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Influence of Total Quality Management on the Performance of Brewery Company in Gondar, North Ethiopia

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Abstract

This research paper focuses about the total quality management on performance of Brewery industry in Gondar city, north Ethiopia. The total quality management approaches with an aim of incorporating awareness of quality in organizational process. A well framed questionnaire was prepared and used as the instrument for the data collection and administered to respondents of the Brewery's industries understudy randomly selected using Yaro Yemane formula. By applying this formula, a sample size from the population of 156 is 120 respondents at 95% confidence level. The data analysis was made and its hypothesis is formulated, those were analyzed using Krustal Wallis one-way analysis of variance by rank. The outcomes revealed that a positive and significant relationship occurs by applying of total quality management to increase the return of interest, decreasing the product wastage and increases the customer satisfaction. By implementing the total quality management techniques, the overall performance of the organization is increased. This study recommends, the importance of total quality management in all levels of employees is necessary to produce the quality output with less cost.

Keywords: Total quality management, performance, brewery industry

Introduction

The total quality management (TQM) is an important development for achieving higher productivity in modern companies or organizations such as manufacturing industries, oil companies, banks, trading houses and service organizations. Some organizations have adopted TQM and some organizations not adopted TQM. The organizations whose adopted TQM have better productivity and more successful than the organization not adopted TQM. The increase of competition among the organizations brings the rapid innovation. The strategic planners are having an ability to identify the cause of changes, i.e. technological, social changes and quality improvements etc, which will effects the organization productivity. Most of the organization managers are not properly known the influence of quality improvement on the performance of the organizations.

Maiturare, (2010) have shown that the increasing economic globalization of the 1980s, made possible for advanced information technologies are need for product improvement. Irechukwu, (2010) have noticed that, the success level of the organization is depends on the implementation of total quality management.

Based on the Besterfield et al., (2006) the total quality management is defined as both a philosophy and a set of guiding principles that represents the foundation of a continuously improving organization. It is the application of quantitative methods and human resources to improve all the processes within an organization and exceed customer need now and in the future. The TQM inte-

grates the fundamental management techniques, existing improvement efforts, and technical tools under a disciplined approach.

Yalokwu, (2006) defined that the total quality management as a long term effort of an industry to change its own management approach towards the production of goods and services that continuously meet customers' requirements at the lowest cost. In order to improve the performance continuously at lowest cost, people has to understand that, what we have to do, how we have to do it, whether the correct tools are available to do the work, it is possible to measure the performance and receive the feed-back on the current levels of achievement.

Based on the Stoner et al., (2000) the TQM defines the supports the constant attainment of customer satisfaction through an integrated system of tools, techniques and training. This involves the continuous improvement of organizational processes, resulting in high quality products and services.

Ciama, (2012) also revealed that, the TQM as the state in which all the activities of all the functions are designed and carried out, in such a way that all external customers requirements are met while reducing internal time and cost, thus enhancing the work place climate. Ndiokho, (2012) noted that total quality management involves making constant effort to identify the customer satisfaction. This is based on the recognition of the fact that customers needs, desires, and wants normally changes overtime in relation with changes which may occur in key aspects of the environment such as social, political, economic and technological changes. In particular, TQM is a culture of continuous improvement based on continuous learning and adaptation to changes in customer demand and product or operational method.

Jones, (2011) explained the total quality management as a management technique that focuses on improving the quality of an organizations products and services and stresses that all of an organizations functional activities should be directed towards this goal.

Total quality management is a business philosophy that embodies the belief that the management process must focus on integrating the idea of customer-driven quality throughout an organization. It stresses continuous improvement of product quality and service delivery. Managers improve durability and enhance a product with additional features as the product mature in age managers also strive to speed up delivery and improve other services, in order to keep their brands competitive. The philosophy underlying the implementation of a TQM strategy is to see customers and clients as the vital key to organizational success.

