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Deming Management Method in the Readymade Garments Industry of Bangladesh

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A good quality management system is crucial for a manufacturing organization to increase its competitiveness. Over the time, TQM has become a tactical instrument for manufacturing organizations to grow up and uphold in the vastly competitive business surroundings. Though, developing suitable base for TQM implementation is still the real challenge for an organization. The RMG industries of Bangladesh are using TQM without having any knowledge about it. This paper is designed to outline the application of TQM, based on the Deming Management Method in the RMG industry of Bangladesh. The study will help to focus on the implementation; deficient of implementing this method and recommendations for improving it. The study is conducted in the time period of 2013-15. A structured Questionnaire was used to collect data from random sample of 100 production managers of RMG industry. The findings propose that an integrated approach is required to implement the Deming Management Method of total quality practices in order to understand actical quality objectives. The study supports the applicability of Deming Management Method to the RMG industry. The result of the research provides a better understanding of issues relating to Deming Management Method of total quality and suggests measures for improving the implementation of this method in the RMG industries of Bangladesh.

Keywords: TQM (Total Quality Management), RMG (Readymade Garments), Deming Management Method, Implementation.

1. Introduction

With the introduction of total quality management philosophy some creative companies in Bangladesh are trying to practice this new idea intended for sustainability. A widespread review of literature indicates that the study on TQM in Bangladesh has been paying concentration mainly on individual firms particularly in the manufacturing industries. However, little research has been conducted in this area in the context of readymade garments sector of Bangladesh. Total quality management is used to describe a comprehensive view of quality assurance (Evans and Lindsay, 1999). TQM is merely the process of building quality into goods and services from the initiation and making quality everyone's concern and responsibility. The accomplishment of TQM depends on the authentic commitment to quality by every member of the organization.

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TQM is an enhancement to the traditional way of doing business and is a proven technique to guarantee survival in world-class competition (Besterfield, 2009). Besterfield also analyzed the three words Total Quality Management as Total means made up of the whole; Quality means degree of excellence a product or service provides; Management means act, art or manner of handling, controlling, directing, etc. Therefore, TQM is the art of managing the whole to achieve excellence. He defined TQM as both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization.

Juran (1992) described TQM through a 'trilogy' of management processes: quality planning, quality control and improvement. However, it is the quality control programme that received top priority (Evan & Lindsay, 1999). Crosby (1979) prescribed a 14-step quality program that focused on how to change organizations using management; organizational processes rather than statistical tools and techniques; this program is primarily behavioral and its audience is mainly top management. Ross (1993) explained TQM as a set of practices, continuous improvement, meeting customers' requirements, reducing rework, increased employee involvement and teamwork, process redesign, competitive benchmarking, team-based problem-solving, constant measurement of results and closer relationships with suppliers.

To understand about the discipline of quality management we have to know the philosophies of quality 'Gurus' who formed the evolution of TQM. Some of those 'Gurus' are Deming, Juran, Crosby, Feigenbaum, Shewhart, Ishikawa and Taguchi. Their individual contribution like as Deming (1986) 14 points, Juran (1988) trilogy and 10 steps, Crosby 14 steps to quality improvement, as identified by Brocka and Brocka (1992), and Feigenbaum (1983) approach of total quality control are vital fundamentals of quality management.

One of the strongest proponents of quality management was W. Edwards Deming, a member of the selected few credited with contributing to the rapid revitalization of the Japanese economy after World War II (Deming, 1986; Walton, 1986; Yoshida, 1989). The Deming management method is currently embraced by many firms in the United States and around the world (Hodgson, 1987); its widespread popularity appears to stem from numerous case studies attributing organizational turnaround to the influence of the method (Baker & Artinian, 1985; Hodgson, 1987; Scherkenbach, 1986b; Walton, 1986). Deming (1986) prescribed TQM in 14 points that he claimed to be a set of principles of transformation and the purpose is to remain competitive in providing products and services. The purpose of the method has been and continues to be the transformation and improvement of the practice of management, more specifically, the practice of quality management. Deming philosophy starts with top management but maintains that a company must implement this system at the entire levels of the organization. His 14 point plans is a complete philosophy of management, that can be applied to small or large organizations in the public, private sectors, which according to Deming (1986) "Are a signal that management intend to stay in business and aim to protect investors and jobs".

