Implementation of TQM in Manufacturing Industries in the Kingdom of Saudi Arabia

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ABSTRACT

Manufacturing industry in the Kingdom of Saudi Arabia has been grown significantly over the last decades due to increased public demand, Government's initiatives, and the investors increased interest in the manufacturing sector. Unfortunately, quality of product is still an important issue for the locally produced goods. Only a few manufacturers are producing high quality products with higher customer satisfaction. Many of them are holding quality certificates but a few has reached a stage of development where they are able to apply modern quality principles and techniques effectively. Research on product quality improvement shows that meeting customer satisfaction, increasing profits and reducing losses to a minimum level can be attained through the application of modern quality philosophies and principles such as Total Quality Management (TQM). Understanding the tools and techniques of TQM is considered to be significant in order to get useful results. A better understanding is required to investigate the current status of TQM implementation. This research article presents a survey on current quality control practices within the manufacturing industries in the Western region of the Kingdom of Saudi Arabia to assess the potentiality of implementing TQM technique and principles in order to improve the customer satisfactions and market share.

Keywords: Quality, Total Quality Management, Saudi Manufacturing Industry

1. INTRODUCTION

The Industrial development and strength of any country depends primarily on the proper application of quality management systems in all productive stages of industrial products. Many companies promote quality as the central customer value and consider it to be a critical success factor for achieving competitiveness [1]. Because of huge competition, market globalization, and public demand, it has become necessary for managers, engineers, crews, and other employees to know not only the methods of controlling the quality of products but also to know how to improve quality continuously. Manufacturing industry in the Kingdom of Saudi Arabia has been grown significantly over the last decade due to response to increasing public demand, Government's initiatives, and the investors increased interest in manufacturing sector. Saudi manufacturing industry has an important role to play in the country's economy in terms of employment and contribution to gain a market position. There are more then 3,900 manufacturing companies established in Saudi Arabia with more than SR300 billion capital investment, employing nearly 395,000 people [2]. Many of these are small to medium-sized companies. Attainment of acceptable level of quality in the manufacturing industry in the KSA has been a problem since the beginning of the development process. Huge expenditure of time, money, and resources (both human and material) are wasted each year because of inefficient or non existent quality management systems (QMS). Implementation of Total quality management (TQM) system within the Saudi manufacturing companies might result in better customer satisfaction, increase profit and decrease failure of the companies.

Therefore, the majority of these companies could be benefited from upgrading their quality management systems through the implementation of TQM as this concept has already been tested and used in many developed countries and proved to be very effective. This may result in improving productivity, as well as enhancing competitiveness in national and international markets.

Implementation of TQM is a management decision that requires many considerations such as company's operations, strategy, staff and customers. It has been shown that a commitment to TQM is essential for industry's top management to floor level employees to compete against competitors. There is a need for properly documented study and project survey on how TQM can be properly implemented in manufacturing companies in the KSA and to find out the level of awareness of these companies in conducting TQM. Understanding the tools and techniques of TQM is considered to be significant in order to get useful results. A better understanding is required to investigate the current status of TQM implementation.

The objective of this study is to investigate the current level of implementation, prospects and barriers in implementing TQM in manufacturing industries in the KSA. A survey questionnaire was developed and distributed to different manufacturing companies. This research article presents the survey result on current quality control practices within the manufacturing companies in the Western region of Saudi Arabia to assess the potentiality of implementing TQM system in order to improve the customer satisfactions through employee participation and continual improvement process.

Section 1 of this paper discusses the significance of implementation total quality management system in the Saudi manufacturing Industry. Section 2 defines the TQM and a very brief literature review on TQM in order to justify its importance. Investigation methodology is described in the Section 3. Section 4 analyses and discusses the survey results. Finally, the contributions of this paper and the future works are described in the Section 5

2.0. TOTAL QUALITY MANAGEMENT

2.1. Definition and Concept of TQM

TQM has been presented by many definitions over the years. TQM is a way of thinking that becomes a centre piece of an organisation. It is defined as a management tool, philosophy and a set of principles which guides every member of organisation who involved in the continuous improvement process to meet customer satisfaction. The TQM concept requires an effective involvement of all members of organisation in decision making because their participation and contribution are considered as critical role in all business activities for providing services to customers with high quality products [3]. However, there is no standard method as to how TQM should be implemented. The organisation committed to customer satisfaction through continuous improvement varies from organisation to organisation and also from country to country, but it has common principles that can be applied to secure market share, increase profits and reduce costs [4]. In brief, TQM is the management of quality throughout all members of organisation. The organisation must satisfy internal and external customer needs and then use strategic planning including all functional areas to achieve strategic goals.

