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Impact of Implementing TQM in RMG Manufacturing Units in Bangladesh

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ABSTRACT

Total quality management is the application of quantitative methods and human resources to improve all the processes within an organization and exceed customer needs once for all. Readymade garments (RMG) industry in Bangladesh is well qualified with exceptional growth since 1995. It contributes 77% to the country's net exports, which is more than 25% of GDP growth. Bangladesh has got 5150 export oriented factories, but, none of these units is following total quality management (TQM). All factories must understand that the customers will be satisfied, if they receive products and services that accomplish their needs, are delivered at the right time and are priced for value. A couple of hypothesizes of this study are, there is a positive correlation between suppliers and manufacturers of RMG of Dhaka, if least amount of efficiency in input will result in the most output of RMG of Dhaka. The significant objectives are, to analyze TQM in RMG manufacturing units of Dhaka, to find out TQM in satisfaction of internal and external customers, to explore the possibilities of effectiveness. The research tools are used such as questionnaire, face to face interview, discussion on case studies, published reports. The samples are 37 respondents from 33 different RMG organizations. They have been selected on random sampling method. This study divulges, quality is the strongest competitive weapon for RMG industry. All manufacturing units should set the factories to meet the compliance standard, to meeting the "zero defects" products, to train the middle level managers and supervisors as leaders, to follow "House of Quality" matrix, to strengthen the communication between purchase and quality departments with suppliers, RMG units should provide employee empowerment, satisfy the customer needs, establish research and development, continuous improvement process and finally ensure TQM model. Government and Bangladesh Garment Manufacturers and Exporters Association (BGMEA) needs immediate action to provide training and seminar to RMG employees on proposed TQM.

Keywords: *TQM, RMG, Compliance, zero defects, customer satisfaction, TQM model, BGMEA.*

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1.0 Introduction

Globalization has made the world to become a small society. It promotes least developed countries like Bangladesh to become economically sound and to increase the standard of living. The RMG industry in Bangladesh is well qualified with exceptional growth since 1995. It contributes 77% to the country's net exports, which is more than 25% of GDP growth. Bangladesh Textile and RMG industry has got 155,557 units, with 148,000 handloom units, 3,284 mechanized primary textile units, 5,150 export-oriented RMG units and 273 garments washing-dyeing units. Unfortunately, none of these units is following TQM system.

We are living in a cut throat competitive society. Marketing concept holds that achieving organizational goals depend on knowing the needs and wants of target markets and delivering the desired satisfactions better than competitors do (Kotler et al., 2012). As per the marketing concept, the customers are the king and are detained through their satisfaction. In order to meet the customer's satisfaction, adaption TQM system is urgently needed. Total quality management is not only the application of quantitative methods and human resources to improve all the processes within an organization and exceed customer needs once for all which integrates fundamental management techniques, existing improvement efforts, and technical tools under a disciplined approach. Analyzing the three words, we have, Total– Made up of the whole, Quality – Degree of excellence a product or service provides, Management – Act, art, or manner of handling, controlling and directing (Besterfield et al., 2004).

As per the TQM system, efficiency and effectiveness are the two important factors. Efficiency refers to getting the most output from the least amount of inputs, effectiveness referred to as doing the right things, which means high efficiency is low resource waste and high effectiveness is high goal attainment (Robbins and Coulter, 2009). All factories must understand that the customers will be satisfied, if they receive products and services that accomplish their needs, are delivered at the right time and are priced for value. They are using the techniques of process management to develop processes, which will control the total costs. These processes will be stable and capable in order to achieve customer expectations (Paterakis, 2010). TQM is based on the principles of Frederick W. Taylor, which is called as scientific management, the use of the scientific method to determine "the one best" for a job to be done. Today, we are bound to provide product and service with quality. We can beat our competitors and satisfy the customers through a total quality.

TQM concept was largely influenced by the experience of high-quality products from Japanese manufacturers (Zandin, 2001). The implementation of TQM in practice is not straight forward as TQM does not occur overnight. It takes long time to be effective in a changed culture. Indeed, it requires times and patience to complete the process of sharing organizational culture. Moreover, the results may not see for a long period of time. Several steps must be taken in the process of shifting to quality management in an organization (Islam and Haque, 2012).

Some unique characteristics of TQM are continual improvement, customer focus, organization-wide activity, employee empowerment, team approach, competitive benchmarking, knowledge of quality control tools, internal and external customers and long term relationship suppliers (Hasan, 2012). The key enablers for TQM implementation are job satisfaction, communication, teamwork, cross-functional teams, empowerment and training and education (Gunasekaran, 1999). Top management vision and mission must coincide with middle management, bottom management and the general employees. When all staffs of the organization will be dissatisfied with the present management system, then TQM implementation will be easier (Rahman et al., 2010). The implementation of TQM requires the participation of high and middle level managers. Methods to implement must be based on the principle "do correctly at the very beginning", in researching and designing to minimize economic cost. Strictly apply deeming circle to make foundation for the continuous quality improvement (Vinet, 2012).

The reasons why teamwork becomes successful are flexibility, commitment, synergistic response to challenge, enhance work and focus. Teams should be made by the group of employees who are collectively responsible for some carefully delineated, complete piece of the work process. Organizations can improve its processes with the appropriate applications of quality control tools and techniques. Employees should be introduced and trained up with these tools. To sustain with continuous improvement momentum, the important steps are: a) develop quantitative measures to know the quality efforts; b) use benchmarking and similar approaches to help generate innovative solutions and c) focus on incremental improvements in quality (Mamun and Islam, 2002).

