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Implementation of the Critical Success Factors of TQM in ISO 9001: 2008 Certified Manufacturing Organizations in Ethiopia

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Abstract

The purpose of this study is to assess the implementation of TQM practices (CSFs) in ISO 9001: 2008 certified manufacturing companies found in Ethiopia. Cross-sectional survey was conducted to address the purpose of the study, and the unit of analysis was at the factory-level. Data used for the study was solely primary data, and were collected from the purposefully selected management staff of the organizations and senior experts working under operations and quality management departments of each company. A total of 252 usable questionnaires were obtained from 35 ISO 9001: 2008 certified manufacturing companies yielding a response rate of 70% which is satisfactory. Descriptive statistics (mean and standard deviation) were used to analyze the data. The findings revealed that all of the TQM elements were implemented well in the ISO 9001: 2008 certified manufacturing organizations in Ethiopia. It was also found that continuous improvement, customer focus and process management practices of TQM were the top three most implemented practices in the surveyed companies. Results of the Analysis of Variance (ANOVA) test established that there is no significant difference on the level of TQM implementation among the ISO-9001 certified manufacturing organizations based on either length of operation or scope of operation.

Key Words: *Total Quality Management (TQM), Critical Success Factors (CSFs), ISO 9001: 2008 certified manufacturing organizations*

1. Introduction

In this increasingly competitive market, quality has assumed a much larger role than its traditional connotation. Its meaning has stretched to include all employees from the top organization's management through the entire organization as well as raw material and input suppliers (Kahsay et.al, 2007). Aly and Elshennawy (2003) have also explained quality as becoming a device of providing a continuous feedback to the business systems and functions with the primary goal of producing products with high quality and low cost, and thus increasing the organization's performance. Manufacturing companies around the world are aiming at finding new ways of designing, producing, selling and delivering their products to the market. Porter (1986) asserted that quality creates not only a value advantage in terms of price over rival firms but also allows the firm to charge a relatively higher price through differentiation. He further indicated that a strategy focuses on high quality products leads to a sustainable competitive advantage. Reitsperger (1986) further particularised this point by signifying that organizations should concentrate on gaining a competitive advantage by creating competence in continuous improvement.

The well-thought philosophy organizations use to improve the quality of their production process and products continuously, and there by obtain a competitive advantage is Total Quality Management (TQM). The TQM approach has been accepted by many organizations all over the world as a management paradigm and a means for achieving business excellence

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(Nikzad-Zeidi & Tayebi, 2012). It has been one of the most commonly applied continuous improvement methods in the last two decades. TQM, according to Lapina, et al. (2015), concentrates on increasing the effectiveness of organizations by enabling set quality objectives. Nkechi (2010) also mentioned that organizations, in order to survive and stay competitive in the global market, need to create new management based on TQM.

The implementation of TQM is primarily associated with meeting the customers' requirements by delivering superior-quality products. When the results are observed closely, however, some of the organizations that implemented TQM practices were found to be successful while others remain ineffective. Such kind of variation in firms' level of achievement is believed to be mostly caused by the degree of attention provided on the course of its implementation. In this regard, Islam and Haque (2012) argued that poor understanding of TQM and improper involvement of employees in its implementation may results in production loss, and then, of course, poor organizational performance. Antony et al. (2002) asserted that as long as the TQM practices are effectively and successfully implemented in an organization several benefits such as improved employee involvement, improved communication, increased productivity, improved quality and less rework, improved customer satisfaction, reduced costs of poor quality, and improved competitive advantage can be yielded. Therefore, since global trade in manufacturing sector is growing fast currently, it is essential to develop and maintain a worthwhile manufacturing base for organizations by implementing proper quality management (QM) practices.

Raju and Haile (2016) conducted a study concerning the implementation of TQM in Ethiopian manufacturing firms, and indicated that manufacturing companies in Ethiopia need to improve their product quality so as to improve their productivity and competitiveness, which in turn would enable them to start exporting their products abroad. The researchers further added that product quality has emerged as a key issue in most of Ethiopian manufacturing companies recently and that most of those organizations have started implementing TQM to improve their competitiveness. They have also established that the status of TQM practices among surveyed manufacturing firms has been far below other developing countries. Birhanu and Daniel (2014), in a study aimed at diagnosing QM practices in Ethiopian manufacturing and service industries, also specified poor quality as the major cause of the firm's' poor performance and low level of competitiveness in the global market. Thus, from the above extracts it can be spotlighted that TQM implementation in this sector needs to be comprehensive enough, systematic and of higher level to realise global competitiveness. Therefore, the objective of this study is to assess the implementation of TQM practices in ISO 9001: 2008 certified manufacturing organizations in Ethiopia.