The key idea of TQM is that quality control must be an integral part of the production process. It includes continuous improvement to remove waste, doing things right first time (removing the need for inspection), and quantitative measurement to analyse deviations from quality. The purpose is to reduce costs by preventing unnecessary rework jobs and to conform customer needs by satisfying expectations of high quality [5]; [6].

2.2. Development of TQM Culture in the Organisation

Culture has a strong influence on people's behavior and is not easy to change. It includes beliefs, values and premises which underline and govern personal behavior [7]. The successful implementation of TQM, requires a change in organisational culture to create the quality culture. The adaptation of TQM principle in the organisation begins with an effort by management to make the culture supportive since management is capable of changing and creating a culture for successful TQM implementation. It can be done in two ways: the organisation may choose an approach that fits the existing organisational culture, or manage a cultural change. It is important to integrate the quality principles and techniques into the organisation culture which is capable of contributing in continuous and consistent improvement in the organisation. TQM dictates that the culture of an organisation can be changed by developing and improving all aspects of customers and suppliers relationship and assessing them on a regular basis, practicing teamwork at all levels organisation, involving all employees at all stages of the improvement process, educating and training the employees to change their attitudes and behaviors, and improve their skills, recognising that change is continuous and must be embedded in the organisation culture [8].

A cultural change needs commitment from the leaders and all other participants and may create a cooperative teamwork at all levels in an organisation. It is necessary for top management to ensure the participation of the employees in quality improvement process, and to develop a quality culture by changing perception and attitudes towards quality [9].

2.3. Need for TQM Implementation in Saudi Manufacturing Industry

Research studies suggested that TQM implementation can improve organisations competitive abilities and provide strategic advantages in the market and adoption of TQM practices can allow organisations to compete globally [10]; [11]; [12]. Rategan [13] showed that a 90% improvement rate in workers relations, operating procedures, customer satisfaction, and financial performance can be accomplished through the implementation of TQM system.

Although the Saudi manufacturing industry has been grown significantly over the last ten years, the quality of the most of the products have not been improved with the same pace. This results in low customer satisfaction (less reliable product with high costs) and loss in both local and global level competitions. This opened the door wide for foreign products to invade the local markets since the Saudi customers still rely on the better quality overseas products. To overcome such challenges in Saudi manufacturing industries, it is important to adopt proper modern quality control and management technique and philosophies such as Total quality management. In the long run, a substantial improvement is expected to be achieved if they implemented TQM properly.

3.0 SURVEY METHODOLOGY

The objective of this study was to investigate the level of implementation of TQM in manufacturing companies in Saudi Arabia. Selection of type of company for survey among 3,900 manufacturing companies in the KSA played a vital role in effective outcomes. Many of these are small to medium-sized companies. It was not possible for these researchers to investigate all the companies due to time and cost constraints. So, this study chose a number of medium to large size manufacturing companies in the western region of the KSA for the purpose of this investigation.

3.1. Survey Design and Preparation

A survey questionnaire was developed and distributed to the selected participants. The questionnaire was designed based on the work done by Zhang [14] and it was then modified to suit the objectives of this

study. The first part of the questionnaire was used to gather general information about respondents such as company and personnel details business type etc. The second part of the questionnaire dealt with the concepts of TQM. These are: leadership; supplier quality management; vision and plan statement; evaluation; process control and improvement; product design; quality system improvement; employee participation; recognition and reward; education and training, and customer focus. The questionnaire used a multiple points Likert scale - the respondent were allowed to select among a range of alternatives along pre-specified continuum such as strongly agree, partially agree, disagree, strongly disagree, and I don't know.

3.2. Data Collection

A list of more than 500 manufacturing companies in the western region of Saudi Arabia obtained from the Chamber of Commerce and Industry. About 100 manufacturing companies, those who were applying quality program in their business were selected initially in the study. Out of the 100 manufacturing industries 76 (76%) responded. About 12 responses were excluded due to unreliable and incomplete data. The collected data were then analysed using Statistical software such as SPSS.

