

Investigation of Total Quality Management Principles In The Print Production Industry

Srividya B., Thirunavukkarasu V.

Abstract: *The purpose of the investigation was to determine the efficiency of the term “Total Quality management”, to define the principle of the quality concept and to test the effectiveness with in the print production industry. The research involves in-depth survey of quality management system, which was distributed to print production employees across the state. The aim of the survey was to collect data that was predominately qualitative. It inquired upon the utilization and effectiveness of quality management system, knowledge and usage of TQM principles with in the participant’s company. Using content analysis, the collected data was analysed and with the gathered information case studies were developed. The investigation result shows that the principle of TQM was widely executed in print production industry. In many of the print production industry employees not having the clear idea of TQM is, and the more successful industry tended to have a more solid knowledge and usage of TQM principles. These print production industries may benefit by taking time to fully understand TQM and use it to its fullest potential.*

Keywords: *TQM Principles, Print Production, Printing Industry, Quality Management System*

I. INTRODUCTION

Quality concepts can be applied to every aspect of life. The idea of “quality management” exists in order to reach the higher level of Excellency by any type of industry that wants to prove success. The world economy thrived for continuous improvement for revival after second world war. This resulted in development of philosophies and theories on quality as well as quality management. The quality system such as ISO, 5S, Six sigma, Kaizen, Lean manufacturing, Malcom Baldrige National Quality Award, etc have been implemented in various industries and proved their success. The problem of these varying philosophies is the difficulty of applying the optimal quality management to a particular type of industry. The graphic art industry and print production industry is changing at an extraordinary phase. These industries were providing facilities like marketing plans, variable data printing, e-publishing, social media and service-based solutions to their customers. Because of the print production industries are in continuous progression, it is more complicated process for the management to choose the effective quality management system to the industry.

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This investigation focuses on the principle of Total Quality Management and its effectiveness on the modern business with in the print production industry. Using the survey research and case studies, the investigation intends to determine the, TQM and its principle have proven for overall growth and significant improvement of proficiency of print production industry. The investigation derives a level of expectation a print production industry should have for a TQM system success or failure. It is important for the current and future managers of print production industry to understand about quality management system that most likely to lead their business towards Excellency.

II. TQM PARAMETERS

Total Quality Management broad and adoptable term nearly a century old that has been applied possible in every industry. Its often altered specifically to meet the goals of the organisation by implementing the TQM system. Widely accepted definition comes from the American Society for Quality’s website. It explains, ‘TQM describes a management approach to long term success through customer satisfaction. In a TQM effort, all members of an organization participate in improving processes, products, services, and the culture in which they work’.

A study entitled “Studies about the Total Quality Management Concept” provides a different perspective on the implications of a Total Quality Management system by Ioan Milosan in 2011 from the Transilvania University of Brasov, Romania. Milosan explains, “Total Quality Management is an organizational strategy founded on the idea that performance in achieving a quality education is achieved only through involvement with the perseverance of the entire organization in improving processes permanently. The objective is to increase the efficiency and effectiveness in satisfying customers” (p. 45). Milosan concludes later, “TQM refers to an integrated approach by management to focus all functions and levels of an organization on quality and continuous improvement” (p. 45). Milosan’s research six key elements for successfully implementation of TQM process: confidence, training, teamwork, leadership, recognition, and communication. By focusing on three different quality management models, TQM needs to focus on using all of these key elements to create a “continuous flow” of small and progressive improvements from the very bottom of the organization. As an overarching statement, author confines a successful TQM strategy as a “lasting commitment to the process of continuous improvement” (Milosan 45).

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SixSigma.com defines Six Sigma as “a disciplined, data driven approach and methodology for eliminating defects (driving toward six standard deviations between the mean and the nearest specification limit) in any process” Every type of a business, from manufacturing to customer-based service virtually using this quality system.

The definition for TQM in isixsigma.com: “TQM is a management philosophy that seeks to integrate all organisational functions to focus on meeting the customer needs and organisational objectives” (Hashmi 2010). They too have list of principles to form TQM system; Management commitment, employee empowerment, fact-based decision making, continuous improvement, and customer focus. “Do the right things, right the first time” is the main objective of TQM also it concerns with continuous improvement in every part of the organisation. isixsigma.com believes that the way to achieve this is not by implementing new system, but by preventing the mistakes in the current process.

By considering these TQM survey report, it is easier to narrow down the key components of TQM as three main categories: total employee involvement, continuous improvement and customer focus along with improved communication within the organisation and between organisation and its customer.

III. TQM IMPLEMENTATION PROCESS

The Certified Manager of Quality /Organisational Excellence Handbook (Westcott 2005,p.306-307) from the American society for Quality identifies 5 different strategies for implementing a TQM system in the business: 1) TQM elemental approach (using TQM elements in practice), 2) Guru approach (using one /more quality philosopher's methods), 3) Organisational model approach (using successful TQM-based company as a model), 4) Japanese total quality approach (using “develop a long-range master plan for in-house use” Deming Prize), 5) Award criteria approach (using any of the quality award criteria – Deming prize, Malcolm Baldrige or otherwise). Many business organisations choose anyone of their approach to implement TQM system.