2. Literature Review

2.1. TQM Practices

Various studies have been conducted so far with an aim of identifying the critical factors required for the successful implementation of TQM in organizations (Ahire et al, 1996; Motwani, 2001; Sila and Ebrahimpour, 2002; and Talib and Rahman, 2010). However, these studies resulted in somewhat different sets of quality practices vital for successful implementation of TQM.

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Islam and Haque (2012) conducted an empirical study aimed at developing a comprehensive framework for TQM implementation in manufacturing organizations, and examining the viability of the proposed framework. They conducted multiple case studies with questionnaire based interviews directed to the top management members of 31 purposefully selected export-oriented ready-made garment manufacturing organizations in Bangladesh. The findings of the study revealed that customer focus, creation of quality management environment, development of teamwork, implementation of quality control tools & techniques, building strong supplier relationship, benchmarking, continuous process improvement, and employees' involvement are the major pillars of TQM implementation.

Talib et al. (2011) critically examined 30 published research studies focused on TQM principles and practices in an attempt to identify the TQM practices in Manufacturing and Service Sectors. Based on the frequency of occurrence, the researchers have identified a total of nine TQM practices from the extensive review of journal articles focused on practices influencing TQM (15 published research papers in each sector). Based on the findings of the study, the TQM practices commonly applied in manufacturing organizations are reported to incorporate top management commitment, customer focus and satisfaction, human resource management, training and education, employee involvement, supplier quality management, quality information and performance measurement, process management and quality systems. Concerning the importance of each quality management practice, Barros et al. (2014) categorized leadership, customer focus and process management as 'extremely important' principles of quality management, while employee involvement and commitment, human resource management, strategic planning management, supply chain management, continuous improvement and innovation were distinguished as 'very important".

The elements used in this study to represent TQM CSFs include: top management support, customer focus, employee empowerment and involvement, supplier quality management, process management, continuous improvement, and education and training. The major reason for considering these TQM practices is that these elements have been identified and frequently used in several previous studies in the field (Almansour, 2016; Bajaj et al., 2018; Lakhal, 2014; Sadikoglu and Olcay, 2014; Salaheldin, 2009; Terzvioski and Samson, 1999; Zhang et al., 2000; Sabella et al., 2014). Moreover, according to Arumugam et al. (2008), these practices constitute elements that represent both the hard and soft elements of TQM.

3. Materials and Methods

3.1. Data collection methods and instrument design

The type of data used in this study was primary data. Data collection was primarily stranded on a quantitative research approach as data relating to the research objective was collected by means of a structured questionnaire. Self-administered structured questionnaire with three sections that include respondents' profile, firm characteristics; and the TQM practice scale containing 40 items attributable to seven constructs was developed to address the objective of the study. The TQM scale was designed in a five-point Likert scale arrangement containing multiple items for each construct ranging from 1 which represents a "strongly disagree" response through 5 indicating "strongly agree". The scale used to measure TQM practices was adopted from the instruments that have been utilized in several previous studies (Antony et al., 2002; Ahire et al., 1996; Baird et al., 2011; Fotopoulos and Psomas 2010; Kaynak, 2003; Sadikoglu & Olcay, 2014; Salehaldin, 2009). For ease of understanding and the sake of obtaining reliable data, the questionnaire was transcribed in to the local work language

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(Amharic), and again back translated to ensure interpretative consistency. Once the content and face validity of the instrument has been established and its reliability checked based on the outputs of the pilot-test, it was distributed to the participants with the help of data enumerators.

