardized regression loadings of higher than 0.5 (Hair et al, 2006); secondly, with significant p-values (at 95% confidence interval) (Anderson and Gerbing, 1988; Hair et al, 2006) and critical ratios outside the -1.96 to +1.96 z-range; and finally, SMC values below 0.4 are considered not to hold convergent validity. SMC values between 0.4 and .05 were scrutinized and accepted if all other convergent validity measures were well above the recommended thresholds. SMC above 0.5 were accepted. The standardized factor loadings, the critical ratio, p-value and SMC of each item are displayed for the measurement model.

4.5.2.4 Discriminant Validity

Discriminant validity measures to what extent latent variables differ from each other. In contrast to convergent validity, which is a measure within latent variables, discriminant validity is a measure between variables. Discriminant validity can be assessed based on correlations between different constructs. The presence of high correlations (above 0.8 or 0.9) among constructs shows a lack of discriminant validity (Holmes-Smith 2007). In addition to model fit statistics, discriminant validity measures will be presented for the measurement model.

4.5.2.5 Nomological validity

Nomological validity is a connection with measures of other constructs that, according to theory, should be linked to it; (Cronbach&Meehl, 1955). The association between constructs should be reflected in the relationships between measures or observations. It is a type of construct validity which evaluate the overall model validity. In this study both convergent and discriminatory validity were established, therefore, the researcher believes that the model does not violate nomological validity.

4.5.2.6 Goodness of fit

Whether a measurement model is considered valid is dependent on goodness of fit (GOF) indices. GOF indices indicate how well the model reflects the data, in other words, how well the specified model reproduces the covariance matrix among the indicator items (Hair et al. 2006). There are a range of GOF indicators, although regularly only a couple of which are reported. Generally GOF indicators can be grouped into three categories: absolute measures, incremental measures and parsimonious fit measures. To ensure rigor in the empirical assessment, as suggested in the literature (Ho, 2006; Kline, 2005) multiple GOF indices are used. The literature is divided over the amount of fit indices that should be reported (e.g. Kline (2005) suggests at least four), which fit indices are most appropriate, as well as the acceptable cut-off threshold (Hair et al, 2006; Kline, 2005).

This study follows the advice by Weston and Gore, (2006); MacCallum and Austin, (2000); Hu and Bentler, (1998) and McDonald and Ho, (2002) and presents the following fit indices: chisquare, normed chi-square, RMSEA, RMR and CFI. The table shows the summary of fit indices.

Table 4.10 An Illustration of Recommended Cut off Values of Indices from AMOS.

Category	Indices with Abbreviation	Definition	Cut off values	References
Chi-Square	Chi square (x2)	Difference between observed and estimatedcovariance matrices	p-value of >.05	Abdul Razak and Abduh (2012)
	Degrees of freedom (df)	Covariance in the observed matrix less thenumberof estimated coefficients		
	Probability statistic (p)	Probability that the observed and estimated covariance matrices are actually equal		
	Normed chi-square (x2 /df)	Ration of chi-square to degrees of freedom for a model	≤0.3	Kline,1998
			< 5	Schreiber et al. 2006
Absolute Fit measures	Goodness of fit index (GFI)	Measure indicating how well a model reproducesthe variance/covariance matrices of the observed Sample	≥0.90	Matsunaga,2010
			>0.85	Abdul Razak and Abduh (2012)
	Root mean square error of approximation (RMSEA)	Badness-of-fit index measuring how well a modelfits a population taking into account both modelcomplexity and sample size	<0.10	Matsunaga,2010
			<0.08	Abdul Razak and Abduh (2012)
	Root mean square residual (RMR)	Represents the average residual value derived from the fitting of the variance–covariance matrix for the hypothesized model	<0.05	Hair et al ,1988
			<1.00	Schreiber et al., 2006
Incremental fit	Normed fit index (NFI)	Assesses how well a specified model fits relative to some alternative baseline model (often a null model that assumes all observed variables are uncorrelated)	Values >= .90 and sample size	Hair et al, (2010)
	Comparative fit index (CFI)			
	Tucker-Lewis index (TLI)			
Parsimony fit indices	Parsimony comparative fit index (PCFI)	Evaluates the parsimony ratio of the model compared to the GOF such as CFI and NFI	Values >= .5	Hair et al, (2010)

Source: Hair et al, (2010)

Model Re-specification Considerations: A model is said to be properly specified when it represents the sample covariance matrix well. When instances of specification error are noticed, the critical ratios (t-values), the squared multiple correlations (SMC) values, the standardized residuals and the modification indices (MI) were examined to re-specify the model. SMC values should be greater than 0.5. Standardized residual covariance should also be less than the benchmark value of |4| but preferably less than |2.58| (Hair et al, 2010).

A large residual covariance between any two measurement items indicates that the association between these two items is not accounted for sufficiently by the model. This suggests a problem with one or both of the measurement items. A standardized residual value of |2| indicates that a particular covariance is not well reproduced by the hypothesized model (at $\alpha = 0.05$ significance level) and a standardized residual value of |4| relates to $\alpha = 0.001$ significance level. When a constant pattern of large standardized residuals is associated with either a single item or several of the items within the factor, the necessary re-specification was made to account for this relationship between the variables, such as by removing an item and re-running the measurement model (Hair et al, 2010).

MI also suggests a potential source of model re-specification. An MI is calculated for each non free parameter and signifies a possible decrease in X^2 if the parameter is freely able to be estimated in the re-specified model. A chi-square of 3.84 with one degree of freedom has a $p = 0.05$ and a MI value greater than |4| suggests that the chi-square could be significantly reduced if the corresponding parameter were estimated. Based on this guideline, this study examined the measurement items that reveal high MI; that is, above |4| (Byrne, 2010; Hair et al, 2010), and made appropriate re-specification to the model.

The measurement model task begins with the final outputs of exploratory factor analysis which consists of latent variables with their respective indicators (observed variables) which are shown in the table 4.11 of full measurement model.

Table 4.11 Proposed Latent variables and Indicators for EFA

No.	Latent variables (unobserved variables)	Indicators (observed variables)				
1	Top Management Commitment People Management (TMPMG)	TMPMG1	TMPMG2	TMPMG3	TMPMG4	TMPMG5
2	Customer Focus (CF)	CF1	CF2	CF3	CF4	CF5
3	Information Analysis Process Management (INPM)	INPM1	INPM2	INPM3	INPM4	INPM5
4	Supplier Management (SM)	SM1	SM2	SM3	SM4	SM5
5	Organizational Culture (OC)	INV	CONS	ADPT	MISN	
6	Competitive Advantage (CA)	CAP	CAQ	CADD	CATTM	

Source: Researcher AMOS Output

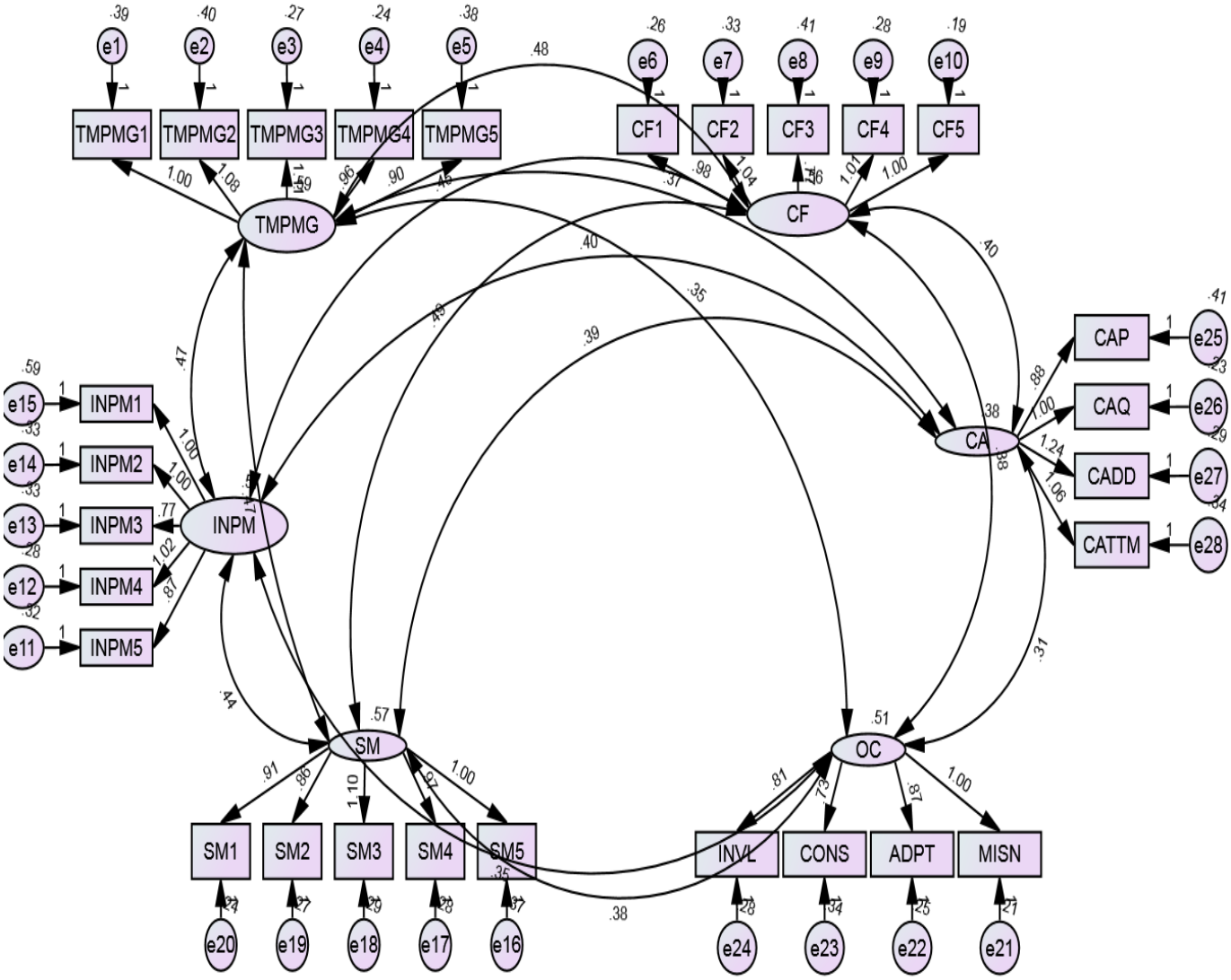


Figure 4. Proposed Measurement Model

Source: Researcher AMOS V24 output

Examination of the GOF statistics is summarized in table 4.12below and the table reveals that the proposed measurement model is inadmissible.