The house of quality translates the voice of the customer into design requirements that meet specific target values and matches those against how an organization will meet those requirements. Customer expectations and

requirements are translated into engineering characteristics (technical descriptors). The roof of the house is the interrelationship between technical descriptors. Items such as the technical benchmarking, degree of technical difficulty, and target value are listed (Besterfield et al., 2004).

Team is defined as a number of people gather together with common vision and dedication, with mutual understanding and help among them and work interdependently to complete an assignment. When people are involved in teamwork, there are three types of focus that prevails. First one is the personal focus, where the individual gives importance to self and self needs. The second one is the social focus, where the individual is concerned with the other members of the team and keeping people happy will be the motto. The third one is the professional focus, where the output, target and efficiency are best thought (Suganthi and Samuel, 2004).

As organizations found it difficult to conceptualize and follow the ISO 9000 series certification, consolidation of the ISO clauses was carried out during the late nineties. The quality management principles behind the certification were, customer focused organizations, leadership, involvement of people, process approach, system approach to management, continual improvement, factual approach to decision making, mutual beneficial supplier relationship. The objectives of ISO 9001:2000 certification are, to demonstrate the organization's ability to provide a product that meets customer requirements on a continuous and sustainable manner, to address customer satisfaction through effective application of the system, including processes, continual improvement and prevention of non-conformity. Quality auditing is also classified based on the area of coverage as, system audit, process audit and product audit. Product audit, checks whether the products conform to the specified standard, checks the accuracy of the measuring equipment used and test procedures followed, checks whether the products conform to the environmental regulations, can be performed internally or externally. There are two other types of quality audits conducted in industries, 1) Adequacy audit – checks how much the documented procedure complies with the requirements of applicable standards. 2) Compliance audit – checks how much the documented procedures are being implemented by the personnel in the organization. Quality auditing, makes people know where they stand in quality, adequacy and suitability of them to the projected objectives in made known, effectiveness of the system is found out, non-conformities identified helps in analyzing the process and they system, problem solving is taken up with high priority, once the non-conformities are projected by the audit teams, helps in proper decision making, taking into account all the deficiencies in the system,

brings employees together and improves their involvement in job and decision making, capabilities of the process and equipments are established, helps in meeting legal and statutory requirements and puts the industry in a strong position and indirectly it also facilitates training (Suganthi and Samuel, 2004).

People want better from good and best from better. Industry people have also begun to think of different approaches to satisfy the customer. They have now come to the stage finding out the methods to prevent a problem rather than finding out a solution to a problem and finding out methods to eliminate waste from monitoring of waste. Failure mode and effect analysis is one of the tools of total quality management which helps in finding out the possible failure modes of a design, product, process or service and setting up ways to prevent their occurrence. Failure Mode and Effect Analysis (FMEA), is a proactive tool which is used to foresee the probable failures that can occur at a later stage. This forces one to analyze critically each and every process with the sole aim of identifying problems that may emerge. A failure mode and effect analysis is an engineering technique used to define, identify and eliminate known and/or potential failures, problems, errors and so on from the system, design, process and/or service before they reach the customer. The FMEA will identify corrective actions required to prevent failures from reaching the customer, thereby assuring the highest durability, quality and reliability possible in a product or service. FMEA involves, identifying known and potential failure mode, identifying cause and effect of each failure mode, prioritizing the failure mode according to Risk Priority Number (RPN), finding out preventive action for failure mode (Suganthi and Samuel, 2004).

Hypothesis is usually considered as the principal instrument in research. According to Best, "It is a shrewd guess or inference that is formulated and provisionally adopted to explain observed facts or conditions and to guide in further investigation." In short hypothesis becomes the basis for action in its elementary stage. The following hypothesizes are set (i) there is a positive correlation between suppliers and manufacturers of RMG of Dhaka, (ii) if least amount of efficiency in input will result in the most output of RMG of Dhaka and (iii) there is no significant difference between internal and external customers.

The specific objectives are: (i) to analyze TQM in RMG manufacturing units of Dhaka; (ii) to find out TQM in satisfaction of internal customers of RMG of Dhaka; (iii) to find out TQM in satisfaction of external customers of RMG of Dhaka; (iv) to study the relationship between suppliers and manufactures of RMG of Dhaka; (v) to bring out the efficiency from RMG of

Dhaka; (vi) to explore the possibilities of effectiveness of RMG of Dhaka and (viii) to compare the role of internal customers and external customers in RMG of Dhaka.

2.0 Materials and Methods

Area: RMG manufacturing units in Dhaka, Bangladesh. Population: Middle and top management and consultants. Content: Analysis of TQM implementation in RMG units in Dhaka, Bangladesh.
The following tools such as, (1) Questionnaire, (2) Interview, (3) Observation, (4) Discussion on case studies and (5) Library; published and unpublished reports were used for this study.

Randomly selected 37 respondents from 33 different organizations intricate in RMG manufacturing in Dhaka, Bangladesh were selected for this study. All of them are exporting their products to international markets such as Europe and USA. They all are highly conscious and cautious about quality, as they are satisfying the international customers those who are importing many miles away. They receive and supply the garments based on Purchase Order (PO) sheet and Letter of Credit (LC). They have expressed their opinion with liberty. This study has been followed as descriptive statistics. A structured questionnaire which contains 26 was prepared. Secondary data have been collected from published books and reports, primary data have been collected from informal interviews, discussion on case studies with management and middle level managers of RMG organizations.