3.2. Target population and sampling

All ISO 9001: 2008 certified manufacturing companies operating in Ethiopia made up the original universe. The major reasons for limiting the target population only to those ISO certified organizations include the following. First, ISO 9000 certified organizations are expected to have implemented most of the elements of TQM. In this regard, Dale et al. (2000a) described ISO 9000 certification as an objective criterion guaranteeing such kind of firms do possess a quality system. Second, ISO 9001:2000 is considered as a standard that is very much in line with the TQM approach compared to other quality standards (Fotopoulos and Psomas, 2010; Psomas et al., 2014). According to the data obtained from DQS Ethiopia, Ethiopian Standard Agency (ESA) and Addis Ababa Chamber of Commerce & Sectorial Associations (AACCSA), there are 99 ISO 9001 certified manufacturing organizations in Ethiopia until the end of 2016. The number of ISO 9001:2008 certified manufacturing organizations, however, was found to be 45, and all were considered for the survey. The target population of the study represents executives and senior experts working under operations and quality management areas of the companies as they are believed to have good understanding of issues pertaining to the implementation of TQM practices. Even though the exact number of domain-specific subjects was not specifically obtained, the researchers arrived at a sample size of 362 based on a sample size determination method suggested by Israel (2009). Accordingly, questionnaires were sent to 362 participants in 45 ISO 9001: 2008 certified manufacturing organizations, resulting in 252 useful questionnaires returned from 35 organizations, which represents a response rate of about 70%.

3.3. Instrument validity and reliability

The content validity of the instrument was evaluated by a panel of experts comprised of subject matter scholars at Debre Markos University as suggested by Saunders et al. (2009). The result showed that the tool possessed sufficient content validity. Moreover, a pilot study was conducted on five conveniently selected ISO 9001: 2008 certified manufacturing organizations (10% of the sample) as recommended by Flynn et al. (1990). Accordingly, 35 respondents have participated in the pilot test. Pilot study and expert evaluation results, in general, indicated that the instrument has possessed sufficient face and content validity.

Instrument reliability was established by using the Cronbach's alpha coefficient for each TQM construct. Items that did not significantly add to reliability were eliminated for parsimony purpose. Zikmund et.al (2013) asserted that an alpha coefficient of ≥ 0.60 is considered "acceptable" in most social science research situations. According to Flynn (1990), an alpha coefficient value above 0.7 is generally considered acceptable and satisfactory, above 0.8 is quite good, and above 0.9 is believed to show excellent internal consistency. Results are presented in Table 1.

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Table 1. Cronbach's alpha statistics for the TQM practices

Sub-construct (TQM practice)	Number of Items	Cronbach's Alpha (α)
Top management support	8	0.92
Customer focus	6	0.91
Employee empowerment & involvement	4	0.88
Supplier quality management	6	0.89
Process management	7	0.90
Continuous improvement	4	0.89
Education and training	5	0.92

As indicated above, alpha coefficient for each TQM practice is greater than 0.80 (falling between 0.88 and 0.92) which, according to the proposition made above by Zikmund et.al (2013), is acceptable, and is considered 'excellent' by Pallat (2007). Cronbach's alpha for the overall TQM scale yielded 0.960 which is also considered significant and reliable.

3.4. Data Analysis Methods

The collected data was analysed using mean distribution as a descriptive statistics. It was used to determine the mean scores for each statement representing the participants' perceptions toward the implementation level of each TQM element in their respective organization. Analysis was made with the help of SPSS version 23.

4. Profile of the study participants

Most of the study participants were males making up 172 (68%), and the remaining 80 (32%) of them were females.

Table 2. Characteristics of the companies

Characteristics	Description	Frequency	Percentage*
Industry type (sub-division)	Food and beverage product industries	5	14.3
	Textile and apparel products industries	2	5.7
	Leather and leather products industries	5	14.3
	Wood and pulp products industries	6	17.1
	Metal and engineering products industries	3	8.6
	Non-metallic mineral products industries	2	5.7
	Chemical and chemical products industries	5	14.3
	Rubber and plastic product industries	7	20.0
Scope of operation	Domestic	26	74.3
	International	3	8.6
	Both	6	17.1
Years of operation	1-5 years	7	20.6
	6-10 years	6	17.6
	Above 10 years	21	61.8
	Missing	1	

Note: *Not including missing respondents

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Considering the respondents' age category, survey results showed that large proportion of respondents (55.4%) fall in the age category of 30-45, while respondents who fall under the age category of 46-65 and 18-29 account for 23.7% and 20.1% of the entire sample. The least number of respondents (0.8%) are older than 65 years. When it comes to the respondents educational level, the survey output shows that the largest proportion of respondents, i.e. 150 (59.5%) are first degree holders followed by college diploma holders, i.e. 45 (17.9%), and those with the academic qualification of master's degree and above making up 33 (13.1%) of the entire sample respondents. Whereas, 23 (9.1%) of the respondents indicated that their highest academic level is a TVET diploma.