As principles of transformation, the 14 points are based on a set of assumptions about "how work is accomplished and how the outcomes of work should be evaluated" (Gartner, 1993), assumptions premised on the notion that variability is inherent to all phenomena (Gartner &

Naughton, 1988). These points represent Deming's beliefs regarding how to manage this variability; therefore, they prescribe a number of practices in the name of quality management (Anderson, Dooley, & Misterek, 1992). The elements in this set of practices cross beyond the boundary of a single discipline to include such traditionally different functional domains in management (Baillie, 1986; Gartner & Naughton, 1988) as human resources (Point 6), strategic management (Point 1), purchasing (Point 4), and process control (Point 5). The purpose of these practices is to assist management of the extended process (Gitlow, Gitlow, Oppenheim, & Op-penheim, 1989), stretching the legal borders of the organization to include and affect suppliers upstream (Point 4) and customers downstream (Point 9).The 1986 (Deming, 1986) edition of the 14 points is shown in a table on the appendix section. All of the 14 points begins with a verb and is articulated in the "imperative mood" (Fowler, 1986), captivating the language structure of a "command."

The RMG industries of Bangladesh are maintaining quality of goods without knowing well about quality management. Therefore they face problems about quality management. For this reason they can't deliver quality products. To provide a better guideline for garment industries of Bangladesh this study can play a vital role.

The research study could provide information on the issues of implementing Deming Management Method in the RMG sector of Bangladesh and improving the deficient related to this method. Further, this study would also be a review on the RMG industries to assure total quality. This would expectedly intensify the awareness of organizations using TQM. To the future researchers, this study can provide baseline information on the recent status of using Deming Management Method of TQM in the RMG industries.

We believe that the Deming management method is essential for improved implementation of these 14 points and, more generally, to the advancement of the field of quality management in the manufacturing industries. The objective of the study in general is to investigate about the application of the Deming Management Method in the readymade garments industry of Bangladesh. The specific objectives include:

1. To assess the practices of Deming Management Method in total quality management.
2. To address the lacking concerning implementation of Deming Management Method in total quality management.
3. To suggest measures for improving the lacking area of following Deming management method for quality improvement.

The paper is divided into 5 sections. Section 2 includes review of literature about quality management. Then, section 3 will describe study methodology and development of hypotheses. The paper will then present findings of the study in section 4 and section 5 conclude with major findings and direction about future research.

2. Literature Review

The concept of modern total quality management has been defined by many different individuals in different ways but the real meaning and spirit remained the same. According to Anderson et al, (1994) the Deming Management Method contains a prescriptive set of 14 imperative statements which published together for the first time in Deming (1981/1982) and subsequently in Deming (1982) and Walton (1986). These 14 points provide as guiding principle for proper organizational behavior and practice concerning quality management.

Another literature contributed by Anderson et al., (1995) empirically validated Deming management method. Later this was used in empirical studies (Rungtusanatham et al., 1998; Fisher et al., 2005; Douglas &Frendendall,2004; Singh et al., 2007). The findings of these studies give strong support for all hypotheses of Deming Management Method. Anderson et al., (1994) emphasized the need to undertake dynamic testing of the theory to validate its generalizability, and applicability across sectors, countries, industries, employee groups and time periods. Some of the other researchers also argued that improvement efforts through testing of this theory would contribute toward better understanding, and aid in knowledge consolidation (Sousa and Voss 2002).

Tsang and Antony (2001) identified critical success factors of TQM in UK service organizations including telecommunication. The study identified top management commitment, customer focus, training and development, teamwork, continuous improvement, supplier partnership, and cultural change as essential dimensions of TQM. Khan (2010) surveyed on evaluating the Deming Management Model of Total Quality in telecommunication industry in Pakistan. The findings of this study suggest that an integrated approach is required to implement the TQM practice in order to realize strategic quality objectives, provide more variation for understanding of issues relating to quality management in developing countries and a framework for enhancing organizational effectiveness.