Table 4.12 GOF indices of proposed measurement model

Initial Iteration							
Chi-Square		Absolute Fit Indices		Incremental Fit Indices		Parsimony Fit Indices	
X2 (P value)	541.037 (.000)	RMSEA	0.088	CFI	0.880	PCFI	0.775
Df	309	RMR	0.056	IFI	0.882	PNFI	0.672
X2/Df	1.751	PCMIN/DF	1.751	TLI	0.864		

GOF indices for the proposed Measurement model

			Estimate	S.E.	C.R.	P	SMC	Comment
TMPMG1	<---	TMPMG	1				0.602	Convergent Validity Holds
TMPMG2	<---	TMPMG	1.078	0.129	8.38	***	0.633	Convergent Validity Holds
TMPMG3	<---	TMPMG	1.108	0.121	9.143	***	0.729	Convergent Validity Holds
TMPMG4	<---	TMPMG	0.961	0.108	8.88	***	0.695	Convergent Validity Holds
TMPMG5	<---	TMPMG	0.9	0.116	7.735	***	0.554	Convergent Validity Holds
CF1	<---	CF	0.978	0.095	10.278	***	0.674	Convergent Validity Holds
CF2	<---	CF	1.044	0.105	9.989	***	0.652	Convergent Validity Holds
CF3	<---	CF	0.764	0.102	7.462	***	0.444	Convergent Validity Holds
CF4	<---	CF	1.004	0.099	10.148	***	0.664	Convergent Validity Holds
CF5	<---	CF	1				0.745	Convergent Validity Holds
INPM5	<---	INPM	0.874	0.11	7.913	***	0.569	Convergent Validity Holds
INPM4	<---	INPM	1.041	0.116	8.952	***	0.694	Convergent Validity Holds
INPM3	<---	INPM	0.78	0.105	7.441	***	0.515	Convergent Validity Holds
INPM2	<---	INPM	1				0.623	Convergent Validity Holds
INPM1	<---	INPM	1.005	0.139	7.211	***	0.488	Convergent Validity Holds
SM5	<---	SM	1				0.611	Convergent Validity Holds
SM4	<---	SM	0.965	0.111	8.672	***	0.656	Convergent Validity Holds
SM3	<---	SM	1.096	0.121	9.07	***	0.704	Convergent Validity Holds
SM2	<---	SM	0.856	0.103	8.299	***	0.611	Convergent Validity Holds
SM1	<---	SM	0.905	0.104	8.687	***	0.658	Convergent Validity Holds
MISN	<---	OC	1				0.71	Convergent Validity Holds
ADPT	<---	OC	0.867	0.104	8.366	***	0.606	Convergent Validity Holds
CONS	<---	OC	0.728	0.106	6.879	***	0.443	Convergent Validity Holds
INVL	<---	OC	0.813	0.104	7.851	***	0.547	Convergent Validity Holds
CAP	<---	CA	0.871	0.138	6.322	***	0.404	Convergent Validity Holds
CAQ	<---	CA	1				0.613	Convergent Validity Holds
CADD	<---	CA	1.277	0.148	8.644	***	0.694	Convergent Validity Holds
CATTM	<---	CA	1.065	0.136	7.842	***	0.562	Convergent Validity Holds

A row with blank space indicates a default indicator

Model Fit: InadmissibleFactor Loadings: (* = p< 0.001, ** = p< 0.01, * = p< 0.05)**

Source: Researcher AMOS V24 output

As can be seen in the table 4.12 above, the model fit indices show, the value of X^2/DF is 1.751 which is in the acceptable range (between 1 and 5), RMSEA has a value of .088 which is in the unacceptable range (above .08), RMR is .056 which is in the unacceptable range (below .05). CFI, TLI, and IFI values are .880, .864, and .882 respectively and all of these values fall within the unacceptable range (below.90). The values of PCFI and PNFI are .765 and .630 respectively and both fall within the acceptable range (above .5).

All standardized regression weights (estimates) are significant at p value of below 0.001(as described in ***). The critical ratios of the factor loadings are all significantly different from zero (above 1.96). Standardized regression weights (estimates) all are acceptable range (above .5). On top of that, in order to satisfy convergent validity squared multiple correlations (SMC) are not expected to be below .4 (Holmes-Smith, 2007) and the model shows that all the SMC values are higher than the 0.4 threshold. Thus, convergent validity holds.

Unlike in the structural model, in the measurement model modification indices considered from covariance between error terms of observed indicators only within the same latent variable and having a M.I. of above 4. Table 4.13 reveals the existence of covariance having a high M.I. within the same latent variable and these includes e1 with e2, e6 with e7, e19 with e20, e23 with e24 and e25 with e26. Consequently, the measurement model was rerun after covaried error terms are linked and is depicted in figure 5 below.