Firm Characteristics

As it is presented in Table 2, most (20%) of the surveyed companies were under Rubber and plastic product industries, while 17.1% fall under wood & pulp products industries. Companies operating under the food and beverage products, leather and leather products, and chemical and chemical products industries each made up 14.3% of the sample. The survey also showed that 8.6% of the companies were the metal and engineering product industries, while those under textile & apparel products and non-metallic mineral products industries each comprised 5.6% of the entire sample.

Considering the scope of operation, the data showed that 74.3% of the surveyed companies operate in domestic market followed by those operating in both domestic and international business accounting for 17.1%. Only 8.6% of the sample organizations are reported to operate only in international market. Pertaining to years of operation, the survey showed that the largest proportion of sample organizations (61.8%) had been in existence for more than 10 years, followed by those that have been in operation for 1-5 years (20.6%) and those with 6-10 years of operation.

5. Results and discussion

5.1. Level of TQM Implementation

The extent of TQM implementation in terms of in terms of its practices was measured based on the respondents' perceptual information about each CSF. The grand mean and standard deviation results for all TQM practices are summarized in Table 3.

Table 3. Descriptive statistics summary on level of Implementation of TQM practices

Key Variables	Grand Mean (GM)	Mean range (for items)	Std. Deviation	Level of implementation Rank
Continuous improvement	3.92	3.83-4.09	0.60	1st
Customer focus	3.91	3.63-4.06	0.66	2nd
Process management	3.87	3.70-4.02	0.65	3rd
Top management support	3.83	3.66-3.93	0.72	4th
Education and training	3.80	3.67-3.92	0.80	5th
Supplier quality management	3.79	3.67-3.84	0.74	6th
Employee involvement and empowerment	3.75	3.56-4.01	0.70	7th

The survey results summarized in Table 3 above revealed that the level of implementation of each CSF of TQM varies slightly across the organizations. The ranks show the relative degree

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of implementation. Accordingly, "continuous improvement" (GM=3.92) happens to be the most practiced TQM element (CSF), followed by "customer focus" (GM=3.91), "process management" (GM=3.87) and "top management support" (GM=3.83). The practice with a relatively minimum total average score (GM=3.75) is "employee empowerment and involvement". Even though it is quite unreasonable to make a point that "employee empowerment and involvement" is not well practiced by the ISO 9001: 2008 certified organizations, its relatively smaller grand mean value signifies that it is the least emphasized TQM element (compared to other elements) in the surveyed organizations. However, the grand mean value computed from the respondents' perceptual data indicates that "employee empowerment" and involvement still remains to be a very well implemented TQM practice along with CSFs. Islam and Haque (2012), in a TQM implementation study conducted on 31 export oriented manufacturing companies in the Ready Made Garments (RMG) Industry of Bangladesh, a developing country, established that the organizations are in gloomy condition about employee empowerment, even though they happened to agree that the empowerment of employees play vital role in the implementation of TQM. The result is also supported by Gotzamani et al. (2007), who established that ISO 9000 certified organizations place high degree of attention on the process management practice of TQM while placing little attention to employee involvement and empowerment and the satisfaction of stakeholders at large.

The large mean values exhibited by "continuous improvement", "customer focus", and "process management" indicated that the ISO 9001: 2008 certified manufacturing firms provide reasonable concern for their customers by improving product and process quality continuously, and boosting the overall operational process. Similarly, the result presented above concerning "top management support" implies that top management of ISO 9001:2008 certified manufacturing organisations in Ethiopia are starting to give emphasis to quality management programs. Samson and Terziovski (1999), on their study concerning the relationship between TQM practices and Operational performance on 1200 Australian and New Zealand manufacturing organisations, indicated that leadership is construed to be the major driver of TQM as it helps to examine the top management's involvement in formulating strategic directions and building a support system that facilitates improved organizational performance, man power development, and organizational learning.