Limitations make the general topic to a workable size; establish limits of the delineated topic that are to be investigated for the specific research (Sharma and Soti, 2002). Though research studies are unlimited but it has certain boundaries. The following limitations are identified in the present study, such as, (a) the study was deal only with RMG units of Dhaka, Bangladesh, (b) external factors like economy, politics were not taken into consideration for the present study and (c) year of establishment was not been restricted for this study.

3.0 Results and Discussions

3.1 Quality

Out of 37 respondents, 65% strongly agree and 32% just agree that the quality is the strongest weapon in the RMG industry. The respondents are not even seen the real customers and buyers. They communicate and satisfying the customers through the quality products. Whether TQM is significant influence for RMG sector, for which, 68% respondents strongly agree and 32% agree.

3.2 Suppliers

RMG factories are absolutely depending upon the appropriate and standard suppliers for their raw materials such as raw cotton, yarn, fabric, accessories, packing materials and etc. Manufacturing units are assembling the yarn, fabric and accessories and make them as garments. When the suppliers are not providing the materials with required quality, RMG manufacturing units are unable to accumulate them for further garment production. We need to adapt Japanese culture, which is, suppliers are being treated as their family members. It is essential to treat and honor the suppliers like customers, for which, 62% respondents strongly agree, 35% just agree, 3% neither agree nor disagree and none is disagree and strongly disagree (Fig. 1). Also, suppliers are part of organization, for which, 54% strongly agree, 43% agree and 3% neither agree nor disagree.

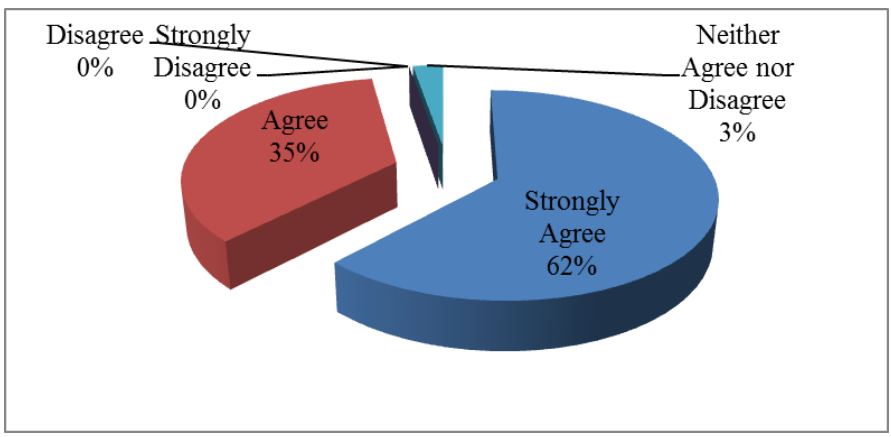

Fig. 1: Suppliers

3.3 "Zero Defects" products

The zero defects concept emphasizes on preventive techniques rather than corrective techniques. Japanese industries have got zero defects products.

RMG factories are keeping heavy margin for repairing, mending and rectifying the garments, we can achieve zero defects products through TQM system, though it is not a onetime affair, this is a slow process, but required continuous improvement. Whether we need zero defects products in RMG, for which, 43% respondents strongly agree, 35% agree, 3% strongly disagree, 5% disagree and 14% neither agree nor disagree (Fig. 2).

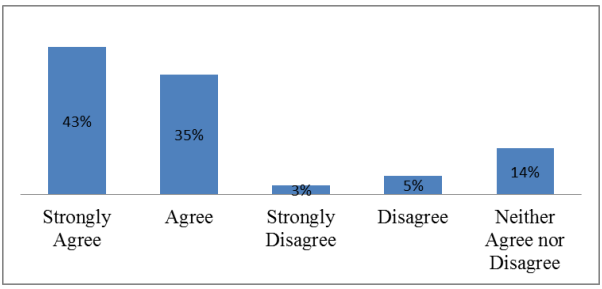

Fig. 2: Zero defects products

3.4 High cost mode of transport

RMG units are manufacturing the garments ready at inappropriate period due to non-implementation of TQM, for which, 22% respondents strongly agree, 51% just agree, 11% disagree and 16% neither agree nor disagree (Fig. 3). RMG units are facing heavy loss due to switching the mode of shipment from Free on Board (FOB) to Cost and Freight (C&F) and they need to switch to high cost mode of transport.

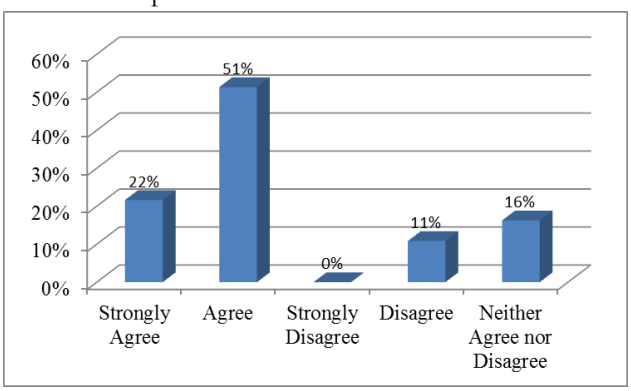

Fig. 3: High cost mode of transport

3.5 Purchase Order (PO) cancellations

RMG industry is facing a lot of problems caused by shortage of power, gas, poor infrastructure, poor port facility, political instability, labor unrest, shortage of raw materials and depending foreign countries for raw materials like cotton, blended yarn and accessories. Apart from the aforesaid causes, RMG units are facing PO and LC cancellations due to non-adaption of TQM, for which, 57% agree, 8% strongly agree, 3% strongly disagree, 14% just disagree and 19% neither agree nor disagree (Fig. 4).