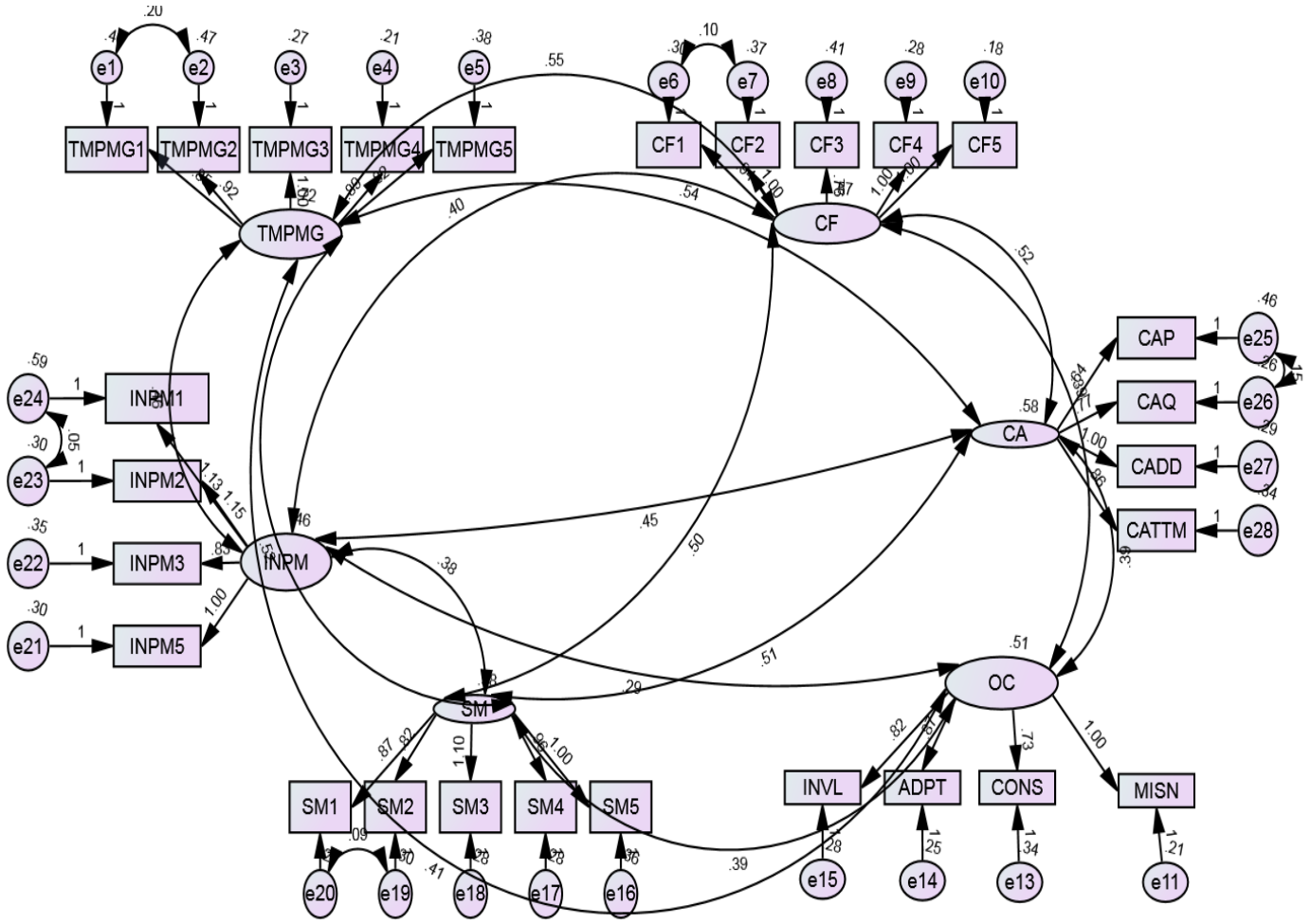


Figure 5. Re specified measurement model

Source: Researcher AMOS 24 Output

Table 4.13 Statistics of Modification Indices for CFA Measurement Model

			M.I.	Par Change					M.I.	Par Change
e27	<-->	INPM	5.107	0.065		e8	<-->	e23	4.44	-0.086
e25	<-->	e26	14.6	0.132		e8	<-->	e11	22.212	0.19
e24	<-->	OC	4.118	0.065		e6	<-->	e16	4.121	-0.073
e23	<-->	e24	13.663	0.131		e6	<-->	e7	5.695	0.081
e22	<-->	CA	4.061	0.042		e5	<-->	CA	4.694	0.054
e22	<-->	TMPMG	4.696	-0.057		e5	<-->	SM	8.384	-0.085
e22	<-->	e25	8.499	0.108		e5	<-->	e26	6.728	0.089
e21	<-->	OC	4.082	-0.059		e5	<-->	e25	5.256	0.1
e21	<-->	CF	4.555	0.048		e5	<-->	e20	4.909	-0.078
e20	<-->	e27	4.872	0.072		e5	<-->	e18	4.62	-0.084
e19	<-->	e20	7.692	0.082		e5	<-->	e12	4.166	-0.079
e17	<-->	e25	5.944	0.093		e5	<-->	e9	4.173	0.077
e16	<-->	e27	12.436	0.138		e4	<-->	OC	6.957	0.081
e15	<-->	e22	14.209	-0.171		e4	<-->	e17	6.4	-0.079
e14	<-->	e23	8.428	-0.113		e4	<-->	e10	6.98	0.071
e14	<-->	e21	5.876	0.084		e3	<-->	CA	5.279	-0.051
e13	<-->	OC	4.857	0.076		e3	<-->	e27	7.136	-0.095
e13	<-->	e19	4.961	-0.075		e2	<-->	INPM	4.966	-0.073
e13	<-->	e18	5.391	0.084		e2	<-->	TMPMG	4.847	0.069
e12	<-->	SM	4.062	0.054		e2	<-->	e8	5.353	-0.104
e12	<-->	e27	4.121	0.073		e1	<-->	OC	4.921	-0.084
e12	<-->	e22	11.62	0.113		e1	<-->	e27	8.075	0.115
e11	<-->	CF	6.304	0.063		e1	<-->	e25	7.151	-0.119
e10	<-->	OC	5.072	0.063		e1	<-->	e20	4.069	0.072
e10	<-->	e18	9.898	0.093		e1	<-->	e19	4.235	0.076
e10	<-->	e15	4.493	-0.085		e1	<-->	e4	6.828	-0.093
e8	<-->	INPM	16.987	0.132		e1	<-->	e2	13.367	0.165

Source: Researcher AMOS V24 output

Table 4.14 GOF indices of Re-specified measurement model

Initial Iteration							
Chi-Square		**Absolute Fit Indices**		**Incremental Fit Indices**		**Parsimony Fit Indices**	
X2	478.698	RMSEA	0.077	CFI	0.908	PCFI	0.786
Df	378	RMR	0.048	IFI	0.894	PNFI	0.682
X2/Df	1.575	PCMIN/DF	1.575	TLI	0.910		

GOF indices for the Re specified Measurement model								
			Estimate	**S.E.**	**C.R.**	**P**	**SMC**	**Comment**
TMPMG1	<---	TMPMG	1				0.557	Convergent Validity Holds
TMPMG2	<---	TMPMG	1.087	0.112	9.7	***	0.735	Convergent Validity Holds
TMPMG3	<---	TMPMG	1.176	0.142	8.273	***	0.726	Convergent Validity Holds
TMPMG4	<---	TMPMG	1.051	0.126	8.325	***	0.567	Convergent Validity Holds
TMPMG5	<---	TMPMG	0.955	0.133	7.185	***	0.530	Convergent Validity Holds
CF1	<---	CF	0.932	0.095	9.802	***	0.675	Convergent Validity Holds
CF2	<---	CF	0.993	0.105	9.494	***	0.442	Convergent Validity Holds
CF3	<---	CF	0.749	0.101	7.442	***	0.604	Convergent Validity Holds
CF4	<---	CF	0.997	0.096	10.426	***	0.629	Convergent Validity Holds
CF5	<---	CF	1				0.758	Convergent Validity Holds
INPM5	<---	INPM	0.866	0.108	7.999	***	0.495	Convergent Validity Holds
INPM3	<---	INPM	0.77	0.103	7.484	***	0.664	Convergent Validity Holds
INPM2	<---	INPM	1				0.474	Convergent Validity Holds
INPM1	<---	INPM	0.997	0.137	7.279	***	0.603	Convergent Validity Holds
SM5	<---	SM	1				0.620	Convergent Validity Holds
SM4	<---	SM	0.959	0.109	8.77	***	0.565	Convergent Validity Holds
SM3	<---	SM	1.093	0.119	9.217	***	0.713	Convergent Validity Holds
SM2	<---	SM	0.812	0.103	7.885	***	0.659	Convergent Validity Holds
SM1	<---	SM	0.87	0.104	8.397	***	0.618	Convergent Validity Holds
MISN	<---	OC	1				0.551	Convergent Validity Holds
ADPT	<---	OC	0.805	0.098	8.244	***	0.604	Convergent Validity Holds
CONS	<---	OC	0.618	0.103	6.006	***	0.444	Convergent Validity Holds
INVL	<---	OC	0.711	0.1	7.137	***	0.710	Convergent Validity Holds
CAP	<---	CA	0.834	0.115	7.273	***	0.560	Convergent Validity Holds
CAQ	<---	CA	1				0.664	Convergent Validity Holds
CADD	<---	CA	1.328	0.161	8.234	***	0.565	Convergent Validity Holds
CATTM	<---	CA	1.11	0.152	7.278	***	0.342	Convergent Validity Holds
A row with blank space indicates a default indicator **Model Fit: Admissible**								
Factor Loadings: (* = p< 0.001, ** = p< 0.01, * = p< 0.05)**								

Source: Researcher AMOS V24 output

As can be seen in the table 4.14 above, the model fit indices show, the value of X^2/DF is 1.575 which is in the acceptable range (between 1 and 5), RMSEA has a value of .077 which is in the acceptable range (below .08/.1), RMR is .048 which is in the acceptable range (below .05/.1). CFI, TLI, and IFI values are .908, .910, and .894 respectively and all of these values fall within the acceptable range (above .90). The values of PCFI and PNFI are .786 and .682 respectively and both fall within the acceptable range (above .5). Hence, the full measurement model as indicated in Figure.5 is supported and accepted in terms of the selected fit indices in SEM literature.

All standardized regression weights (estimates) are significant at p value of below 0.001(as described in ***). The critical ratios of the factor loadings are all significantly different from zero (above 1.96). Standardized regression weights (estimates) all are acceptable range (above .5). On top of that, in order to satisfy convergent validity squared multiple correlations (SMC) are not expected to be below .4 (Holmes-Smith, 2007) and the model shows that all the SMC values are higher than the 0.4 threshold. Thus, convergent validity holds. Discriminant validity also holds as the squares of the correlation were not above 0.8.

Table 4.15Discriminiant validity

			Estimate	Squared correlation(r2)	Comment
TMPMG	<-->	CF	0.865	0.75	Dicreminant Validity hold
TMPMG	<-->	CA	0.83	0.69	Dicreminant Validity hold
TMPMG	<-->	SM	0.811	0.66	Dicreminant Validity hold
CF	<-->	CA	0.813	0.74	Dicreminant Validity hold
CF	<-->	SM	0.876	0.77	Dicreminant Validity hold
SM	<-->	CA	0.875	0.77	Dicreminant Validity hold
TMPMG	<-->	INPM	0.804	0.65	Dicreminant Validity hold
CF	<-->	INPM	0.79	0.62	Dicreminant Validity hold
INPM	<-->	CA	0.871	0.76	Dicreminant Validity hold
OC	<-->	INPM	0.604	0.36	Dicreminant Validity hold
SM	<-->	INPM	0.74	0.55	Dicreminant Validity hold
CF	<-->	OC	0.726	0.53	Dicreminant Validity hold
OC	<-->	CA	0.718	0.52	Dicreminant Validity hold
OC	<-->	SM	0.72	0.52	Dicreminant Validity hold
TMPMG	<-->	OC	0.672	0.45	Dicreminant Validity hold

Source: Researcher computation from AMOS V24 output

4.5.3 Final Reliability

Once all the measurement factors underlying the research construct have been empirically derived and validated, the instrument is checked for reliability before proceeding with the structural model (Lewis et al, 2005). Reliability evaluates show consistent the items measuring a construct are and as such make sure trustworthiness of the measurement instrument. An ordinary statistic for measuring reliability is the coefficient of internal consistency (Cronbach's Alpha). This statistic should be calculated for each of the factors that passed all tests of validity. The recommended and widely accepted threshold in the literature is 0.7 (Hair et al, 2010). Table 4.16 provides the reliability estimates of each of the variables; they are all above 0.7, which satisfies the recommended threshold in the literature. Thus, the measurement instrument is reliable.