John Sherwood and Sherwood, the authors of “The Total Quality Paradox: Part Two – How to Make Total Quality Work” identified 7 principles that guide successful quality improvement. They are as follows: 1) organised enterprises and its customer service 2) Systematic change and its improvements 3) Collaborative change in design and implementation 4) Employee voice about their work 5) Team work 6) Competently managed change process 7) Vision on expectation and its possibility. This survey draws attention to the importance of continuous improvement, increased customer satisfaction, reduced cycle time as well as waste and unit cost.

IV. TQM IN PRINT PRODUCTION INDUSTRY

In the recent years it become more common for the print production companies to take initiative to implement the quality system. Though each industry is unique in some way when it comes to implement the quality parameters, survey

focus on two approaches: TQM effectiveness (a statistical approach) and Philosophical and psychological approach.

The first approach featured in iSixSigma.com “Newspaper aim to improve printing: A TQM case study” (Goyal 2010) about newspaper printing plant in India during the TQM system conversion process. The main goal was to make turnover faster and improving the quality of physical print jobs. The printers team attended TQM awareness program and sat down to define what problems had to address. Then the team performed “Five why or “Why-Why” analysis for their printing problems (blurred borders and unequal hue images). By applying this approach, the blurred image problem ended up by replacing the rollers in the printing plate making machine. Unequal hue problem uses the statistical analysis to determine the ink flow and registration, found that 99.7% of dots were between +/-3 sigma (90% of dots out of acceptable range).

TQM team thought reaching the acceptable rage of dots was going to be nearly impossible, so the decided to aim for 45% inaccuracy. The team did more statistical quality approaches and documented the measurements for improving the process, finally they reach 50% beyond the set target also found that improvement decreased the paper waste. This example finds TQM true when its implemented and completely affects every aspect of business to its improvement in long run.

“Effects of Implementing Total Quality Management at Printing Corporation” by Miller is the next case using TQM philosophy for five years prior and achieving constant result and had continuous training for employees. Printing company was involved in printing magazines and newspapers using web offset printing machine, binding, mailing and other operations related to printing. During analysis interviews were conducted based on five objectives: Employee involvement, Techniques & tools used in TQM, need for change by employee's point of view, Specific lesson learnt by employee through TQM system, Understanding of Deming quality philosophies by employee.

The final statement of result was printing company TQM model was not completely based on Deming's 14 points philosophies but they used as initial inspiration for implementing the change. Both printing industry exhibits overall positive results by implementing two different methods for analysing the success of the TQM system.

V. TQM IMPLEMENTATION METHODOLOGY

This investigation objective was to determine the effectiveness of the principles of TQM, which TQM principles are primarily being used and usage of these TQM principles benefited or not within the print production industry. The result of this investigation determines the factors influencing the effectiveness of TQM implementation overall. The sample population consisted of employees of 4 different newspaper print production industries (includes 24 individual printing divisions) around the Tamil Nadu state.

The investigation included newspaper print production industry who have been existence long enough, members at various hierarchical levels and area of employment (ranging from pressman to CEOs of various industries). The two types of qualitative data were gathered. Descriptive data collection done through online survey, over phone and face to face that includes survey and interviews questions (under the heading Demographics, Company information,

Quality management system, Total quality management and conclusion) to ascertain demographic information, employee's perception on TQM, quality management system principle implementation and employee's suggestions for improvement were recorded. Historical data was gathered through the interviews and survey, as well as research through outsource. Content analysis were used for analysing the collected data. For the purpose of the investigation the "success factors" considered for the company growth and profitability. The TQM effectiveness indicates the correlation of TQM factors with growth and profitability of the print production industry.

VI. RESULT ANALYSIS

The questionnaire consists of 30 questions ranging from checkbox, fill in the blank, one answer type and essay format. The two categories of questions were demographic in nature and subjective and descriptive in nature on quality management system.

A. Demographics Analysis

The investigation survey yields 156 responses, they represent 4 different print production industry. The most highly represented industries were "The Hindu publications", "Express publications", "Daily Thanthi Publications" and "Dinamalar Publications". These industries had greater response rate, so higher focus given in the data report and analysis in the form of case study.

Of all respondents, the majority were ages 45-55 (44.3%) and were male (95 %). In addition, 68.5% identified as Management role, 55.2% identified as operator role and 34.3% identifies ad quality control role as their current position shown in Fig. 1. of all the individuals 42% had been working for 1-5 years, 21.5% had been working for 20+ years in the current company. Additionally, 15.2% had held their current position for 1-5 years, and 12.6% had held their position for 15-20 years.