The total quality management is one type of management, which gives the responsibility for everyone working in the company to deliver quality product to the costumer. Now a day, most of the companies' slogan is customer satisfaction is our mote, but to reach the customer satisfaction a company need to implement the total quality management. Each and every stage of the process, the customer requirements has to be considering to get the maximum satisfaction of the customer, but at the same time the cost of the product should be less and customer should affordable. The employees in the company also play a vital role for getting higher quality product. The companies have witnessed various negative impacts because of substandard products or fake products. Suppose, is the products are not based on the required standards means those are not competitive in national and international markets. The money which spent on the development of the product and man power is waste only; it is difficult to get returns on that product. Some important products such as medical products should have high standards otherwise it will effect on the human lives.

Without applying the total quality management to the organizations, it damage the company's image and profit. So, it is an important parameter has to consider for each and every company

to produce high quality product with less price to the end users. Hence this study is performed, to implement the total quality management for the Brewery industry in Gondar town, Amhara state, Ethiopia.

Objectives of this study

There are two main objectives of this study and those are,

(1) To apply the total quality management technique to increase the returns on investment for the company.

(2) The impact of total quality management on decreasing the level of product wastage and increases in end users satisfaction.

Research questions

The below questions were framed for this study:

i. At what extent the total quality management will help to increase the company's return on investment.

ii. Whether the total quality management is useful to decrease the product wastage, and increase the end user satisfaction.

Research hypothesis

The below research hypotheses are used for this study:

(1) The total quality management helps to increase the company's return on investment.

(2) The contribution of total quality management for decrease the product wastage and increase the customer satisfaction.

Methodology

The Dashen brewery industry in north Gondar is considered for this study. The sample size of 92 was selected from a population of 120 based on the Yaro Yamene formula which is given below.

$$n = \frac{N}{1+N(e)^2} \quad (1)$$

Where, n is the sample size sought, e is the level of significance, i.e. 0.05 or 95%, N is the population size, i.e. 156.

$$n = \frac{156}{1+156(0.05)^2} = \frac{156}{1+0.3} = \frac{156}{1.3} = 120 \text{ respondents} \quad (2)$$

By applying the formula, sample size from a population of 156 is 120 respondents at 5% confidence level.

The simple random sampling method was used to select the respondents. The Olaiton et al., (2000) method is adopted for the survey by considering the plan and structure to solve the research problem using the questionnaire in collecting analyzing and interpreting the data. In this study, the data used is collected from the both primary and secondary sources of data. The primary source data was collected from questionnaire and face-to-face interview. The instruments were validated by experts in total quality management to authenticate the relevance of the instrument.

The secondary source data was collected from text books, and publications on total quality management. The collected data was collated and analyzed using percentages. Kruskall Wallis hypothesis technique is used for the analysis.

Evaluations

The hypothesis one (1) was tested using Kruskall Wallis one-way analysis of variance by rank.

Krustal Wallis one-way analysis of freedom by rank

Degree of freedom = $k - 1 = 2 - 1 = 1$
Table value $X^2 = 0.05 = 3.841$
Level of significance = 0.05
Decision rule: Reject H_o of $H_{Calculated} > X_{Tab}$.

Sample distribution

The below sample distribution equation is used.

$$H = \frac{12}{N(N+1)} \sum_j^k \frac{R^2 j}{nj} - 3(N+1) \quad (3)$$

Where, k is the number of samples, nj is the number of cases in j[th] sample, N is $\sum nj$, the number of cases in all samples combined, Rj is the sum k of ranks in j[th] sample (column) and $\sum_j^k$ is directs one to sum over the k samples (column).

Computation

The below procedure is used for computations.

Study 1: Apply the total quality management on the return on investment

Table 1. Total quality management and increasing organization return on investment (Source: Field Survey, 2021)

Responses	Frequency	Percentage
Strongly agree	59	49.16
Agree	48	19.66
Undecided	8	6.66
Strongly disagree	3	2.57
Disagree	2	2.5
Total	120	100