A study conducted by Rahman and Masud (2011) on RMG industry found that quality improvement can play a vital role for improving productivity as well as economic development for the country; implementation of TQM approach has enabled to reduction in rework and cost of poor quality, through proper utilization of company's internal resources without the need for significant investment. The paper tries to see how an organization should implement TQM; how to improve quality by implementing the pillar of TQM.

Another study by Islam and Haque (2012) on the RMG industry of Bangladesh found that the creation of quality management environment, development of teamwork, practice of quality control tools and techniques, closer supplier relationship and customer focus are the main pillars of TQM implementation.

According to Flexstudy (2011) the idea of service quality can be found in many other service areas like retail, hospitality, and healthcare. These areas have the similar goals of

safeguarding business and the purpose of emerging a reputation for quality and excellence of service. Quality management is critical in the service and also in manufacturing sector.

A study by Rizwan U. Farooqui and Syed M. Ahmed (a conference held on *June 2-5, 2009,*) found that although most companies have quality goals, systems and processes do not completely relate to Deming's 14 points. They suggest top management should have commitment to TQM and companies should relate quality implementation ideas with Deming's 14 points in order to achieve TQM to the maximum extent. A study by Tony Polito (NC 27858, 328-6569) on the population of Deming subject matter experts (SMEs) were surveyed in order to determine their beliefs regarding the causes of implementation difficulties and failures associated with demingistic principles. The results indicate that senior management or corporate leadership; represent the most common root cause of such difficulties and failures. A certain degree of informal evidence offers to conclude that there was a lack of commitment and constancy of purpose, inadequate understanding of demingism, lack of long-term focus or short-term thinking, poor or partial implementation, lack of good Deming consultant and organizational culture or philosophy that conflicted with demingism.

None of the studies mentioned focus on the aspects of application of the Deming Management Method in the context of RMG sectors of Bangladesh. This study is new and become a significant ground of investigation and research. Therefore, this area of study seems to be unexplored so far in Bangladesh and hence, become a relevant field of inquiry and research.

3. The Methodology

The population of this study is comprised of all the readymade garments industry of Bangladesh. At present there are 5,538listed garments industries in Bangladesh. According to Bangladesh Garments Manufacturers and Exporters Associations (BGMEA) these are 3,508 and according to Bangladesh Knitwear Manufacturers & Exporters Association (BKMEA) these are 2,030 (Source: BGMEA and BKMEA).

Sources of data: Data have been collected from both primary and secondary sources. The data sources contain interviews through a structured questionnaire, published journal articles, text books, and websites.

Method of primary data collection: A self-administered questionnaire based on the Deming's 14 points was developed to collect information about the status of following Deming Management Method in the readymade garments industry of Bangladesh. Each question is framed with the aim of assessing the application of Deming management method in the RMG industry of Bangladesh. The target respondents were the production managers, quality control managers of the selected garments located in Dhaka, Ashulia, Gazipur, Tongi and Narayanganj. A total number of 150 copies of the questionnaire were administered, out of which 100 copies were retrieved and usable. In the questionnaire there are 16 questions

about Deming's 14 points. Point 4 is divided into question no. 4 and 5; point 12 is divided into question no. 12 and 13. So there are 16 questions for 14 points. In this study, the five point Likert scaling technique has been used to code data. In this technique, 5 response categories have been used ranging from 1(minimum) to 5 (maximum). The label of these 5 response categories are like 1= Strongly disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly agree.

Sample procedure: A sampling frame has been developed with the lists of garment units obtained from the Bangladesh Garments Manufacturers and Exporters Associations (BGMEA), Bangladesh Knit Manufacturers and Exporters Association (BKMEA) and Bangladesh Export Processing Zone Authority (BEPZA). The Sample size is 100, sample proportion is 20% and sample error is 7.8% at 95% confidence level.

Data Analysis tools: Chi-square test with 5% level of significance was employed to test the hypotheses. So, the degree of freedom is 4. The value of X^2 from that 4 degree of freedom at 5% significance is 9.49. The decision rule is to reject the null hypothesis if the calculated value is greater than critical value and accept if otherwise.

3.1 Development of Hypotheses

Research hypothesis: The research hypothesis is that the readymade garments industry of Bangladesh follows Deming Management Method in total quality management. If the null hypothesis is rejected the research hypothesis will be accepted.