Moreover, the survey output showed that sampled companies establish strong relationship with their suppliers and manage the quality of supplies regularly. These practices are highly critical for the effective and comprehensive implementation of the TQM philosophy. This result, however, is not in agreement with the findings made by Haile and Raju (2016), on their study concerning the investigation in to the status and levels of TQM practices among Ethiopian manufacturing organizations which shows that manufacturing organizations in Ethiopia don't have strong and long-term cooperative relations with their suppliers, and have limited involvement in auditing suppliers' quality management performance. The reason seems to be related largely to the type of manufacturing organizations considered in the studies. Here in this study, ISO 9001: 2008 certified manufacturing organizations were considered, whereas, in the study conducted by Haile and Raju (2016) no such distinct consideration was made while setting the target population. The same reason works for the "customer focus" CSF of TQM which, according to Haile and Raju (2016) is one of the least implemented CSFs of TQM in Ethiopian manufacturing firms, but in this study it is found to among the most implemented TQM practices. The reasons are mostly justified by the assertions of several researchers who argued that ISO certification constitutes a good first step towards the solicitation of a TQM system (Sadikoglu and Olcay, 2014; Sadikoglu and Zahir, 2011), and that ISO 9000 certified organizations are expected to have implemented most of

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the elements of quality management (Fotopoulos and Psomas, 2010; Psomas et al. 2014; Baird et al., 2011).

In general, the survey result showed that all of the seven CSFs of TQM considered in this study are practiced well in the surveyed manufacturing organizations. In other words, all of the TQM elements considered in this study exhibited an above average level of implementation in the target organizations. This is in agreement with studies conducted by several researchers in developing countries, some of which include Islam and Haque (2012) on Bangladesh manufacturing industries, Shibani, et al. (2012) on Libyan construction companies, Al-Humedhi (2000) on Saudi basic industry company, Arshida and Agil (2013) on Libyan Iron & Steel Company, Baidoun (2003) on ISO 9000 certified Palestinian organizations, and Samal, et al. (2014) on Indian small and medium scale manufacturing enterprises.

5.2. Degree of emphasis placed on TQM practices across industry sub-sectors

The cross-tabulated data provided in Table 4 helps to have a clear picture of the status of each TQM practice among the eight sub divisions of manufacturing sector (industry). The detailed analysis is made subsequently.

Table 4. Summary on the level of Implementation of TQM practices based on Industry sub-sector

	Average score for TQM practices (on a 1-5 scale)							Grand
Industry sub-division	**TM**	**CF**	**EE**	**SQ**	**PM**	**CI**	**ET**	**mean**
Chemical and chemical products	4.08	4.07	3.75	3.80	4.00	4.01	3.77	3.93
Food and beverage	3.79	3.67	3.56	3.91	3.92	4.05	3.87	3.82
Leather & leather products	3.82	4.05	3.98	3.69	3.93	4.05	4.04	3.94
Metal & engineering products	3.56	3.74	3.59	3.88	3.67	3.85	3.99	3.75
Non-metallic mineral products	3.60	3.79	3.50	3.38	3.63	3.86	4.12	3.70
Rubber and plastic products	3.85	3.97	3.90	3.86	4.00	4.02	3.94	3.94
Textile and apparel products	3.49	3.43	3.44	3.63	3.34	3.53	3.68	3.51
Wood and pulp products	3.88	4.04	3.82	3.75	3.83	3.81	3.37	3.79

Notes: where, TM: Top management support, CF: Customer focus, EE: Employee empowerment and involvement, SQ: Supplier quality management, PM: Process management, CI: Continuous improvement, and ET: Education and training.

As it is reflected by the mean score presented in Table 4, companies under chemical and chemical products sub-division exhibited strong support from top management on quality issues (M=4.08) compared to other sub-sectors followed by the wood and pulp products sub sector (M=3.88) and rubber and plastic products (M=3.85). Similarly, chemical and chemical products (M=4.07), leather & leather products (M=4.05), and wood and pulp products (M=4.04) demonstrated the uppermost average scores on the 'customer focus' practice signifying that strong emphasis and care is provided for customers by companies under these sub-sectors. On the other hand, companies under leather & leather products sub-industry have a relatively better implementation of employee involvement and empowerment (M=3.98) followed by companies engaged in rubber and plastic products (M=3.9). When it comes to supplier quality management, the data showed that organizations under food and beverage sub-sector the highest mean score (M=3.91) signifying that these organizations work together with suppliers in order to effectively manage the quality of supplies and optimize the