4.0. DATA ANALYSIS AND RESEARCH FINDINGS

The first part of the survey presents general information about the participants of this survey. The second part of the questionnaire exhibits statements which related to TQM implementation. The analysis of Survey is described in as follows:

4.1 Part One: General Information

A percent wise analysis shows that among the respondent, 28.3 % were top management level personnel, 60 % were medium level management and 11.7 % were first line management or shop floor level personnel. The investigation also found that 70 % of organisations have employees ranges from 200-1000, 18.3 % of the organisation have workforce ranging from 1000 to 5000 and 11.7% have work force ranging from 50 to 200. 91.7% of the respondents indicated that quality managers are responsible for quality applications whereas 8.3 % reported that logistic managers are responsible for quality control. Concerning the size of the served customers/ users, it was identified that 45.8 % of the organizations served between 201-1000 customers, whereas 39 % of the organizations served 1001-5000 customers and 15.3 % of the organizations served ranges from 20-200 customers. This implies that most of the organisations (84.8 %) serve medium to a large number of customers. The study also found that 47 of organisations were more than 11 years old, whereas 5 organisations were in the business between 6-10 years. This implies that most of the responded organisations have a good experience in managing quality problems and issues. The survey found that 61.7% of the organizations have suppliers number ranging from 21-100, whereas in 36.7% have suppliers between 5 and 20. It is seen that most organizations were interested to use a relatively large number of supplier to create a competition among the suppliers with a view to receive quality supplies.

The respondents were asked whether they had business partnership or not. It was noticed that 48.3% of the organizations in this study have partnership with regional partners, whereas 46.7% they have partnership with international partners, and only 5% they have no partnership.

The respondents were asked whether they implement any type of quality tools in the organisation. The outcome showed that 95% of respondents were implementing ISO9000, whereas 3.3% were considering for implementation of Total Quality Management, and only 1.7% were implementing other systems. This

implies that most of Saudi manufacturing companies are interested only in ISO 9000 system for their business.

4.2 Part Two: TQM Statements

The respondents were asked in the second part of survey to what extend they agree to the TQM statements. Most of the respondents stated that top management strongly encourages employee involvement in quality management activities (68.3 % of respondents strongly agree whereas 28.3% partially agree, and 2.3% were disagree). It can be seen from these results, managements were conscious about the quality improvement through employee's involvement in quality management activities. Furthermore, the results demonstrated that top management can play a key role in implementing TQM in the organisation.

A total of 50 % of the respondents were strongly agreed that top management arrange adequate resources for employees education and training, while 46.7% partially agree and 1.7% disagree and only 1.7% were strongly disagree with the statement. This implies that top managements initiative for employee education and training is just but not adequate and need more to increase the awareness and knowledge of quality conception among the employees towards the achievement of high class quality (Figure 1a).

The respondents were asked about the importance of establishing long term cooperative relation with suppliers. 46.7% of them indicated that they strongly agree whereas 45% were partially agreed, and 8.3% were disagreeing to keep long term cooperative relationship with the supplier. This result implies that only few organisations have positive responses about the establishment of long term cooperative relation with suppliers (Figure 1b).

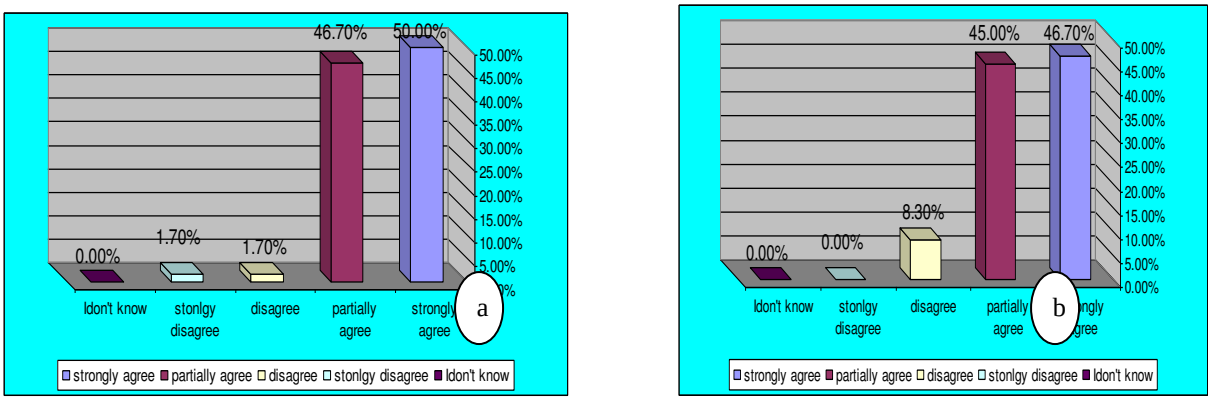

Figure 1: a)Top management arrangement of adequate resources for employees education and training; b) The establishment of long term cooperative relation with suppliers