Null hypotheses: In order to test the association that exists between Deming Management Method and its application in the readymade garments industry of Bangladesh16hypotheses has been developed from the Deming's 14 points as there are 16 questions in the questionnaire.

H1: In the organization there is no constancy of purpose toward improvement of Product & service.
H2: Management is not liberal to adopt new philosophy / idea.
H3: Organization doesn't rely on mass inspection to achieve quality.
H4: Management doesn't emphasis on long-term profit.
H5: Organization doesn't maintain loyal relationship with the supplier.
H6: In the organization there is no constant improvement of production & service system.
H7: Organization has no training facility on the job.
H8: In the factory floor supervisors are not friendly, participative & do not encourage the worker to do better job.
H9: In the organization there is no existence of an environment of working without fear.
H10: No unity between departments and no existence of teamwork within the organization.
H11: In the factory floor there is no slogans & targets for the worker in doing work &

Not asking for zero defects & new levels of productivity.

H12: No quota sexist in the factory floor.

H13: In the organization no evaluation of worker is made based on the number of units produced by them.

H14: No evaluation is done on the basis of performance, merit rating& pride of workmanship.

H15: No dynamic program of education & self-improvement exists in the organization.

H16: Everybody in the organization doesn't work sincerely to accomplish the transformation.

4. The Findings

Table 1: Lack of constancy of purpose toward improvement

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	35	35%
2	Disagree	38	38%
3	Neutral	6	6%
4	Agree	10	10%
5	Strongly agree	11	11%

Source: Field Survey, 2014

Out of 100 respondents almost 73% respondents disagreed that there is lack of constancy of purpose toward improvement of product & service. On contrary 27% of the respondents agree to the statement. This implies that most of the respondents opinion is that there is a constancy of purpose toward improvement of product and service.

Table 2: Management is liberal to adopt new philosophy

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	2	2%
2	Disagree	6	6%
3	Neutral	2	2%
4	Agree	51	51%
5	Strongly agree	39	39%

Source: Field Survey, 2014

Among the total respondents 90% agreed that management is liberal to adopt new philosophy / idea. Meanwhile the remaining 10% of the respondents disagree to the statement. Most of the respondents opinionis that management is moderate to adopt new philosophy.

Table 3: Strongly dependent on inspection to achieve quality

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	11	11%
2	Disagree	14	14%
3	Neutral	8	8%
4	Agree	38	38%
5	Strongly agree	29	29%

Source: Field Survey, 2014

The respondents were asked whether the organization is strongly dependent on inspection to achieve quality. Above graph reveals that 67% of the respondents agree to the statement. Meanwhile the remaining 33% of the respondents disagree to the statement. Most of the respondents opinion is that the organization strongly dependent on inspection to achieve quality.

Table 4: Management emphasis on short-term profit

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	23	23%
2	Disagree	49	49%
3	Neutral	5	5%
4	Agree	19	19%
5	Strongly agree	4	4%

Source: Field Survey, 2014

The inquiry is about whether management emphasis on short-term profit. Out of 100 respondents 23% of the respondents agree to the statement. On contrary 77% of the respondents disagree to the statement. Most of the respondents opinoin is that management doesn't emphasize on short-term profit.

Table 5: Organization maintains loyal relationship with supplier

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	5	5%
2	Disagree	14	14%
3	Neutral	10	10%
4	Agree	58	58%
5	Strongly agree	13	13%

Source: Field Survey, 2014

Reveals that 71% of the respondents agreed that there is a single supplier for any one item and the organization maintains a relationship of loyalty and trust with them. Meanwhile the remaining 29% of the respondents disagree to the statement. Most of the respondents opinion is that there is a particular supplier for any one item and the organization maintains a relationship of loyalty and trust.

Table 6: Constantly improving its system of production and service

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	0	0%
2	Disagree	1	1%
3	Neutral	1	1%
4	Agree	47	47%
5	Strongly agree	51	51%

Source: Field Survey, 2014

The analysis reveals that 98% of the respondents agree that the Organization is constantly improving its system of production and service to improve productivity and quality to reduce cost. Meanwhile the remaining 2% of the respondents disagree to the statement. Most of the respondents opinion is that organization is relentlessly improving its system of production and service to advance productivity and quality to shrink cost.