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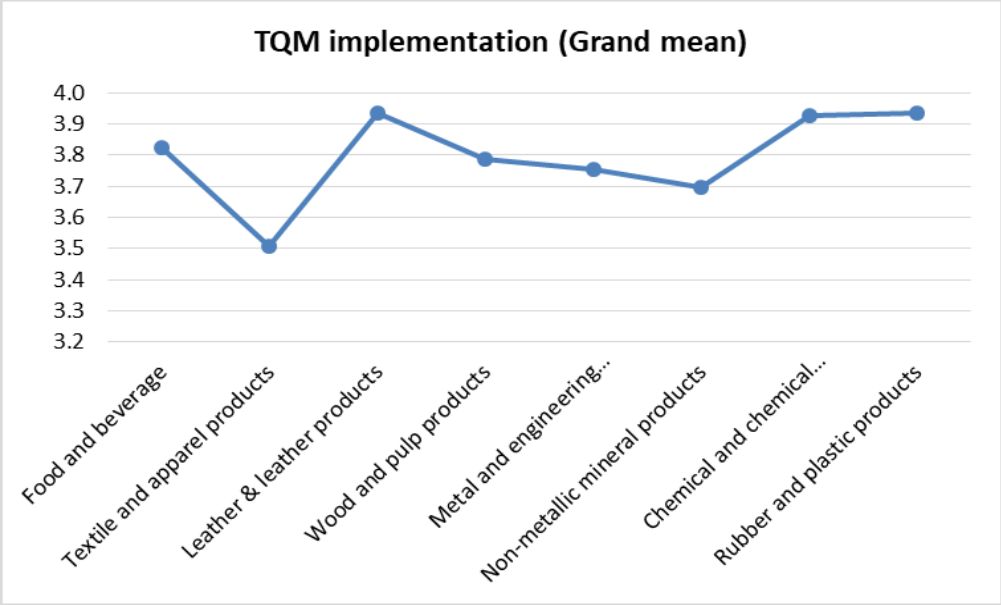
associated costs. Conversely, companies under the non-metallic mineral products sub-division demonstrate a relatively lower level of implementation of supplier quality management practice.

Table 4 also showed that ISO 9001: 2008 certified manufacturing companies under the sub-sector of chemical and chemical products, and rubber and plastic products have implemented process management very well evidenced by high average score (M=4.00) for each followed by leather and leather products, and food and beverage products with a mean score of (M=3.93 and 3.92) respectively. Concerning continuous improvement, good level of implementation was reflected in companies operating under the food and beverage sub-sector and leather & leather products (M=4.05) each, followed by those engaged in rubber and plastic products (M=4.02), and chemical and chemical products (4.01). The outputs signify that ISO 9001: 2008 certified manufacturing organizations under these sub-sectors are achieving process and product quality improvements well through continuous improvement and problem solving. Moreover, companies under the leather & leather products (M=4.04), metal and engineering product industries (M=3.99) and rubber and plastic products (M=3.94) were reported to have implemented training and development practice of TQM better than firms in other sub-divisions.

Chart 3. The level of implementation of TQM practices by Sub-sector category



As it is depicted in Chart 3, ISO 9001: 2008 certified manufacturing organizations companies under the leather & leather products sub-sector (Grand Mean =3.95) have implemented the TQM elements with a relatively higher intensity followed by those under the rubber and plastic products (GM=3.94), and chemical and chemical products (GM=3.93) subsectors. Whereas, firms under the wood pulp products remained to have the smallest average score (M=3.37) signifying the relatively minimum concern provided for employees training and development as part of quality improvement program. This result supports the result of Rahman (2001) study which concluded that manufacturing firms in the engineering, manufacturing (durable), and manufacturing (non-durable) fields are the major industries in which TQM programs have been implemented.