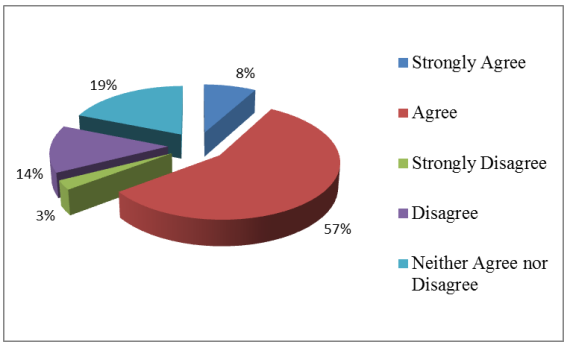

Fig. 4: PO and LC cancellations

3.6 Efficiency

RMG industry in Dhaka, Bangladesh, is experiencing low productivity with high level of input and high maintenance cost with low profit. This study suggests adapting TQM to increase the productivity with low input and avoid backlog and stock lot. RMG industry is TQM will increase the system efficiency in RMG, for which, 68% strongly agree and 32% just agree (Fig. 5).

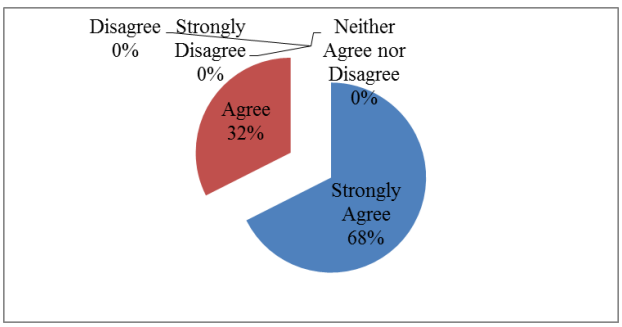

Fig. 5: Efficiency

3.7 Customer satisfaction

RMG organizations are being established for meeting the customer satisfaction at the highest level. In today's competitive world, every factory is fighting for customers, customer requirements their customer satisfaction is a key differentiator and increasingly become a key component of RMG sector. Customer requirements and satisfactions are major objectives, for which, 70% strongly agree, 27% just agree and 3% neither agree nor disagree.
We can meet customer's demand of due date, by adapting TQM, for which 38% strongly agree, 57% agree, 3% disagree and 3% neither agree nor disagree (Fig. 6).

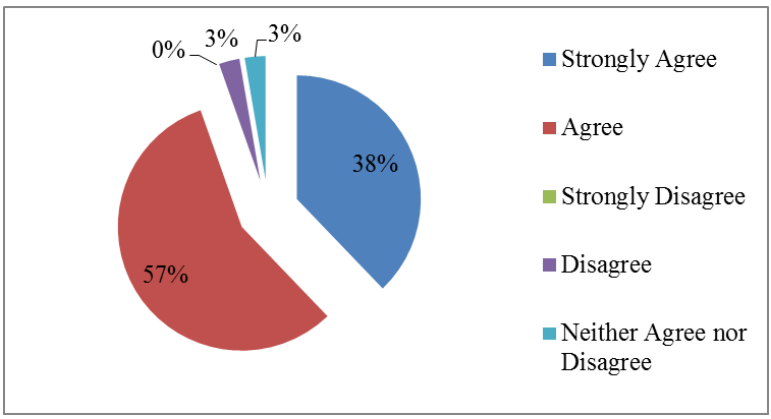

Fig. 6: Customer's demand of due date

3.8 Reduce complaints

RMG factories are being received heavy chargeback due to poor quality consignments. They are not sure, whether they will be paid full payment as per the declared invoice or not, as they always anticipate customers will raise some complaints against the shipped garments and issue debit note. TQM will reduce complaints in RMG sector, for which, 41% strongly agree and 57% just agree.

3.9 Cost

RMG Bangladesh is experiencing heavy input and raw material costs. TQM helps to reduce costs such as labor, raw materials, for which, 35% strongly agree, 57% agree and 8% neither agree nor disagree.

3.10 Production time

Every garment manufacturing has got a lot of processes and need to consume a very good amount of time. Management is depending upon the production and factory supervisors and managers to fix the required consumption of production period. But, no prior planning and statistical experiment have been followed. But, TQM will reduce the production time, for which, 41% strongly agree, 57% just agree and 3% neither agree nor disagree.

3.11 Time wastage

Every processing from procuring yarn, fabric, materials, placing the orders with suppliers and subcontractors, need to spend a lot of time. But, time wastage is reduced by TQM system, for which, 54% strongly agree and 46% agree.

3.12 Production wastage

RMG factories are spending a huge amount of extra money for additional quantity for wastage and fulfill the short quantity. Every factory is obtaining 5% to 10% extra materials and utilities. TQM reduces production wastage, for which, 54% strongly agree and 46% agree.