Table 4.16 Instrument Reliability

Constructs	Number of Items	Cronbach's Alpha
TMPMG	5	0.895
CF	5	0.896
INPM	4	0.875
SM	4	0.900
OC	4	0.850
CA	4	0.849

Source: Researcher SPSS V20 output

4.6. Structural Model

In structural equation modeling an assessment of a model fit can be done in two-step process (Hair et al, 2006). The first step involves testing the full measurement model's fit, as well as its construct validity. The goal of testing the measurement model is to establish how well the observed variables of a hypothesized construct relate to one another. This was reported in the previous sections and the result shows acceptable model fit and validity. However, the test of the full measurement model does not examine the nature of the relationships between constructs and beyond simple correlations.

As such, a measurement model is a way towards founding the fit and validity of a structural model, rather than an end in itself (Hair et al, 2006).

The second step is requiring a testing of the structural model, including for the significance of the structural relationships. The structural model can be checked only after sufficient measurement and construct validity are established, as the latter is the foundation for the structural model. Hence, this section presents the tests of the structural model. The validity and acceptability of the structural model can be assessed in terms of (1) model fit or GOF indices; (2) taking comparisons of factor loadings of the structural model to that of the measurement model; and (3) the size, direction and significance of the estimated structural parameters. The above provides a description of the above tests and the rule of thumb criteria for what constitutes as acceptable value based on recommendations of SEM literature.

Tests for Structural Model Validity fulfils the following; the first is to test Structural model fit, it assesses extent of the structural model fit of the sample data using the GOF indices used for the measurement model (See Table 4.17). Second is Comparison of loadings of the structural model and the measurement model which assesses closeness of the parameter loadings of the structural and measurement models the acceptable value difference in loading should be 0.05 or less. The last is Size and significance of parameter which is to estimates significance of the parameter estimates based on the corresponding the acceptable p-values $p<0.05$ and/or t-value above 2.00.

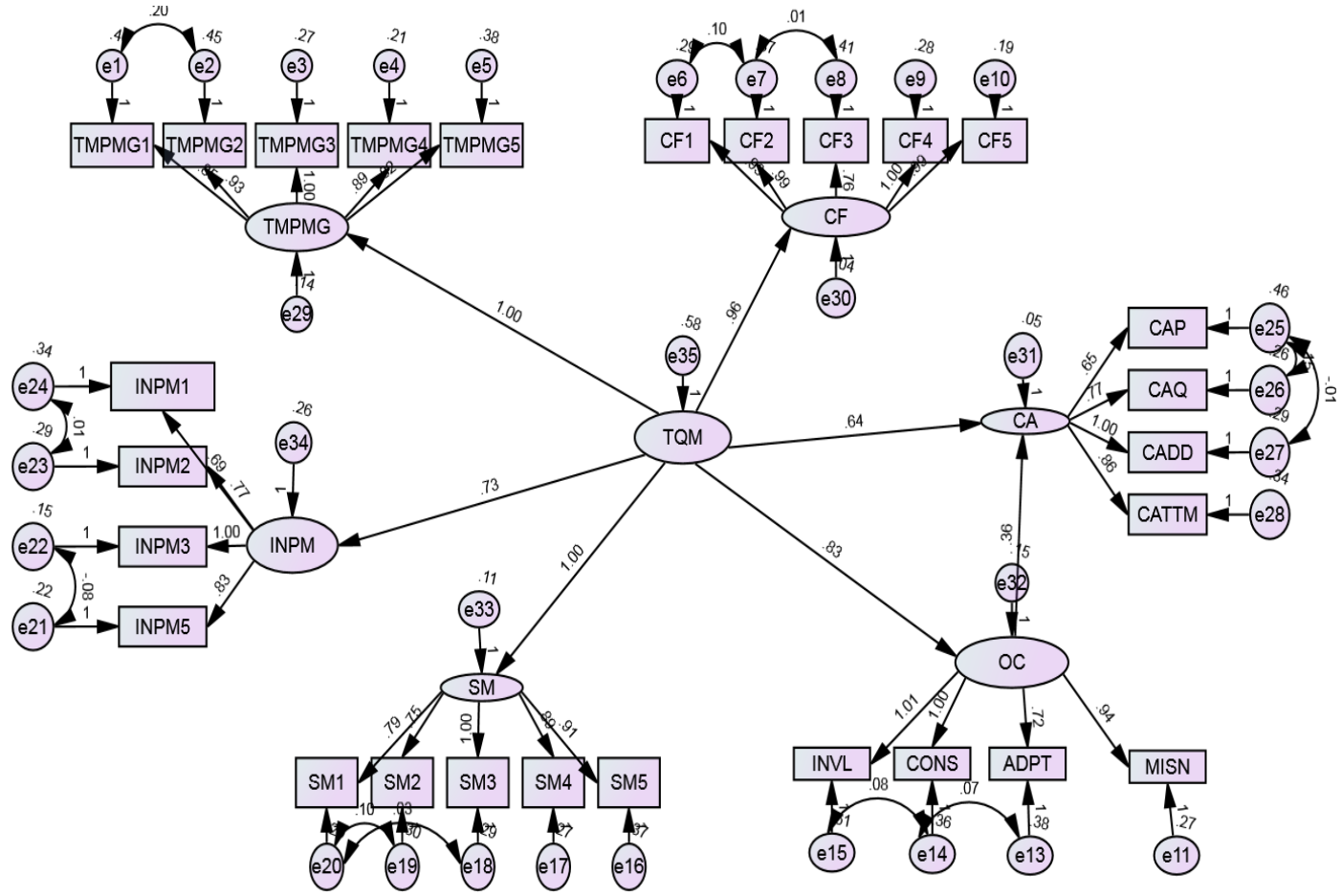


Figure 6. Structure model with Mediating variable

Source: Researcher AMOS V24 Output

Table 4.17 GOF indices for structural Model with mediating variable

Initial Iteration							
Chi-Square		Absolute Fit Indices		Incremental Fit Indices		Parsimony Fit Indices	
X2 (P value)	476.364 (.000)	RMSEA	0.076	CFI	0.910	PCFI	0.793
Df	378	RMR	0.047	IFI	0.912	PNFI	0.687
X2/Df	1.557	PCMIN/DF	1.682	TLI	0.897		

Source: Researcher AMOS V24 output

As can be seen in the table 4.17 above, the model fit indices shows, the value of X2/DF is 1.557 which is in the acceptable range (between 1 and 5), RMSEA has a value of .076 which is in the acceptable range (below .08/.1), RMR is .047 which is in the acceptable range (below 0.05/.1). CFI, TLI, and IFI values are .912, .910, and .897 respectively and all of these values fall within the acceptable range (above .90). The values of PCFI and PNFI are .793 and .687 respectively and both fall within the acceptable range (above .5). Hence, the full structural model as indicated in Figure 6 is supported and accepted in terms of the selected fit indices in SEM literature.

Second, the loading estimates of the structural model are compared against the loading estimates of the corresponding measurement model. The structural model is likely to show similar or close loadings to that of the measurement model (Hair et al, 2006).In this regard, majority of the loading estimates of the structural model are almost unchanged from the measurement model. Only six standardized estimated loadings show change and the maximum change in standardized loadings is 0.042, which is not above the 0.05 limit (Hair et al, 2006). This shows the existence of parameter constancy among the measured items in the two models, which provides further support for the validity of the structural model.

The other set of criteria for assessing the validity of the structural model is investigating the size, direction and significance of the structural parameter estimates. Table 4.18 presents the Regression weight.

Table 4.18 Regression Weights of structural Model with mediating variable

			Estimate	S.E.	C.R.	P	Comment
OC	<---	TQM	0.826	0.12	6.866	***	Significant
CF	<---	TQM	0.959	0.115	8.361	***	Significant
TMPMG	<---	TQM	1				Can't explained AMOS
INPM	<---	TQM	0.731	0.107	6.842	***	Significant
SM	<---	TQM	1.001	0.123	8.158	***	Significant
CA	<---	TQM	0.642	0.178	3.609	***	Significant
CA	<---	OC	0.362	0.182	1.99	0.047	Significant
TMPMG1	<---	TMPMG	0.848	0.104	8.176	***	Significant
TMPMG2	<---	TMPMG	0.934	0.107	8.766	***	Significant
TMPMG3	<---	TMPMG	1				Can't explained AMOS
TMPMG4	<---	TMPMG	0.893	0.085	10.519	***	Significant
TMPMG5	<---	TMPMG	0.82	0.096	8.577	***	Significant
CF1	<---	CF	0.934	0.103	9.048	***	Significant
CF2	<---	CF	0.995	0.113	8.776	***	Significant
CF3	<---	CF	0.758	0.106	7.176	***	Significant
CF4	<---	CF	1				Can't explained AMOS
CF5	<---	CF	0.995	0.096	10.356	***	Significant
MISN	<---	OC	0.937	0.121	7.751	***	Significant
ADPT	<---	OC	0.723	0.103	7.042	***	Significant
CONS	<---	OC	1				Can't explained AMOS
INVL	<---	OC	1.007	0.136	7.392	***	Significant
SM5	<---	SM	0.912	0.102	8.949	***	Significant
SM4	<---	SM	0.887	0.093	9.541	***	Significant
SM3	<---	SM	1				Can't explained AMOS
SM2	<---	SM	0.752	0.089	8.478	***	Significant
SM1	<---	SM	0.789	0.085	9.284	***	Significant
INPM3	<---	INPM	1				Can't explained AMOS
INPM2	<---	INPM	0.773	0.106	7.284	***	Significant
INPM1	<---	INPM	0.686	0.105	6.52	***	Significant
CAP	<---	CA	0.646	0.109	5.919	***	Significant
CAQ	<---	CA	0.769	0.094	8.192	***	Significant
CADD	<---	CA	1				Can't explained AMOS
CATTM	<---	CA	0.858	0.105	8.133	***	Significant
INPM5	<---	INPM	0.83	0.105	7.921	***	Significant
OC	<---	TQM	0.826	0.12	6.866	***	Significant

A row with blank space indicates a default indicator

Model Fit: admissible

Factor Loadings: (* = p< 0.001, ** = p< 0.01, * = p< 0.05)**

Source: Researcher AMOS V24 output

The total, direct and indirect effects of the regression output are as shown below tables.