The respondents were asked whether the organization regularly conducts supplier quality audit, 43.3% of them agreed strongly, 35% were partially, 6.7% were disagree, and 13.3% were strongly disagree with this statement and only 1.7% do not know actually. This indicates that only a moderate number of the organisation conduct supplier quality audit (Figure 2a).

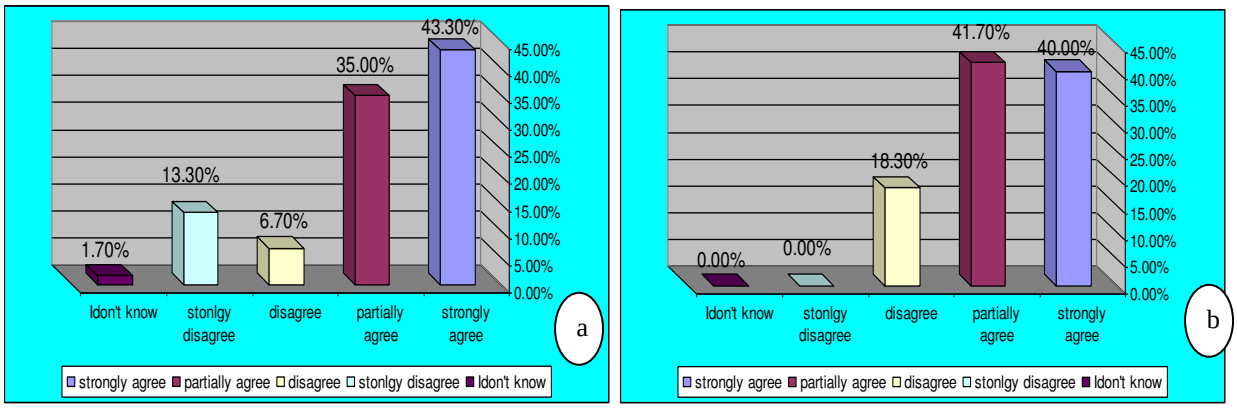

Figure 2: a)The organization conduction of supplier quality audit; b) The organization conduct regularly quality audit

Respondents were asked if they implement and conduct regular quality audits. About 40% of them strongly agree, 41.7 were partially agree, and 18.3% were disagree (Figure 2b).

It was observed that inadequate number of organisations (40%) use quality related data to evaluate the performance of all departments and employees, and they conduct inspections effectively. Most of them use quality control tools extensively for process control and improvement. Generally, the organisation often participates in new product development and the product designs are thoroughly reviewed before marketisation. The study indicated that about 90% of organisation use ISO 9000 as guideline for establishing the quality system and they have a clear quality manual, procedure documents, and clear working instructions (?). 75% of the responded those who are using ISO 9000 strongly agreed that they were facing difficulties in implementing ISO 9000QMS due to the increase in the amount of paperwork, the difficulties in controlling too many suppliers, and understanding different terminologies used in the standards and presence of full time quality manager. Only 12% of the respondents found themselves alright with the ISO 9000 QMS. It is noticed from this study that most organisation implement employee's suggestions after an evaluation.

About 39 % of respondents strongly agree that employees were committed to the success of the organization whereas 52.5% were partially agreed, 3.4% were disagreed and 5.1 % strongly disagreed (Figure 3a). This indicates a poor management employee relationship.