3.13 Internal and external customers

There are two types of customers, internal and external customers. An internal customer in RMG industry, every sewing operator is a customer for each other; sewing operators are customers of fabric cutting people. Garments checking and finishing workers are customers of sewing operators. External customers, whom the RMG factories are supplying and exporting the garments. RMG factories always try to satisfy the external customers, but, fail to concentrate on internal customers. Internal and external customers exist in every organization, for which, 30% strongly agree, 68% just agree and 3% neither agree nor disagree (Fig. 7).

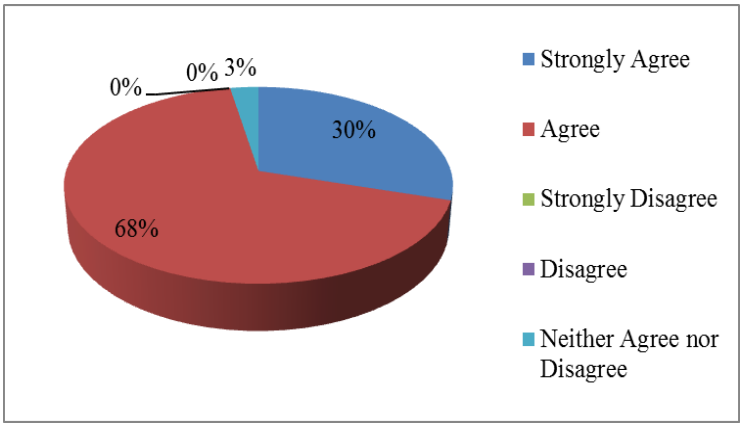

Fig. 7: Internal and external customers

There is no significant difference between internal and external customers, for which, 14% strongly agree, 65% just agree, 16% neither agree nor disagree (Fig. 8).

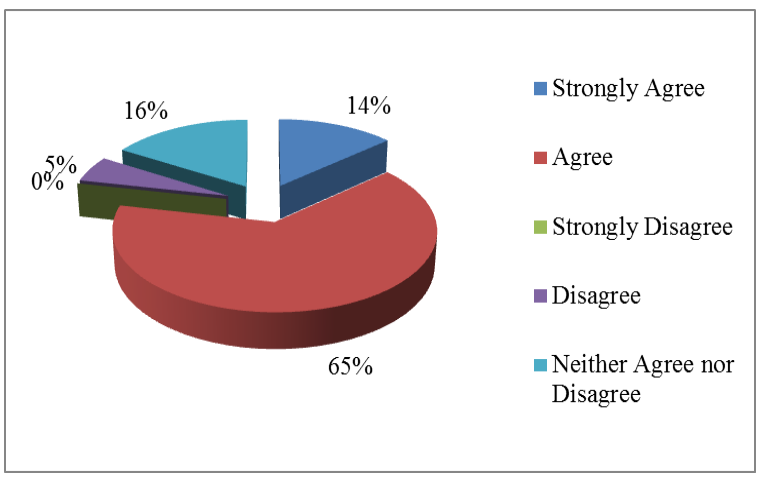

Fig. 8: Difference between internal and external customers

3.14 Teamwork

Until the previous generation, industry used to believe on hard work, now, organizations believe in smart work and group work, but, future generation will believe in team work. Where, there is a team work in any organization, there, we can find a growth. RMG industry is based on team work, where all the workers and employees gathered together with common vision and dedication, with mutual understanding and help among themselves and work independently to complete an assignment (Suganthi and Samuel, 2010). Teamwork is one of the main pillars in RMG industry, for which, 73% strongly agree and 27% just agree.

3.15 Industry compliance

RMG industry compliance is a key requirement for most of the reputed buyers. It ensures all labor rights, facilities and safety. All RMG owners are less interested to follow the industry compliance, as the initial investment and running cost is higher. Industry compliance is mandatory for all RMG factories, for which, 49% respondents strongly agree and 51% agree.

3.16 ISO certificate

The International Organizations for Standardization (ISO) has formulated standards for quality certification. Quality certification is the procedure adopted by organizations to let the customers and stakeholders know about the system being followed. It is used as a mode of quality assurance (Suganthi and Samuel, 2010). ISO Certificate is necessary for RMG factories, for which, 30% strongly agree, 35% just agree and 27% neither agree nor disagree (Fig. 9).

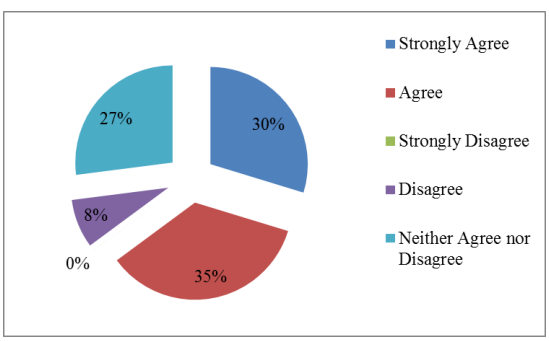

Fig. 9: ISO certificate

Also, customers are satisfied with ISO certified factories, for which, 22% respondents strongly agree, 43% respondents agree, 5% disagree and 30% neither agree nor disagree (Fig. 10).