Table 7: Enough training on the job

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	0	0%
2	Disagree	10	10%
3	Neutral	8	8%
4	Agree	64	64%
5	Strongly agree	18	18%

Source: Field Survey, 2014

The analysis reveals that 82% of the respondents agree that there is enough training on the job. Meanwhile the remaining 18% of the respondents disagree to the statement. Most of the respondents opinion is thatthere is adequate training on the job.

Table 8: Supervisors encourages the worker to do better job

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	0	0%
2	Disagree	8	8%
3	Neutral	1	1%
4	Agree	61	61%
5	Strongly agree	30	30%

Source: Field Survey, 2014

The analysis reveals that 91% of the respondents agree that supervisors are friendly, participative and encourage the worker to do a better job. Meanwhile the remaining 9% of the respondents disagree to the statement. Most of the respondents opinion is that supervisors are participative and encourage the worker to do a better job.

Table 9: An environment of working without fear

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	3	3%
2	Disagree	5	5%
3	Neutral	9	9%
4	Agree	50	50%
5	Strongly agree	33	33%

Source: Field Survey, 2014

The analysis reveals that 83% of the respondents agree that there is an environment of working without fear. On contrary 17% of the respondents disagree to the statement. Most of the respondents opinion is that the organization contains an environment of working without fear.

Table 10: No barrier between departments and existing team work

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	0	0%
2	Disagree	5	5%
3	Neutral	12	12%
4	Agree	64	64%
5	Strongly agree	19	19%

Source: Field Survey, 2014

The analysis reveals that 83% of the respondents agree that there is no barrier between departments and existing team work. Meanwhile the remaining 17% of the respondents disagree to the statement. Most of the respondents opinion is that there is no barier between the departments and they maintain a team work for completing tasks.

Table 11: No slogans and targets for the worker in doing work

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	5	5%
2	Disagree	29	29%
3	Neutral	11	11%
4	Agree	54	54%
5	Strongly agree	1	1%

Source: Field Survey, 2014

The analysis reveals that 55% of the respondents agree that no slogans and targets for the worker in doing work. The remaining 45% of the respondents disagree to the statement. Most of the respondents opinion is that there are no slogans and targets for the worker in doing work that is asking for zero defects and new levels of productivity.

Table 12: No quotas exist in the factory floor

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	8	8%
2	Disagree	39	39%
3	Neutral	6	6%
4	Agree	46	46%
5	Strongly agree	1	1%

Source: Field Survey, 2014

The analysis reveals that 47% of the respondents agree that there are no quotas exist in the factory floor. Meanwhile the remaining 53% of the respondents disagree to the statement. Most of the respondents opinion is that there are quotas exist in the factory floor.

Table 13: Evaluates quality of worker based on unit produced by them

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	1	1%
2	Disagree	10	10%
3	Neutral	8	8%
4	Agree	71	71%
5	Strongly agree	10	10%

Source: Field Survey, 2014

The analysis reveals that 81% of the respondents agree that supervisor evaluates quality of worker based on the number of unit produced by the worker. Meanwhile the remaining 19% of the respondents disagree to the statement. Most of the respondents opinion is that supervisor evaluates quality of worker based on the number of unit produced.

Table 14: No evaluation by merit rating / annual review of performance

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	20	20%
2	Disagree	61	61%
3	Neutral	3	3%
4	Agree	15	15%
5	Strongly agree	1	1%

Source: Field Survey, 2014

The analysis reveals that 81% of the respondents disagree that there is no evaluation by performance, merit rating, or annual review of performance. Meanwhile 16% of the respondents agree to the statement and the remaining 3% are neutral. This implies that most of the respondents opinion is that there is evaluation by performance, merit rating, or annual review of performance.

Table 15: Dynamic program of education & self-improvement exists

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	0	0%
2	Disagree	5	5%
3	Neutral	5	5%
4	Agree	79	79%
5	Strongly agree	11	11%

Source: Field Survey, 2014

The analysis statement reveals that 90% of the respondents agree that there is a dynamic program of education and self-improvement exists in the organization. Meanwhile the remaining 10% of the respondents disagree. That is most of the respondents opinion isthat there is a dynamic program of education and self-improvement exists in the organization.