Table 4.19 Total Effects

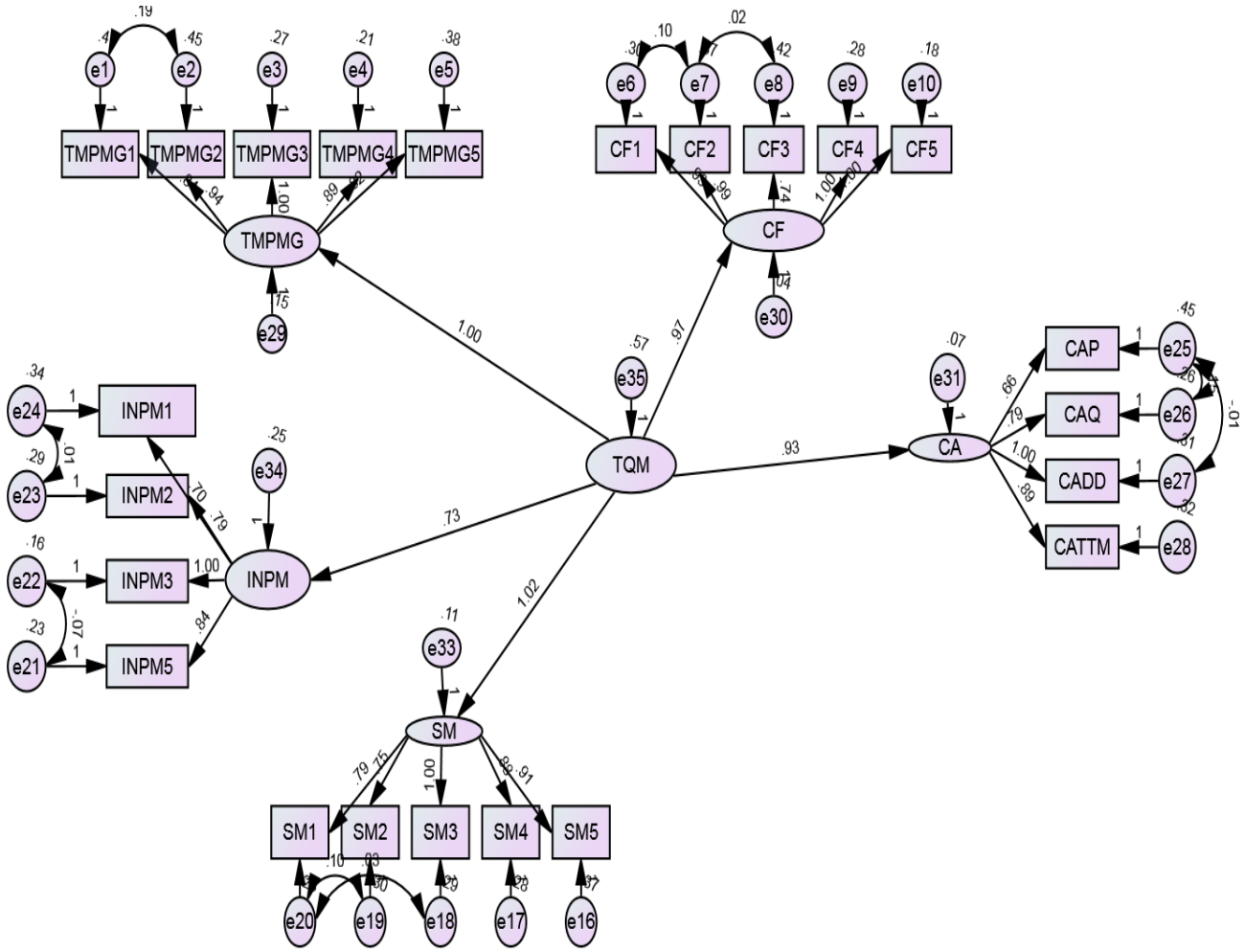
	TQM	OC	CA	INPM	SM	CF	TMPMG
OC	0.826	0	0	0	0	0	0
CA	0.941	0.362	0	0	0	0	0
INPM	0.731	0	0	0	0	0	0
SM	1.001	0	0	0	0	0	0
CF	**0.959**	**0**	**0**	0	0	0	0

Source: Researcher AMOS V23 output

Table 4.20 Direct Effects

	TQM	OC	CA	INPM	SM	CF	TMPMG
OC	0.826	0	0	0	0	0	0
CA	0.642	0.362	0	0	0	0	0
INPM	0.731	0	0	0	0	0	0
SM	1.001	0	0	0	0	0	0
CF	0.959	0	0	0	0	0	0
TMPMG	1	0	0	0	0	0	0

Source: Researcher AMOS output



Source: Researcher AMOS V24 output

Figure 7. Structural Model without Mediating variable

Table 4.22 GOF Induces of Structural Model without Mediating

Initial Iteration							
Chi-Square		Absolute Fit Indices		Incremental Fit Indices		Parsimony Fit Indices	
X2 (P value)	308.746 (.000)	RMSEA	0.067	CFI	0.942	PCFI	0.804
Df	216	RMR	0.049	IFI	0.943	PNFI	0.711
X2/Df	1.492	PCMIN/DF	1.492	TLI	0.932		

Source: Researcher AMSO V24 output

As can be seen in the table 4.22 above, the model fit indices show, the value of X2/DF is 1.492 which is in the acceptable range (between 1 and 5), RMSEA has a value of .067 which is in the acceptable range (below .08/.1), RMR is .047 which is in the acceptable range (below .05/.1). CFI, TLI, and IFI values are .942, .943, and .932 respectively and all of these values fall within the acceptable range (above .90). The values of PCFI and PNFI are .804 and .711 respectively and both fall within the acceptable range (above .5). Hence, the full structural model as indicated in Figure 7is supported and accepted in terms of the selected fit indices in SEM literature

All standardized regression weights (estimates) are significant at p value of below 0.001(as described in ***).

Table 4.23Regression weight of structure model without mediating variable

			Estimate	S.E.	C.R.	P	Comment
CF	<---	TQM	0.966	0.117	8.266	***	Significant
TMPMG	<---	TQM	1				Can't explained AMOS
INPM	<---	TQM	0.734	0.108	6.777	***	Significant
SM	<---	TQM	1.017	0.125	8.144	***	Significant
CA	<---	TQM	0.93	0.119	7.794	***	Significant
TMPMG1	<---	TMPMG	0.845	0.104	8.128	***	Significant
TMPMG2	<---	TMPMG	0.939	0.106	8.826	***	Significant
TMPMG3	<---	TMPMG	1				Can't explained AMOS
TMPMG4	<---	TMPMG	0.892	0.085	10.486	***	Significant
TMPMG5	<---	TMPMG	0.819	0.096	8.561	***	Significant
CF1	<---	CF	0.933	0.104	9.009	***	Significant
CF2	<---	CF	0.993	0.114	8.752	***	Significant
CF3	<---	CF	0.741	0.107	6.953	***	Significant
CF4	<---	CF	1				Can't explained AMOS
CF5	<---	CF	1.004	0.096	10.48	***	Significant
SM5	<---	SM	0.909	0.101	8.975	***	significant
SM4	<---	SM	0.881	0.092	9.526	***	significant
SM3	<---	SM	1				Can't explained AMOS
SM2	<---	SM	0.753	0.088	8.545	***	Significant
SM1	<---	SM	0.79	0.085	9.331	***	Significant
INPM3	<---	INPM	1				Can't explained AMOS
INPM2	<---	INPM	0.789	0.107	7.345	***	Significant
INPM1	<---	INPM	0.698	0.107	6.546	***	Significant
CAP	<---	CA	0.661	0.114	5.787	***	Significant
CAQ	<---	CA	0.79	0.099	7.951	***	Significant
CADD	<---	CA	1				Can't explained AMOS
CATTM	<---	CA	0.891	0.111	8.001	***	significant
INPM5	<---	INPM	0.836	0.106	7.918	***	significant
A row with blank space indicates a default indicator **Model Fit: Inadmissible** **Factor Loadings: (*** = p< 0.001, ** = p< 0.01, * = p< 0.05)**							

Source: Researcher AMOS V24 output

4.7 Discussion of Empirical Findings and Hypothesis Testing

H1: There is a positive and significant relationship between Total Quality Management (TQM) implementation and competitive advantage in firms.

			Estimate	S.E.	C.R.	P	Label
CA	<---	TQM	0.93	0.119	7.794	***	Significant

Key: Competitive Advantage (CA)

Total Quality Management (TQM)

As indicated in the Table 4.21, the estimate value (β= .93, p=.000) shows that there is a positive and significant relationship between TQM implementation and Competitive Advantage. This finding is consistent with previous findings such as: Faris Alghamdi (2018) argued that the relationship between TQM and organizational performance (competitive advantage) is a positive and statistically significant. Therefore, the researcher has accepted the hypothesis 'there is a positive and significant relationship between the total quality management implementation and Competitive Advantage'.