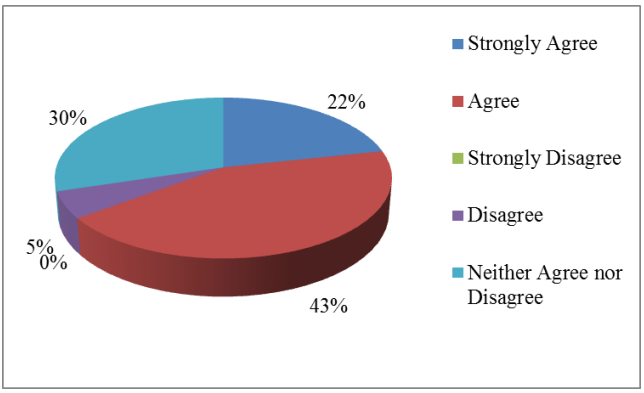

Fig 10: Customers with ISO certified factories

3.17 TQM improves profit

RMG factory's liabilities and obligations are going up and market becomes very tough. In order to sustain in the market and reduce the burden, management compensates their profit and working at Break-Even Point (BEP), whereas, TQM improves profit, for which 43% respondents strongly agree, 54% agree and 3% neither agree nor disagree.

Customers prefer to working with TQM adapted factories, for which, 46% respondents strongly agree, 46% agree, 3% disagree and 5% neither agree nor disagree.

3.18 Government on TQM

Whether government should implement that TQM is a mandatory for RMG, for which, 43% respondents strongly agree, 43% just agree and 14% neither agree nor disagree.

3.19 BGMEA on TQM

Employees and factory management need awareness of quality and training on TQM, whether BGMEA should provide necessary training on TQM, for which, 73% respondents strongly agree and 27% agree.

3.20 Morale of workmen

One of the weaknesses of RMG industry in Bangladesh is job dissatisfaction. TQM will increase the morale of workmen in RMG, for which, 46% strongly agree and 54% just agree.

4. General Discussions

The ISO definition (ISO 8402) for quality is stated as, quality is conformance to requirements, the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs. Quality is the strongest competitive weapon for RMG industry. TQM is significant influence for RMG sector. RMG manufacturing units should set the factories to meet the compliance standard, ensure the safety precautions and appropriate working atmosphere for employees. Working environment is the basic requirement for TQM implementation. RMG owners are anxious that the initial and maintenance cost will go up, when they set the factories for compliance. RMG factories can follow fish-bone diagram for preventing from fire (Fig. 11).

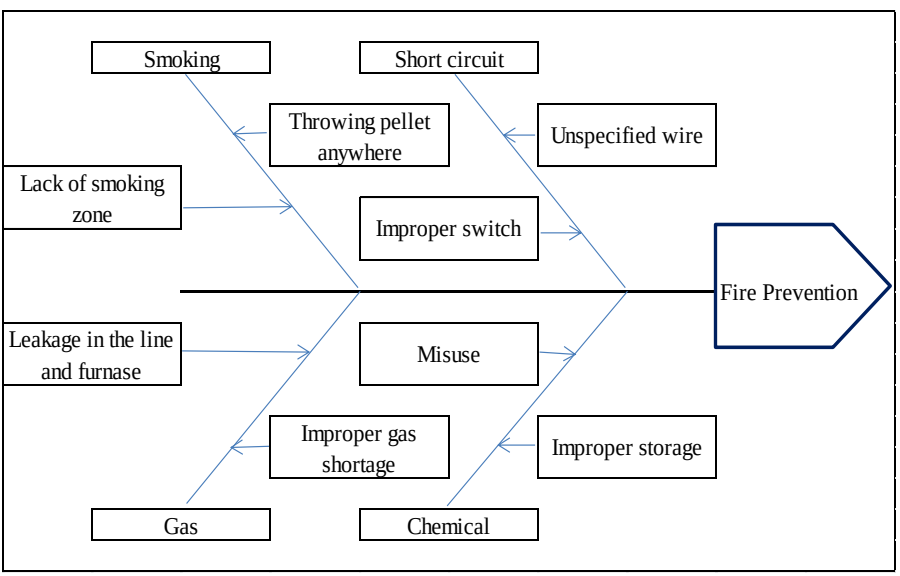

Fig. 11: Fire prevention

RMG units have got unbalanced input and output system, repairing and remaking the products again and again. They should learn and follow to

produce "Zero defects" products and required continuous improvement. Before they implement "Zero defects" on products, employees and managers should be trained and well prepared for "Zero defects" mentality, positive thinking and systematically.

There are many line supervisors, middle level managers and top management involved in the manufacturing units, but, leadership is missing. RMG owners and BGMEA should realize that the successful comes from employees and managers; RMG sector needs leaders instead of managers. RMG owners and BGMEA need to train and motivate managers as leaders rather than managers only. Vision should be clearly designed to the manager-leader, as it leads to the future. Managers-leaders are responsible for preventing the issues and problems than curing. This study suggests that RMG factories should follow "House of Quality" matrix prior to commence any production (Besterfield et al., 2004). House of Quality matrix clearly shows what the customer expects in the garment, first design, second fit, third color, fourth price and finally durability. Also, it illustrates how an organization will meet the technical descriptors and importance, first designer which is creativity, second fabric, third embellishment under materials, fourth tailor made, fifth readymade under manufacturing process and finally accessories (Table 1).