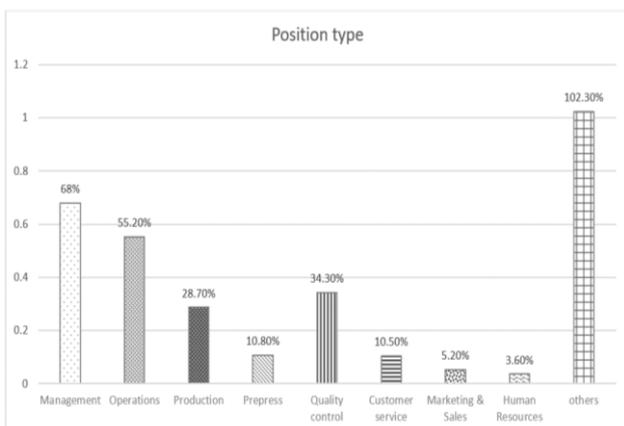


Fig. 1. Position Type

B. Quality Management System Analysis

The quality management system questions then followed after demographic data, it was asked if their industry has a Quality Management System, 82.5% said they do, and out of which 80.4% were using designated QMS that includes 81% had LEAN, 42% had Six Sigma, 38% had ISO series and 42% had implemented TQM shown in Fig. 2. Of all responds 30.5% had been using QMS for 1-5 years and 46% had been using it for more than 10 years and only 2.5% had used their current QMS for 20+ years. In addition, 90.2% identified continuous improvement was the most occurring answer for objective of implementing current QMS shown in Fig. 3.

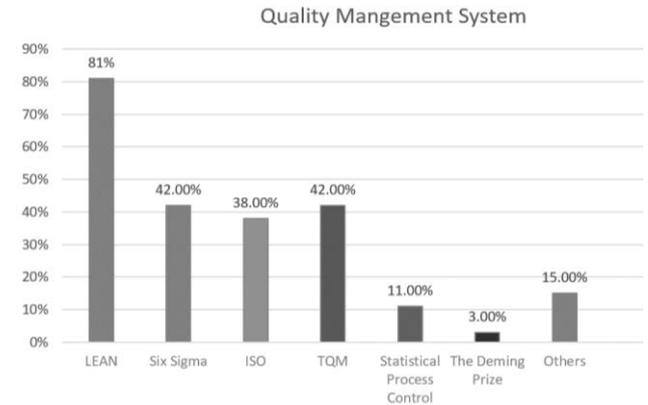


Fig. 2. Implemented Quality Management System



Fig. 3. Objective of Quality Management System

The essay type questions need to be analysed based on content since variety of answers were resulted for the question in what way the quality management system was effective. The highest occurring topic are: improving efficiency of production by 42.5% of respondents, employee involvement by 30.2% of respondents and waste reduction by 25.7% of respondents. Other topics included were reduced defects (10.5%), improved customer service (8.4%), saving cost (3.8%), improved safety (10%) and improved quality (20.4%). More than 50% of individual addressed the quality management system flaws as hard to manage people that indicated people do not execute. There are also 8.5% of respondents mention that their system is out of date and 16% mention that the system was too hard to maintain accuracy.

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The next survey question was about TQM introductory question, asked if they had heard TQM; 90.4% replied as "Yes". Next follows description of TQM, the highest answer 39% stated as customer focus and satisfying customer needs. Other occurring topic was maintenance of standards and procedures, Plan-do-check-act cycle, increasing profit and wages by quantitative data collection.

At last the respondents were given a description of three principles of Total Quality Management includes implementation of principles in their industry and given the description of five approaches to TQM. The most common answer was 47% as TQM element approach, 16.4% as guru approach, 8.4% as Japanese Total Quality approach. As a final question, if they would consider using TQM after learning process, out of 156 respondents, 76% replied "Yes", 13 % replied "Maybe" and 11% replied "No". Immediate question was asked for those replies "Maybe" or "No" about implementation of TQM would be beneficial to their industry; 85% replied "Yes", 10% replied "No" and 5% replied "I don't Know".

VII. CONCLUSION

The purpose of this investigation was to determine effectiveness of principle of Total Quality Management system within the print production industry. The objective was to determine the success or failure of implementation of TQM principle in print production industry and finding the reason for the failure. During investigation the in-depth survey data yields through-provoking results, as well as raised few questions that leads to further study on TQM. Based on the data collection and analysis, it can be seen that TQM principle are always emphasized within the print production industry.

The surveyed understood customer focus, involvement of employee and continuous improvement are the concepts to be implemented in the quality improvement process. The print production companies do not realize whether they are actually using TQM in their industry. But most of the Print production industry actually knew what TQM was defined as, most of these industries were using TQM and implementing it as a functional part of the quality strategy. The future study should focus on financial effects on TQM implementation that includes statistical research on profitability, cost reduction in relation to the use of TQM concepts.

The main target should be direct observation of effect of TQM in industry, rather than simply accepting the respondent's perception. This would provide more accuracy about the effects of TQM.

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