Table 16: Everybody works sincerely to accomplish the transformation

Sl. No.	Responses	No. of responses	% of responses
1	Strongly disagree	0	0%
2	Disagree	3	3%
3	Neutral	6	6%
4	Agree	62	62%
5	Strongly agree	29	29%

Source: Field Survey, 2014

The analysis reveals that 91% of the respondents agree that everybody in the company works sincerely to accomplish the transformation. Meanwhile the remaining 9% of the respondents disagree to the statement. Most of the respondents opinion is that everybody in the organization works sincerely to carry out the transformation.

4.1 Summary of the Results

According to question no. 1,73% of the respondents agree that there is consistency of purpose toward improvement of product and service. Question no. 2, 90% agree that management is liberal to adopt new philosophy / idea. Question no. 3, 67% agree that organization strongly dependent on inspection to achieve quality. Questions no. 4, 77% of the respondents are of the opinion that management doesn't emphasis on short-term profit.

From question no. 5 we find out that, 71% of the respondents agree that there is a single supplier for any one item and the organization maintains a relationship of loyalty and trust. Question no. 6, 98% of the respondents agrees that the Organization is constantly improving its system of production and service to improve productivity and quality to reduce cost. Questions no. 7, 82% of the respondents agree that there is enough training on the job.

Question no. 8 suggests that 91% of the respondents agree that supervisors are friendly, participative and encourage the worker to do a better job. Question no. 9, 83% of the

respondents agree that there is an environment of working without fear. Question no. 10, 83% of the respondents agrees that there is no barrier between departments and existing team work.

According to question no. 11, 55% of the respondents agree that no slogans and targets for the worker in doing work. Question no. 12, 53% of the respondents are of the opinion that there are quotas exist in the factory floor. Question no. 13, 81% of the respondents agree that supervisor evaluates quality of worker based on the number of unit produced by the worker.

Question no. 14 suggests that, 81% of the respondents agree that there is evaluation by performance, merit rating, or annual review of performance. Questions 15, 90% of the respondents agree that there is a dynamic program of education & self - improvement exists in the organization. Question 16, 91% of the respondents are of the opinion that everybody in the organization works sincerely to carry out the transformation.

4.2 Results of Hypothesis Testing

The results of hypothesis one indicates a X^2 value of 46.30 which is greater than the critical value of 9.49. So, we reject the null hypothesis and accept the research hypothesis. Thus, we conclude that there is a constancy of purpose toward improvement of product & service. Second hypothesis indicate a X^2 value of 108.30 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. Thus, we conclude that management is liberal to adopt new philosophy/idea. Hypothesis three indicate a X^2 value of 33.30 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. So, we conclude that organization rely on mass inspection to achieve quality. Hypothesis four indicate a X^2 value of 66.60 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. So, we found that management emphasis on long-term profit.

Hypothesis no. five indicate a X^2 value of 92.70 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. Hence, we conclude that organization maintain a loyal relationship with the supplier. Hypothesis six indicate a X^2 value of 140.60 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. Therefore, we conclude that there is constant improvement of production & service system. Hypothesis seven indicateX^2 value of 129.20 which is greater than the critical value of 9.49. So, we reject the null hypothesis and accept the research hypothesis. Hence, we found that there is enough training on the job. Hypothesis eight indicate a X^2 value of 134.30 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. Thus, we conclude that supervisors encourage the worker to do better job.

Hypothesis nine indicate a X^2 value of 85.20 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. So, the organization has an environment of working without fear. Hypothesis ten indicate a X^2 value

of 131.30 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. Hence, we conclude that there is no barrier between departments and there exist teamwork. Hypothesis eleven indicate a X^2 value of 95.20 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. So, we conclude that there are no slogans & targets for the worker in doing work & not asking for zero defects & new levels of productivity.

Hypothesis twelve indicate a X^2 value of 86.90 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. Thus, we found that there is an existence of quotas in the factory floor. Hypothesis no. thirteen indicate a X^2 value of 165.30 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the research hypothesis. Therefore, supervisors evaluate worker based on the number of units produced. Hypothesis fourteen indicate a X^2 value of 117.80 which is greater than the critical value of 9.49. Hence, we reject the null hypothesis and accept the research hypothesis. Thus, we found that there is evaluation on the basis of performance, merit rating & pride of workmanship.