Table 1: House of Quality

			Technical descriptors (HOW's)											
			Material			Designer	Manufacturing Process							
			Fabric	Embellishment	Accessories	Creativity	Tailor-made	Ready-made	Customer Assessment (CA) 1-5	Target Value (TA) 1-5	Customer Important Factor (CIF) 1-10	Sales Point (SP) 1-2	Scale-up factor [SuF] (TV/CA)	Absolute Weight (CIF x SP x SuF)
Customer requirements (WHAT's)	Quality	Fit	8	5	6	8	8	8	3	4	9	2	1.33	24.00
		Durability	9	7	8	7	8	8	4	4	7	1	1.00	7.00
		Price	8	7	6	10	9	8	2	3	8	1	1.50	12.00
	Look	Design	6	5	4	10	8	7	3	5	10	2	1.67	33.33
		Color	5	4	3	7			4	5	9	1.5	1.25	16.88
		Technical Assessment (TA) 1-5	4	4	5	3	4	5						
		Target Value (TV) 1-5	4	5	5	4	4	5						
		Scale-up Factor (SuF) TV/TA	1.00	1.25	1.00	1.33	1.00	1.00						
		Weight Point (Matrix x CIF)	304	295	225	485	280	262						

RMG units are missing with Human Resource department and Research and Development (R&D). RMG units should not stop innovating. As per the TQM, organization is Human. We discuss about the quality, usually, we think about the product quality, but, it is the quality of employees, is main concern of TQM (Vinet, 2012).

Top management is unaware of actual procurement of materials, suppliers and employees. They are unable to follow their commitment due to lack of awareness of the product and customer's actual demand and satisfaction. Poor communication hints the employees to become exasperated and leads to unrest. There is a very less written communication between the employees and middle management. Every employee looks for his own performance, rather than teamwork. Teamwork is missing in RMG manufacturing units. RMG units should provide the incentives based on team performance rather than individual performance and incentives.

Employees are unaware of customers and their requirements, they are not being trained and educated to meet the customer's requirements. RMG management should provide employee empowerment and autonomy in decision making. Management should encourage the employees to participate the organization. Employees should contribute to the organization growth. The main component of the TQM is the whole participation from the employees. RMG factories are unable to meet the customer's demand of due date and revising the payment terms from Free on Board (FoB) to Cost and Freight (C&F) and need to switch to high cost mode of transport, failure, stock inventory level goes up and facing huge loss on stock lots.

Since, there is no positive relationship and partnership with suppliers and subcontractors, factories are not being supplied the materials and semi-finished and processed garments in time and facing quality disputes. In order to meet the customer's demand of due date, manufacturing units are compromising the quality and level of materials and time wastage that are going high. This study accomplishes, suppliers and subcontractors should be honored like customers. Every garment manufacturers should consider that suppliers and subcontractors are part of their organization. This study concludes, RMG units will be benefited and their profit ratio will go up, when they adapt TQM system. In future, customers will prefer to working with TQM improved factories.

5.0 TQM Model

This study suggests following TQM model for RMG industry (Fig. 12).

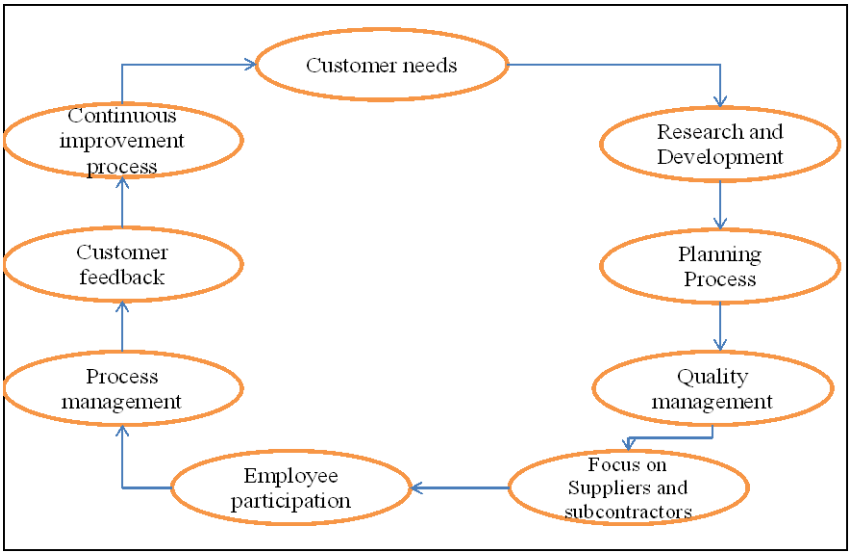

Fig. 12: TQM model

5.1 Customer needs

RMG unit is vain, without any buyer. Therefore, every RMG factory should focus on customer needs. They need to attract the customers, satisfying them at highest level and retaining them. In any RMG organization, quality begins and ends with customers. Customer is said to be the king in any business transactions. He needs to be treated with dignity (Suganthi and Samuel, 2004).

5.2 Research and development

In order to sustain in the market, every factory should have a research and development. RMG factories are just replicating the design and similar products, which are being given by the buyers, importing high value inputs and manufacturing the readymade garments through the low cost labors and shipping them at lowest price in the world to developed countries like US and Europe. When we research and develop the products with our own design, the value of the product goes up.

5.3 Planning process

RMG factories have to setup plan and programs to supervise and prevent problems right before the production commences. Statistical tools can be used to supervise, quantitatively analyze the results as well as factors affecting the quality, consider the reasons and take appropriate prevention methods rather than correcting and repairing the finished garments.

5.4 Quality management

Commitment of top management is needed for the creation of quality management. RMG factories should develop clear vision and mission about TQM implementation. RMG factories should aware of their buyer's standard and specification, before they commence the production. At the beginning, every factory management should train the employees through seminar or workshops within the factory. Later, BGMEA and Government should provide formal training and education for the employees. Factory management should be firm with recruiting the employees of those who are well trained in TQM.