H2: Organizational Culture does significantly mediate the relationship between TQM implementation and competitive advantage in manufacturing firms

- **Testing the Meditational role of Organizational Culture (OC)**

Mediation analysis was performed to test the mediating on Organizational Culture (OC). This research has one major hypothesis on mediation. Data analysis of the mediating hypothesis testing will investigate the effect of mediator on the relationship between independent variable and dependent variable. This study examines mediating on the direct path between the independent variable and the dependent variable using the Baron and Kenny's (1986) three step mediation analysis test. A variable may be considered a mediator to the extent to which it carries the effect of a given Independent variable to a given dependent variable. Mediation exists when the followings are fulfilled.

(1) The independent variable significantly influences the mediator,

(2) The independent variable significantly influences the dependent variable in the absence of the mediator,

(3)The mediator has a significant exclusive on the dependent variable, and

(4)The influence of the independent variable on the dependent variable reduced upon the addition of the mediator to the model.

Baron and Kenny's (1986) Three Step Mediating Analysis

A variable may be considered a mediator to the extent to which it carries the effect of a given independent variable to a given dependent variable. Hence, a mediator accounts for the relationship between an independent variable and the dependent variable. Mediation exists when the followings are fulfilled.

1) The independent variable significantly influences the mediator,

2) The independent variable significantly influences the dependent variable in the absence of the mediator,

3) The influence of the independent variable on the dependent variable reduced upon the addition of the mediator to the model.

The following procedures were carried out to analyze mediation which is presented as follows. First, it is crucial to identify the significance of the indirect to establish mediation and to decide between two major categories of mediation or non-mediation. Prior to identifying the indirect, the path coefficients of both direct and indirect and their significance were estimated simultaneously by using Amos version 24. The significance of indirect s was assessed by employing procedures. Second, the classification of mediation or non-mediation is identified based on whether direct is significant or not. The p values for indirect s were obtained from the bootstrap result using bias corrected confidence intervals in Amos. Next, to determine the type of mediations or non-mediation according to the criteria listed below (Zhao et al, 2010).

1. **Complementary mediation** exists if both indirect and direct s are significant and have the same directions.
2. **Competitive mediation** exists if indirect and directs is both significant and has opposite directions.
3. **Indirect only mediation** exists if indirect is significant, but not direct.
4. **Direct only non-mediation** exists if direct is significant, but not indirect.
5. **No non mediation** exists if both direct and indirect s is insignificant.

Complementary mediation also called partial mediation in Baron and Kenny's approach and the indirect only mediation is the same as full mediation. However, competitive mediation, direct only non-mediation and no non mediation fall under a mediation category in Baron and Kenny's approach which may cause projects to be discarded (Zhao et al, 2010).

There are many implications for the type of mediation or non-mediation existed. First, when the first three cases; complementary, competitive and indirect only mediation occur, the data supports the hypotheses for mediation. Second, in both complementary and competitive mediation, the mediator identified is consistent with the hypothesized theoretical framework, and the significant direct signals that there is second mediator which can be examined in future study. The sign of the direct signals is for the sign of an omitted indirect path. Third, indirect only mediation implies that the mediator identified is consistent with hypothesized theoretical framework and there is no need to test for further indirect s. The sign of the indirect only non-mediation means that there is yet undiscovered mediators. Finally, the no non mediation is a failure for testing mediation (Zhao et al, 2010).

With Meditating variable

Hypothesis				**Estimate**	**S.E.**	**C.R.**	**P**	**Label**	**Mediating**
H2	OC	<---	TQM	0.826	0.12	6.866	***	Significant	Complementary Mediating
	CA	<---	TQM	0.642	0.178	3.609	***	Significant	
	CA	<---	OC	0.362	0.182	1.990	0.047	Significant	

As indicated in Table 4.21, the estimate value (β= .826, p=000) shows that there is a positive and significant relationship between TQM implementation and Organizational Culture, the estimate value (β= .642, p=.000) shows that there is a positive and significant relationship between TQM implementation and Competitive Advantage and the estimate value (β= .362, p<0.05) shows that there is a positive and significant relationship between Organizational Culture and Competitive Advantage. Therefore, all the Baron and Kenney (1986) assumptions were fulfilled.

Figure 8 shown below, the path diagram that shows the path analysis between the independent, the mediating and the dependent variables. Path γ =0.941 (Table 4.19 Total Effect) indicates the coefficient of the independent variable (TQM) to the dependent variable (CA).

Path γ' =0.642 (Table 4.20 Direct Effect) indicates the coefficient of the independent variable (TQM) to the dependent variable (CA) after controlling for the mediator (OC). From these, the direct effect (path γ'= 0.642) is different from zero and less than the total effect (path γ = 0.941). The influence of the independent variable on the dependent variable reduced upon the addition of the mediator to the model. Therefore, according to Baron and Kenney (1986) assumption, this implies organizational culture has partial (complementary) mediation role on the relationship between TQM implementation and Competitive Advantage in selected manufacturing firms. Therefore, the researcher has accepted the hypothesis 'Organizational Culture does significantly mediate the relationship between TQM implementation and competitive advantage in manufacturing firms.

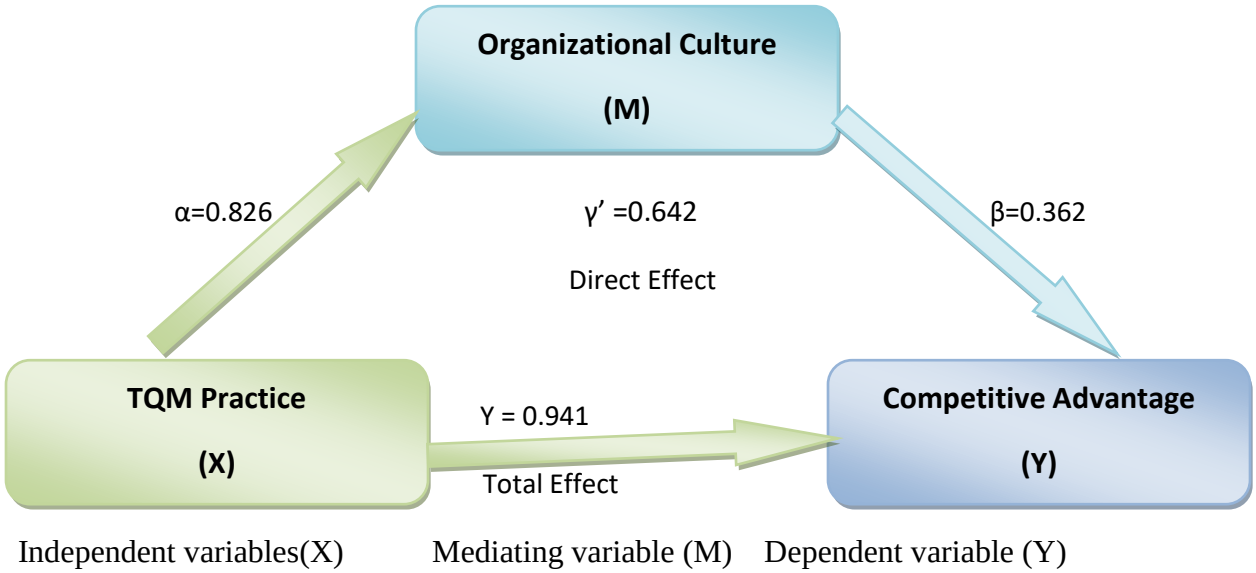


Figure 8.Path/Mediation diagram

Source: Researcher Analysis from AMOS V24 Output

H3: Total Quality Management (TQM) is a second order factor of seven elements.

H3a and H3c: Total Quality Management (TQM) has positive and significant influence on TMPMG.

H3b: Total Quality Management (TQM) has positive and significant influence on Customer Focus (CF).

H3d and H3f: Total Quality Management (TQM) has positive and significant influence on INPM

H3e: Total Quality Management (TQM) has positive and significant influence on Continuous Improvement (CI).

H3g: Total Quality Management (TQM) has positive and significant influence on Supplier Management (SM).

			Estimate	S.E.	C.R.	P	Label
CF	<---	TQM	0.966	0.117	8.266	***	Significant
TMPMG	<---	TQM	1				Can't explain AMOS
INPM	<---	TQM	0.734	0.108	6.777	***	Significant
SM	<---	TQM	0.882	0.125	8.144	***	Significant

Key: Total Quality Management (TQM)

Top Management Commitment and People Management (TMPMG)

Supplier Management (SM))

Customer Focus (CF)

Information Analysis system and Process Management (INPM)

Based on table 4.18 above TQM is second order factor with coefficient of Customer Focus (CF) is 0.966 its P value is 0.000(Positive and significant), the coefficient of INPM (Which is a common name of Information Analysis system and Process Management) is 0.734 and P value is .000 (Positive and significant) and Supplier Management (SM) with coefficient of 0.882 and its P value.000 (Positive and significant) respectively. TMPMG (which is a common name of Top Management Commitment and People Management) but not explained by AMOS but positive and significant if the default is changed. Continuous Improvement (CI) was removed during rotation matrix so it is not tested. Hence, H3a, H3b, H3c, H3d, H3f and H3g are accepted.

H4: Competitive Advantage (CA) is a second order factor of six elements.