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5.3. Analysis of Variance (ANOVA) based on Scope of operation

A one-way ANOVA test was executed to see if any significant differences exists on the TQM implementation among the ISO- 9001:2008 certified manufacturing organizations based on their scope of operation. Organizations were classified in three scope categories: domestic, international, and both domestic & international. The results are discussed in Table 5

Table 5. One-way ANOVA for TQM implementation based on scope of operation

Computed mean for TQM practices (considered in unison)					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.002	2	.001	.015	.985
Within Groups	2.199	32	.069		
Total	2.202	34			

Data contained in Table 5 above show that there is no statistically significant differences among companies of different scope categories on their level of TQM implementation as demonstrated by the p-value of (p=0.985). This signifies that, based on the perception of the respondents, ISO 9001:2008 certified manufacturing organizations considered in the study don't have any significant difference on their level of TQM implementation that stems from the variations in the scope of operation.

5.4. ANOVA based on length of operation with respect to TQM implementation

A one-way ANOVA test was performed to determine if any significant differences exist among the ISO 9001:2008 certified manufacturing organizations with different categories in years of operation (age) concerning the implementation of TQM.

Table 6. One-way ANOVA for TQM implementation based on length of operation

Computed Mean for TQM practice (considered in unison)					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.022	2	.011	.174	.842
Within Groups	2.000	31	.065		
Total	2.022	33			

As indicated in table 6 above, the ANOVA result revealed that there is no statistically significant difference between organizations of different age groups on their responses concerning the implementation level of TQM practices. This implies that surveyed ISO-9001 certified manufacturing organizations don't have any significant difference on their level of TQM implementation which is originated from variations in their age (length of operation).

The ANOVA results are agreement with Sila (2007), and Ahire et al. (1996), who established that contextual factors such as firm size, scope of operation and operating period do not explain variations in the implementation of most of the TQM practices across ISO 9000 certified organizations. Ahire et al. (1996), in their study, found that there was no significant difference in the implementation of TQM practices between domestic and international operating organizations. The results, however, don't concur with the propositions made by such researchers as Prajogo (2006) and Tari et al. (2007) who concluded that years of operation (age of the firm) plays an important role in TQM implementation initiatives across firms along with other contextual factors such as firm size.

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6. Conclusion

In today's global business environment where quality happens to be a key to achieve and sustain competitive advantage, manufacturing organizations are relying on several quality management approaches at different levels and in different contexts. TQM is one of the most commonly used and successful quality management and improvement tool in current situation as it provides a platform to achieve operational excellence, boost organizational performance and enable the achievement of sustained competitive advantage through everyone's involvement in the organizational quality endeavours. Thus, companies specifically found in developing countries are expected to effectively implement the critical success factors of TQM in order to join and stay competent in global markets. This paper was aimed at assessing the implementation of the critical success factors of TQM in ISO 9001: 2008 certified manufacturing companies in Ethiopia.

The findings revealed that all of the seven CSFs of TQM considered in this study, namely: top management support, customer focus, supplier quality management, process management, continuous improvement, and training and development are practiced well in the surveyed ISO 9001: 2008 certified manufacturing organizations. In other words, all of these TQM elements have above average degree of practice in the organizations. This is believed to be attributed to the fact that all of the organizations considered in this study are ISO 9000 certified, and that ISO 9000 standards certification is supposed to offer a good first step towards total quality management as it brings significant enhancement in organizational performance over all elements of TQM.

The study also specifically established that the continuous improvement, customer focus, process management, and top management support practices of TQM are the top most implemented TQM practices among the surveyed organizations. On the other hand, it was also established by the analysis output that ISO 9001:2008 certified manufacturing organizations under the Leather & leather products sub-sector have implemented the elements of TQM with a relatively higher intensity than other sub-divisions followed Rubber and plastic products, and Chemical and chemical products subsectors. Finally, the Analysis of Variance (ANOVA) output established that there is no significant difference on the level of TQM implementation among the ISO-9001 certified manufacturing organizations based on either length of operation or scope of operation.

7. Limitations and implication for future works

The study was conducted solely in manufacturing organizations. However, the level of TQM implementation in service organizations is not as well explored methodically in most African countries, and more specifically in Ethiopia. This provides direction for future studies. On the other hand, the fact that the scope of the study was limited to ISO certified manufacturing organizations limits its generalization to the Non-ISO organizations. Therefore, future studies are recommended to incorporate both ISO 9000 certified and non-certified organizations to present a more complete picture of the issues considered in this study. Moreover, the study can be further extended by incorporating the reaction of customers and other stakeholders towards the quality management and improvement endeavours of firms.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

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