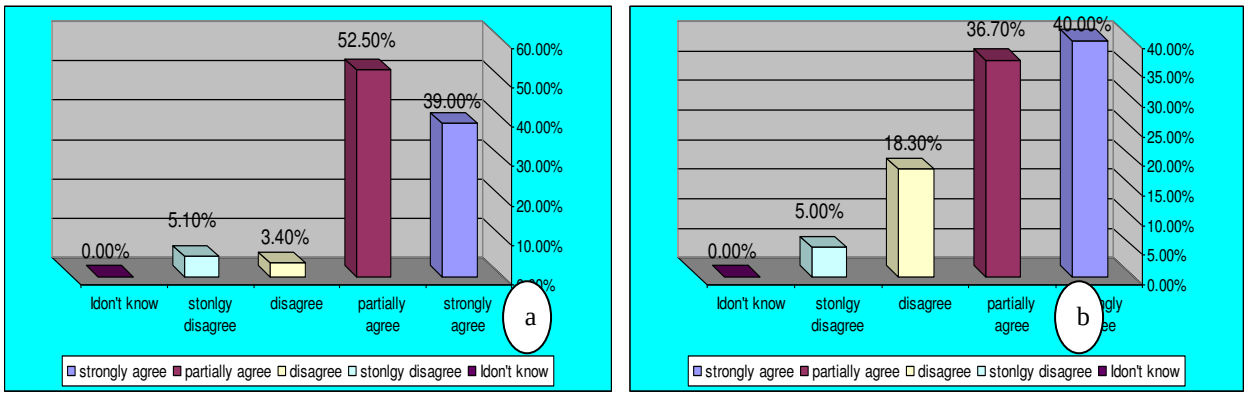

Figure 3: a)The employees are very committed to the success of the organization; b) Employees' rewards and penalties

This study quested whether the recognition and reward activities effectively stimulate employee commitment to quality management. It found that 40% strongly agreed that the employees' rewards and

penalties procedures were clear, and 36.7% partially agreed, and 18.3% disagreed, and only 5% strongly disagreed. This indicates that most respondents are either unsure or less aware of the clarity of rewards and penalties system (Figure 3b).

The respondents were asked whether the employees were encouraged to accept education and training within the organization. The results were 50% strongly agreed, 44.8% partially agreed, and only 5.2% disagreed. A total of 44.1% of respondents in this study strongly agreed that most employees in the organization were trained on how to use quality management methods, whereas 40.7% partially agreed, and 8.5% disagreed, and 6.8% strongly disagreed. It was observed that most organization collects extensive complaint information from customers and quality related customers complaints are treated with priority. The study demonstrated that 66.7% of respondents stated that organization conducts a customer satisfaction survey every year, whereas 30% were partially, and 3.3% were not at all. Therefore, it can be concluded that most respondents strongly agreed that the organizations conduct a customer satisfaction survey every year (Figure 4).

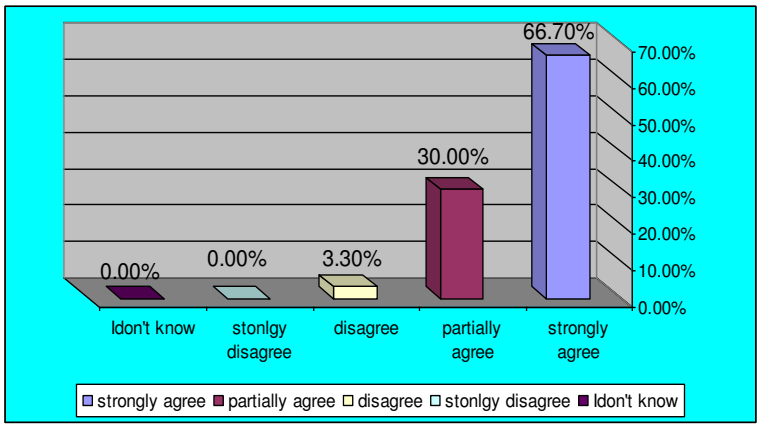

Figure 4: The organization conducts a customer satisfaction survey every year

5.0 CONCLUSION

This paper presented an investigation result on current quality control practices within the manufacturing industries in the Western region of the Kingdom of Saudi Arabia to assess the prospects of implementing TQM technique and principles in order to improve the product quality and customer satisfactions, and overall improvement of market share. Upon obtaining valuable data, it was found that many companies in the western region of the KSA have a low level awareness of TQM implementation and its benefits. This is because of emphasising on the one aspect of quality program ISO 9000 QMS. The result of the survey pointed out some of the major difficulties of implementation of ISO 9000QMS such as increase in the amount of paperwork, difficulties in controlling too many suppliers/subcontractors, and understanding different terminologies used in the standards and need for full time quality manager.

Because of time and cost constraints this investigation was conducted only in the Western region of the KSA. To obtain a better and more representative result a further investigation can be conducted throughout the KSA in the future. This investigation only used an MCQ type questionnaire for the survey. In the future in addition to this, some other forms of survey tools such as personal interview, descriptive questionnaire etc can also be used to come into a more accurate conclusion.

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