H4a: Competitive Advantage (CA) has positive and significant influence on price (P).

H4b: Competitive Advantage (CA) has positive and significant influence on Quality (Q).

H4c: Competitive Advantage (CA) has positive and significant influence on Delivery Dependability (DD).

H4d: Competitive Advantage (CA) has positive and significant influence on Product Innovation (PI).

H4e: Competitive Advantage (CA) has positive and significant influence on Process Flexibility/Innovation (PF).

H4f: Competitive Advantage (CA) has positive and significant influence on Time-to-Market (TTM).

			Estimate	S.E.	C.R.	P	Label
CAP	<---	CA	0.661	0.114	5.787	***	Significant
CAQ	<---	CA	0.79	0.099	7.951	***	Significant
CADD	<---	CA	1				AMOS Can't explained
CATTM	<---	CA	0.891	0.111	8.001	***	Significant

Source: AMOS output

Key: Competitive Advantage (CA) **Delivery Dependability (DD)**

Quality (Q) **Time to Market (TTM)**

Price (P)

Based on table 4.18above CA is second order factor with coefficient of Price (P) is 0.661 and its P value is 0.000 (Positive and significant), Quality (Q) is 0.790 its P value is 0.000 (Positive and significant), and Time to market(TTM) with coefficient of .891 and its P value is .000 (Positive and significant) respectively. The Coefficient of delivery dependability (DD) not explained by AMOS but positive and significant when the default is changed. Product innovation (PI) and Process Flexibility (PF) were removed during rotation matrix so they are not tested. Hence, H4a, H4b, H4c and H4f are accepted.

Table 4.24: Summary of Hypothesis test

No.	Hypothesis	Decision
1.	**H1:** There is a positive and significant relationship between Total Quality Management (TQM) practices and competitive advantage of firms.	Accepted
2.	**H2**: Organizational Culture does significantly mediate the relationship between TQM practices and competitive advantage of firms.	Accepted
3	**H3:** Total Quality Management (TQM) is a second order factor of seven elements.	Accepted
	H3a: Total Quality Management (TQM) has positive and significant influence on Top Management Commitment (TMC).	Accepted
	H3b: Total Quality Management (TQM) has positive and significant influence on Customer Focus (CF).	Accepted
	H3c: Total Quality Management (TQM) has positive and significant influence on People Management (PMGT)	Accepted
	H3d: Total Quality Management (TQM) has positive and significant influence on Process Management (PM)	Accepted
	H3e: Total Quality Management (TQM) has positive and significant influence on Continuous Improvement (CI).	Not tested
	H3f: Total Quality Management (TQM) has positive and significant influence on Information and Analysis System (IA).	Accepted
	H3g: Total Quality Management (TQM) has positive and significant influence on Supplier Management (SM).	Accepted
4	**H4:** Competitive Advantage (CA) is a second order factor of six elements.	Accepted
	H4a: Competitive Advantage (CA) has positive and significant influence on price (P).	Accepted
	H4b: Competitive Advantage (CA) has positive and significant influence on Quality (Q).	Accepted
	H4c: Competitive Advantage (CA) has positive and significant influence on Delivery Dependability (DD).	Accepted
	H4d: Competitive Advantage (CA) has positive and significant influence on Product Innovation (PI).	Not tested
	H4e: Competitive Advantage (CA) has positive and significant influence on Process Flexibility/Innovation (PF).	Not tested
	H4f: Competitive Advantage (CA) has positive and significant influence on Time to Market (TTM).	Accepted

HAPTER 5 - SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter the main findings of the study is summarized and conclusions on major findings are presented. Recommendations are given based on the research findings and finally, some suggestions for further investigations.

5.1 Summary of findings

This section summarized the core points and major findings which were obtained from data analysis of survey questionnaire. The purpose of the research is to identify the mediating role of organizational culture in the relationship between total quality management (TQM) implementation and competitive advantage in selected manufacturing firms. For this purpose, a total of 122 questionnaires were distributed to respondents (mainly managers and supervisors) of selected food and beverage processing factories in Addis Ababa and Oromiya special zone (around Addis Ababa). From the distributed 122 questioners, 98(80.3%) were collected and used in the data analysis. And, among the 98 valid respondents of the study 33(33.7%) were Female; whereas, the remaining 65(66.3%) were male respondents. To achieve the objective of the research the Structural Equation Model factor analysis called exploratory factor analysis was applied in reducing not producing useful factors. As result, 74 measurement items were reduced to 30 items using principal component analysis. Principal component analysis has dual function in factor analysis (1) identify component and categorize (2) partial out weak loadings. Before going into hypothesis testing, internal consistency measure such as Cronbach alpha reliability, composite reliability, Discriminant validity, convergence validity, collinearly diagnostic, model fit and indices has adequately deal with. Apparently, all values for composite reliability in this study meet the recommended threshold values. In conclusion, the statistical analyses obtained here are suggesting that the model exhibits adequate convergent validity and reliability.

In describing the concurrent relationship between TQM implementation, Organizational Culture and Competitive Advantage, and regression analysis for evaluating the mediating effect of organizational culture on the relationship between TQM implementation and competitive advantage were summarized as follows.

- As indicated in Table 4.21, the estimate value (β= .826, p=000) shows that there is a positive and significant relationship between TQM implementation and Organizational Culture, the estimate value (β= .642, p=.000) shows that there is a positive and significant relationship between TQM implementation and Competitive Advantage and the estimate value (β= .362, p<0.05) shows that there is a positive and significant relationship between Organizational Culture and Competitive Advantage. Therefore, this implies there is a concurrent relationship between TQM implementation, Organizational Culture and Competitive Advantage.
- In evaluating the mediating role of organizational culture on the relationship between TQM implementation and competitive advantage, the researcher used Baron and Kenney (1986) assumption to assess whether organizational culture has a mediating role in the relationship between TQM implementation and competitive advantage. Based on this assumption, Organizational culture has a partial (Complementary) mediation in the relationship between TQM implementation and Competitive Advantage.
- TQM is a second order factor for six of the seven elements (Top Management Commitment, People Management, Customer Focus, Information Analysis System, Process Management and Supplier Management) and Competitive Advantage is a second order factor for four of six elements (Price, Quality, Delivery dependability and Time to market)

5.2 Conclusions

The study was intended to address three researcher questions. To what extent do implementing TQM practices assure competitive advantage in manufacturing firms? Is there concurrent relationship between TQM implementation, Organizational culture and competitive advantage in manufacturing firms? And does organizational culture mediate the relationship between TQM implementation and competitive advantage in manufacturing firms?

- The answer for the first question there is a positive and significant relationship between TQM implementation and Competitive advantage. Therefore, the extent of TQM implementation in assuring competitive advantage in manufacture firms significantly high.
- The answer for second question is as the research yields there is significant and positive relationship between TQM implementation and Competitive advantage, TQM implementation and Organizational Culture and Organizational culture and competitive advantage. Hence, there is concurrent relationship among them.

- And finally for the third question, from the findings the researcher has concluded that Organizational Culture has a partial (complementary) mediation role on the relationship between TQM implementation and Competitive advantage in the selected manufacturing firms.

5.3 Recommendations

- ❖ It is recommended that the selected manufacturing firms had better continue focusing on the areas in which they are doing well and improve on those areas of weakness. Thus,
    - TQM secondary factory analysis shows that elements TQM implementation (Top management commitment, Customer focus, People management, Process management, Information and analysis and suppler management) are correctly selected as dimension of TQM implementation. Therefore, firms can apply these TQM dimensions to assure their competitive advantage.
    - Competitive Advantage secondary factory analysis shows that elements Competitive Advantage (Price, Quality, Delivery Dependability and Time to market) are correctly selected as dimension of Competitive Advantage. Therefore, firms can apply these dimensions to measure their competitive advantage.
- ❖ Firms should implement the balanced combination of Denison's four organizational culture traits (Involvement, Consistency, Adaptability and Mission) in order to bring superior performance.
- ❖ The manufacturing firms should give continuous emphasis on implementing TQM practices and maintaining strong organizational culture as both of them have positive significant relationship with competitive advantage.
- ❖ The manufacturing firms should give emphasis on implementing TQM practices which fasten the development of strong organizational culture so that their competitive advantage would be grown.
- ❖ As organizational culture mediates (indirectly affects) the relationship between TQM implementation and Competitive Advantages, the manufacturing firms shall focus on strengthen organizational culture. Hence, they can significantly increase their competitive advantage.

5.4 Suggestions for Further Research

Many limitations were identified while conducting this research such as considering only one sector of manufacturing industries, i.e., Food and beverage processing which limits the generalization of the result. Lack of similar research done in the country was another limitation of the study. Therefore, the research lays foundation to other research opportunity in other industry sectors in our country to investigate TQM implementation, Organizational Culture and Competitive Advantage. Hence, the finding of this study may have significant practical value.

In an attempt to address the limitations of this research, it is recommended that a longitudinal study investigating about TQM implementation, organizational culture and competitive advantage should be conducted across different industries sectors in the Ethiopian context. It is also suggested a larger sample should be used, utilizing a number of industries, with different organizational culture model in Ethiopia.

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Appendix

A. Questionnaire

Structured Questionnaire

Addis Ababa University

College of Business and Economics

M.Sc in Management

Dear Participant,

This questionnaire is designed to conduct a research on the topic ***the Mediating role of Organizational Culture in the relationship between Total Quality Management Practices and Competitive Advantages in selected manufacturing firms.***

The purpose of the study is for the partial fulfillment of the requirements of M.Sc Degree in Management at Addis Ababa University, College of Business and Economics. For the successful accomplishment of the research, the genuine response of the managers and supervisors of the firm will have an important role and the responses will be used as a valuable and primary input for the study. For this reason, you are kindly requested to take few minutes of your busy schedule and genuinely fill this questionnaire.