5.5 Focus on suppliers and subcontractors

Many factories seek for the suppliers, no sooner they receive the Purchase Order (PO) and Letter of Credit (LC). This study proposes to keep the best suppliers, those who can supply the materials with quality, quantity, service within a given time period, are ready at any moment. Every factory management and middle level managers should have a strong relationship with their suppliers. Factory management should ensure that the purchasing department and quality department work together to ensure to get the correct quality materials from respective suppliers.

5.6 Employee participation

Employee participation is very important to get the appropriate quality products out of the garment factories. Employees should be involved in the planning and execution of the production. Employees should be well trained to work as a team; they are the real owners of the garments in their factory. Employees should be flexible, committed, synergetic response to challenge, enhance work and focus (Bernardin and Russel, 1998). Employees should have a proper awareness of quality, proper communication channels, information gathering and problem solving tact.

5.7 Process management

It is an application of knowledge, skills, tools and techniques. An advanced technology upgrades garment factory's setup. Such a technology propels and appropriate system for every processes, which is procuring yarn, fabric, accessories, choosing appropriate and quality suppliers and subcontractors, keeping the right people at the right job.

5.8 Customer feedback

Based on customer feedback, factories are able to update and upgrade their quality and process systems. It is essential for any RMG factories, as they need to run the factories for long run. Dissatisfaction in the initial stages will hit the people, which can be retrieved easily. More dissatisfaction will hit the customer. But, in the final stage, RMG factories get hit, profit goes down and factories will be in deep trouble (Suganthi and Samuel, 2004).

5.9 Continuous improvement process

It is a vital component of an effective performance management system. Improvement is made by, viewing all work as a process, making all processes effective, efficient, and adaptable. Anticipating changing customer needs, controlling in-process performance using measures such as scrap reduction, cycle time and control charts. Eliminate nonconformities in all phases of everyone's work, even if the increment of improvement is small. Use benchmarking to improve competitive advantage. Innovate to achieve breakthroughs. Incorporate lessons learned into future activities. Using Technical tools such as statistical process control, experimental design, quality function deployment (QFD) – House of Quality, Deming's Plan-Do-Study-Act (PDSA) and Fig. 13 illustrates the cycle of PDSA (Besterfield et al. 2004).

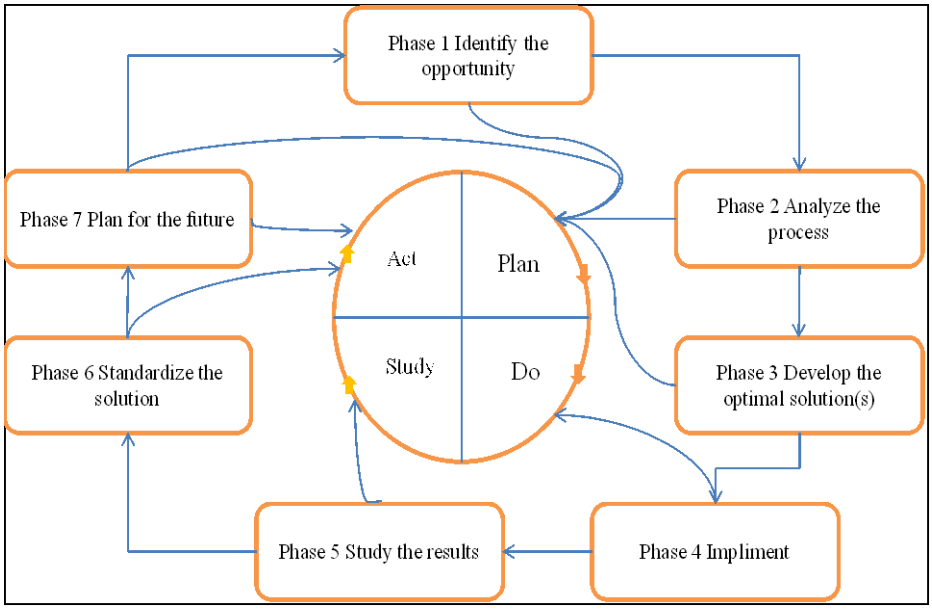

Fig. 13: PDSA

6.0 Conclusions and Recommendations:

6.1 Government and BGMEA

Details research to be conducted to make mandatory for industry compliance. The Government of Bangladesh should subsidize on initial cost of industrial compliance. A paradigm should be drafted for quality awareness for middle level managers and supervisors for up-gradation. A study model should be provided for training on TQM model for management and employees. Government and BGMEA should take strong initiative to implement HR department with all RMG units with immediate effect. BGMEA should provide awareness and training on TQM. Government should implement that TQM is a mandatory for RMG industry.

6.2 Factory owners

RMG factories should include the TQM model in the current practices as stated in this study. All RMG factories should establish Enterprise Resource

Planning system; a study to implement "zero defects" products in RMG, Dhaka, Bangladesh, which is simultaneously a study to measure the customers' feedback

Management and employees should work hand-in-hand to achieve organization's primary objectives. There should be an updated technology to keep on upgrading our garment factories setup.

6.2 Managers and supervisors

Manager-leader should take the personal responsibility for implementing, promoting and monitoring the whole activities. RMG units should encourage written communication. RMG factories should have a very good planning process, so that they can escape from huge backlog production in the peak season and stock lots in the slow season. Suppliers, subcontractors and RMG units should work on the basis of win-win concept. Maintain constructive dissatisfaction with the present level of performance. Eliminate waste and rework wherever it occurs. Investigate and eliminate the activities that do not add value to the product.

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