Hypothesis fifteen indicate a X^2 value of 220.60 which is greater than the critical value of 9.49.Therefore, we reject the null hypothesis and accept the alternative hypothesis. So, we conclude that there is a dynamic program of education & self-improvement exist in the organization. Hypothesis sixteen indicate a X^2 value of 136.50 which is greater than the critical value of 9.49. Therefore, we reject the null hypothesis and accept the alternative hypothesis. Hence, we found that everybody in the organization works sincerely to accomplish the transformation.

5. Summary and Conclusions

The results of the study show that the RMG industries of Bangladesh practicing Deming Management Method without having better knowledge about it. There are some lacking concerning implementations of Deming Management Method in TQM within RMG sector. Such as industries are highly dependent on inspection to achieve quality; quotas in the factory floor; evaluation of worker is done based on the number of units produced by them. For the successful implementation of this method, the RMG industries need to focus on these significant issues to identify gaps, and to make an effort for continuous improvement to achieve total quality.

The theory of quality management is new in Bangladesh and the state is in a limited understanding condition. Some of the organizations adopted quality management practices have experienced an overall enhancement in their performance. These organizations can achieve better relations with employees, increased productivity, enhanced customer satisfaction, better market share and improved profitability by implementing Deming Management Method. By applying this method they can maintain continuous improvement of product, focus on long-term profit, maintain loyal relationship with supplier, constant

improvement of production system, friendly working environment, better team work etc. The industry can do better if they follow the method suggested by Deming.

There is scope for further study considering relative significance of the method. There are some limitations of the study. The time period of the study is short; the sample size is small; the survey has been done in the RMG sector only; this can be done in the other sectors of the manufacturing industry. For the researchers of TQM, this study provides a novel approach for the application of Deming Management Method in the RMG industry of Bangladesh. With regard to the implications for future research, one direction is to examine empirically, how manufacturing industries can use the Deming Management Model for quality control. The study will generate information that will be useful for organizational leaders in evaluating TQM practices in their own organizations, in Bangladesh, using Deming Management Method to enhance organizational performance.

References

Anderson, JC, Dooley, KJ, & Misterek, SA 1992, 'The role of profound knowledge in the continual improvement of quality', *Human Systems Management*, 10: pp. 243-259.

Anderson, JC, Rungtusanatham, M, & Schroeder, RG 1994,'A theory of quality management underlying the Deming management method', *Academy of Management Review*, 19(3), pp.472–509.

Anderson, JC, Rungtusanatham, Schroeder, RG, & Devaraj, S 1995, 'A path analytic Model of a theory of quality management underlying the Deming management method: Preliminary empirical findings', Decision *Sciences,* 26*, pp.* 637-658.

Baker, EM, & Artinian, HL 1985,'The case of Windsor Export Supply, Quality Progress', June: pp. 61-69.

Baillie, AS 1986, 'The Deming approach: Being better than the best', *Advanced Management Journal*, Autumn: pp. 15-23.

Besterfield DH, Besterfield-Michna, Besterfield GH, Besterfield-Sacre, 2009, Total Quality Management, Third Edition, Pearson Prentice Hall, India.

Brocka, B, & Brocka, MS 1992,'*Quality Management: Implementing the Best Ideas of TheMasters'*, Richard D, Irwin, Homewood, IL, Crosby 1979, *Quality is Free*(New York: McGraw-Hill).

Deming, WE, 1981/1982,'Improvement of quality and productivity through action by Management', *National Productivity Review,* 1(1): pp.12-22.

Deming, WE, 1982, 'Quality, productivity, and competitive position', Cambridge: Massachusetts Institute of Technology, *Center for Advanced Engineering Study*.

Deming, WE, 1986, 'Out of the crisis', Cambridge: Massachusetts Institute of Technology, *Center for Advanced Engineering Study.*

Deming, WE, 1993, '*The new economics for industry, government, education',* Cambridge: Massachusetts Institute of Technology, Center for Advanced Engineering Study

Douglas, TJ, & Fredendall, LD, 2004,'Evaluating the Deming Management Model of Total Quality in Services', *Decision Sciences,* 35, November, pp. 393-422.