Confidentiality: The researcher would like to assure you that this research is only for academic purpose for Partial fulfillment of the requirements for the Degree of Masters of Science in Management in Addis Ababa University. No other person will have access to data collected. In any sort of report published, the researcher will not include any private information that will make it possible to identify any respondent. If you have any question or enquiry, please don't hesitate to contact me at any time through the following address: **berhanum01@gmail.com** or

Tel: 0911-487897

Thank you in advance for your genuine, honest, and prompt response!

Part One: Respondent Profile

- *Writing your name is not necessary.*
- *Put tick mark "√" for each question as required or answer the questions in the space provided.*

1. Sex

☐ Male ☐ Female

2. Age (Years)

☐ Below 25 ☐ 25- 35 ☐ 36- 50 ☐ above 50

3. Highest educational level

☐ Diploma ☐ Degree ☐ MA/MSc. ☐ above MA/ MSc Degree

4. How long did you work in manufacturing firms?

☐ 2-4years ☐ 5- 7 ☐ 8-10 ☐ 11 – 15 ☐ 16– 20 ☐ 21- 30

☐ Above 30 years

5. What is your current position in the organization?

☐ Manager ☐ Supervisor

6. How long have you been in this current position?

☐ 2-3 ☐ 4-6 ☐ above 6

Part II- TOTAL QALITY MANAGEMENT

The following questions are pertaining to the extent the firm currently practices **Total Quality Management (TQM).** Please indicate the degree to which you agree or disagree with the following statements (*Please tick only one box*.)

A. Top management, leadership commitment	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
1. Management anticipate upcoming changes and plan accordingly on regular basis					
2. Management ensures appropriate number of resources are allocated based on appropriate skill and knowledge					
3. All departments and employees are involved in quality management program					
4. Top management is committed to employee training					
B. Customer Focus/Feedback system	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
1. The firm provides excellent service by determining and incorporating customer needs					
2. The firm meets at least 95% of customer expectation					
3. The firm exceeds customer expectation majority of the time					
4. Customer satisfaction is measured and recorded in a regular basis					
5. The firm frequently make close contact with its customer					
C. People management -Training of employees, Employee encouragement, Employee Satisfaction, Teamwork	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
1. Effective hiring process is in place to ensure the right person for the right job					
2. Transparent employee policy and procedure are in place					

3. Transparent and open employee appraisal and recognition system is available to reward employees					
4. Specific work-skills training (technical and vocational) given to all employees throughout the organization					
D. Process Management	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
1. The firm uses a good approach to receive an order from clients					
2. The firm carries out the received product order to be completed in a timely manner or on agreed scheduled time					
3. The firm would carry out the received product orders processes to be completed with quality					
4. The firm would carry out the product order to be completed with quality and perfection.					
E. Continuous improvement	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
1. The firm uses a "Plan-Do-Check-Act" checklist to meet customer requirement					
a. The firm monitors and evaluates the process and the product delivered against the firm's policy and set objective on a regular basis					
b. The firm continuously monitors and reports objective versus result					
2. The firm continuously monitors and improves its process to give quality product to its customers					
3. The firm identifies product defects and ensures such faults do not occur in the future					

F. Information and Analysis System	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. The firm has an effective customer handling system					
2. The firm has an effective communication system					
3. The firm uses advance technology					
4. The firm has an effective use of data					
5. The firm has documented procedures					
G. Supplier Management	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
1. Work more closely with supplier					
2. Clarity of specifications provided to suppliers					
3. Evaluate performance of a supplier on regular basis					
4. Offer long term relationships for supplier that meet the firm's standard					
5. Require supplier to meet Certain quality specification					

Part II: Organizational Culture

Please indicate the degree of your agreement/disagreement with the following statements associated with the four dimensions of organizational culture: **Involvement, Consistency, Adaptability and Mission** in your firm. Please read carefully and indicate the magnitude by putting a „√" mark on the number that best describes your view.

Dimensions of Organizational Culture	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
I. INVOLVEMENT					
• **Empowerment**					
Decisions are made at the levels where right information is available.					
Employees believes that they can have a positive impact					
Information is widely shared so that employees can get the information they need					
• **Team Orientation**					
Cooperation across different parts of the firm is actively encouraged					
Teamwork is used to get work done, rather than hierarchy					
Employees work like they are part of a team					
• **Capability Development**					
There is a continuous investment to develop the skills of employees					
The capabilities of employees are viewed as an important source of competitive advantage					
Authority is delegated so that employees act on higher positions by their own					
II. CONSISTENCY	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**

• **Core Values**					
Managers "practice what they talk"					
There is a consistent set of values that govern the way the firm does business					
There is an ethical code that guides employees' behavior and tells right from wrong					
• **Agreement**					
When disagreements occur, employee work hard to achieve a "win-win" solutions					
It is easy to reach consensus, even on difficult issues					
There is a clear agreement regarding the right way and the wrong way to do things					
• **Coordination and Integration**					
Employees from different parts of the organization share a common perspective					
It is easy to coordinate product development across different parts of the organization					
The approach to doing business is very consistent					
III. ADAPTABILITY	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
• **Creating Change**					
Improved ways to do work are continually adapted					
Different parts of the organization cooperate to create change					
The firm respond to competitors actions and other changes in the business environment					

• **Customer Focus**					
Customers comment and recommendations lead to change					
Employees understand customers wants and needs					
Customers inputs directly influences firm's decisions					
• **Organizational Learning**					
Innovations are encouraged and rewarded					
Learning is an important objective in a day-to-day work of this firm					
The firm view failures as an opportunity for learning and improvement					
IV. MISSION	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
• **Strategic Direction and Intent**					
There is a clear mission that gives meaning and direction to work					
The firm's strategic direction is clear to me					
There is a long term purpose and direction					
• **Goals and Objectives**					
Leaders set goals that are ambitious, but realistic					
The firm continuously track its progress against the stated goals					
There is widespread agreement about the goals of the company					
• **Vision**					
Employees have a shared vision of what the organization will look like in the future					

Leaders have a long-term viewpoint					
The firm vision creates excitement and motivation for employees					

Part III- Competitive advantage

The following questions are pertaining firms competitive advantage. Please indicate the degree to which you agree or disagree with the following statements (*Please tick only one box*.)

Competitive Advantage	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
Price/cost:					
The firm is capable of competing against major competitors based on low price.					
The firm offers competitive prices.					
The firm is able to offer prices as low or lower than its competitors					
Quality:					
The firm is capable of offering product quality and performance that creates higher value for customers.					
The firm able to compete based on quality.					
The firm offers products that are highly reliable.					
Delivery Dependability:					
The company is capable of providing on time the type and volume of product required by customer(s).					
The company delivers customer order on time.					
The company provides dependable delivery					

Process flexibility (Innovation):					
The company is capable of making rapid process design changes					
The company is capable of making rapid changeover between product lines					
The company can handle both large and small orders.					
The company can increase its capacity utilization.					
Product Innovation:					
The company is capable of introducing new products and features in the market place.					
The company alters its product offerings to meet client needs					
The company responds well to customer demand for "new" features.					
Time- to- Market:					
The company is capable of introducing new products faster than major competitors.					
The company delivers product to market quickly.					
The company is first in the market in introducing new products.					
The company has time-to-market lower than industry average.					

B. List of selected Food and Beverage Manufacturing firms in AA and Oromiya Regional state special zone around AA

Roll No.	Name of factory	Factory Type	Location	Production capacity
1.	FAFA Foods S.C	Cereal	Addis Ababa	**210 quintal /day**
2.	Misrak Biscuit and flourplc	Cereal	Addis Ababa	**420 quintal /day**
3.	ENRICH Agro Industry plc	Cereal	Legetafo	**4,000 ton/year**
4.	Hilina Enriched foods pr. Plc	Cereal	Legetafo	**14,400 ton/year**
5.	MOHA soft Drink	Beverage	Addis Ababa	**320,000,000 Liter /Year**
6.	Ethio-Agri CEFT	Beverage	Addis Ababa	**4,800 ton/year**
7.	BaleZaf Alcohol plc	Beverage	Sebeta	**400,000 Liter /Month**
8.	Terarra Coffee plc	Beverage	Addis Ababa	**30 ton/year**
9.	Addis Mojo Edible oil S.C	Edible Oil	Addis Ababa	**13,200 ton /year**
10.	Selet Hulling plc	Edible Oil	Legetafo	**7,500 ton/year**
11.	Health food S.C	Edible Oil	Addis Ababa	**24,000 litter/day**
12.	Great Abyssinia plc	Veg. and Fruit	Sendafa	**39,000,000 Liter/year**
13.	Petram Company	Veg. and Fruit	Sebeta	**8,000,000 Liter/year**
14.	Rainbow plc	Confectionery	Addis Ababa	**655 quintal /Month**
15.	Nib Candy plc	Confectionery	Burayu	**2,475 quintal /Month**
16.	Meronacandyplc	Confectionery	Addis Ababa	**2,500 quintal /Month**
17.	Royal candy	Confectionery	Addis Ababa	**1,900 quintal /Month**

Source: **Ethiopian Food, Beverage and Pharmaceutical Industries Development Institute (2020)**