Duncan, W J, & Van Matre, JG, (Guest Eds.), 1990,'The Gospel according to Deming: Is it really new?' Business Horizons, 33(4): pp. 3-9.

Evan, JR & Lindsay, WM 1999,'*The Management and Control of Quality'*, 4th Edition(Cincinnati, OH: South-Western College Publishing).

Feigenbaum, AV 1983,*Total Quality Control*, (3rd Ed) New York, McGraw-Hill.

Fisher, CM, Barfield, J, Li, J & Mehta, R 2005, Retesting a Model of the Deming Management Method, *Total Quality Management*, 16, (3), pp. 401-412.

Flexstudy, 2011, '*Quality and Service in Manufacturing'*.

Fowler, HR 1986, '*The Little, Brown handbook*', Boston: Little, Brown

Gartner, WB 1993, 'Dr. Deming comes to class', *Journal of Management Education*, 17: pp. 143-158.

Gartner, WB & Naughton, M J, 1988, 'The Deming theory of management', *Academy Of Management Review'*, 13: pp. 138- 142.

Gitlow, H, Gitlow, S, Oppenheim, A& Oppenheim, R 1989, 'Tools and methods for The improvement of quality', Homewood, IL: Irwin.

Hodgson, A 1987, 'Deming's never-ending road to quality', Personnel Management July: pp. 40-44.

Islam, Md. Ariful & Haque, AFM Anwarul 2012, 'Pillars of TQM Implementation in Manufacturing Organization- An Empirical Study', *Journal of Research in International Business and Management* (ISSN: 2251-0028), Vol. 2(5), May, pp. 128-141. Available:@http://www.interesjournals.org/JRIBM

Juran, JM 1988, 'Juran on planning for quality', Cambridge MA: Productivity Press. *A Life Cycle Approach*, (5th ed) Homewood, IL, Irwin.

Juran, JM 1992, *Juran on Quality by Design* (New York: Free Press).

Khan, Muhammad Asif 2010, 'Evaluating the Deming Management Model of Total Quality in Telecommunication Industry in Pakistan – An Empirical Study', *International Journal of Business and Management,* Vol. 5 (9), September, pp. 46-59. www.ccsenet.org/ijbm

Rahman, MM, & Masud, AKM. 2011, 'Quality Improvement in Garments Industry Through TQM Approach', *Proceedings of the International Conference on Mechanical Engineering, ICME11-RT-044.*

Ross J 1993,'Total Quality Management: Text, Cases and Readings', Delray Beach, Florida: Lucie Press.

Rungtusanatham, M, Forza, C, Filippini, R, & Anderson, J 1998, 'A replication study of theory of quality management underlying the Deming management method: Insights from an Italian context', *Journal of Operations Management*, 17, pp. 77-95.

Scherkenbach, WW 1986b, 'Performance appraisal and quality: Ford's new Philosophy', QualityProgress, 18(4): pp. 40-46.

Seventh LACCEI Latin American and Caribbean Conference for Engineering and Technology (LACCEI'2009)*'Energy and Technology for the Americas: Education, Innovation, Technology and Practice'* June 2-5, 2009, San Cristóbal, Venezuela.

Singh, PJ, Chua, MW, & Sum, CC 2007, 'Deming management method: Applying theory to public sector organizations and testing refinementsAvailable:http://www.ecom.unimelb.edu.au/downloads/nus_symposium/Singh_paper.pdf

Sousa, R, & Voss, C 2002, 'Quality management re-visited: a reflective review and agenda for future research', *Journal of Operations Management,* 20(1), pp. 91-109.

Total Quality Management (Online) Available at: http://www.skyenet.net/_leg/tqm.htm.

Tsang, JHY, & Antony, J 2001, 'Total quality management in UK service organizations: some key findings from a survey', *Managing Service Quality,* 11(2), pp. 132-141.

Walton, M 1986, *'The Deming Management Method'*, New York: Putnam.

Yoshida, K 1989, 'Deming management philosophy: Does it work in the United States as well as in Japan'? Columbia Journal of World Business, 24(3): pp. 10-17.