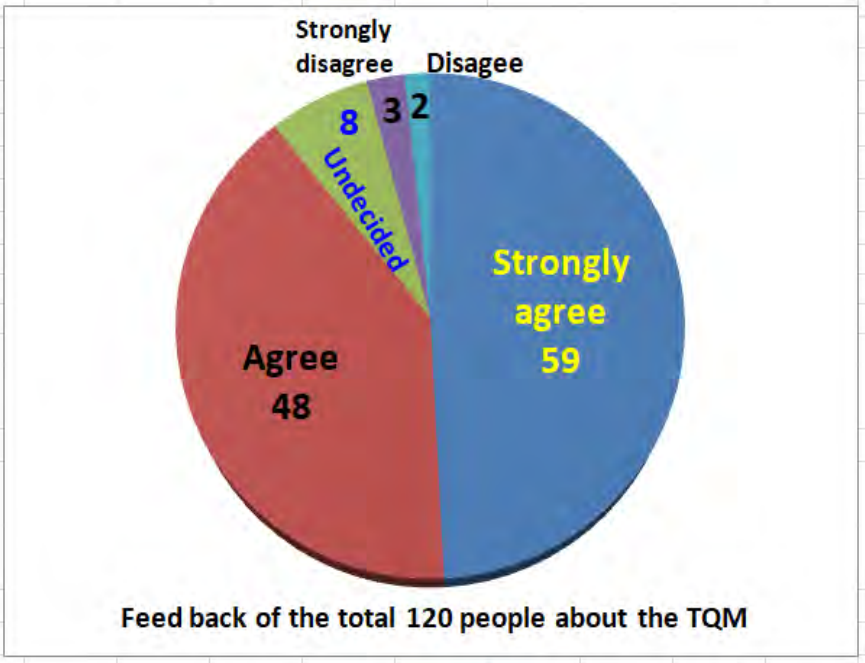

Figure 1. Feedback of the employees about the implementation of TQM in the company

Table 1 indicates the collected feedback from the employees working in the company. There are five responses are used, those are, (i) strongly agree, (ii) agree, (iii) undecided, (iv) strongly disagree, and (v) disagree. The format of the questioner is provided in Appendix. Based on the collected information, the percentage is calculated. Fig. 1 indicates various options chosen by the employees for the implementation of total quality management for return on investment. Similarly, Fig. 2 indicates the percentage of various employees chosen the options.

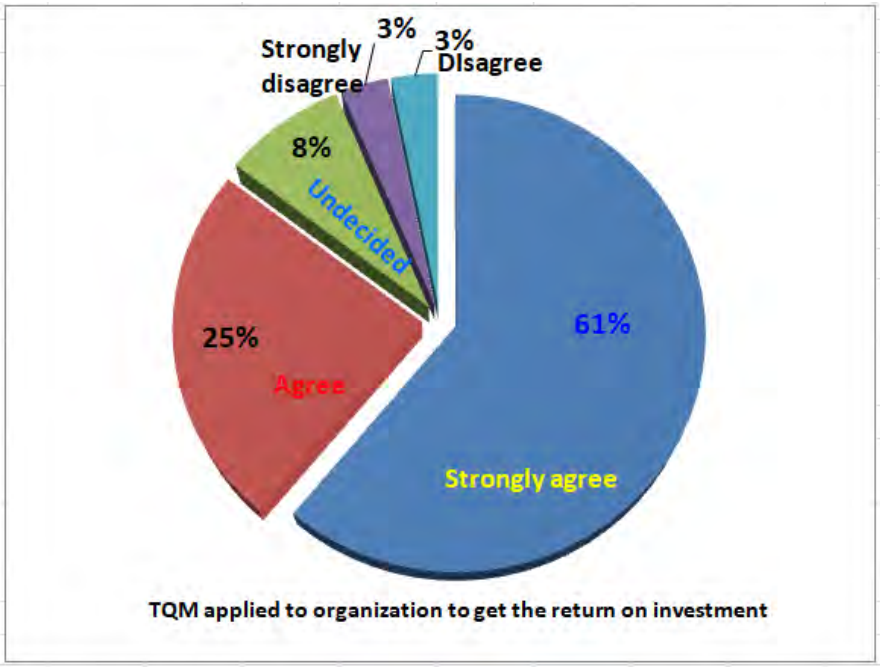

Figure 2. The percentage of feedback provided by various employees about the TQM

The ranking of all the observations for the k groups in a series assigning ranks from I to N we have is indicated in Table 2.

Table 2. Ranks of groups

Frequency	Percentage
8	10
7	9
4	6
3	2
1	5
Total $R_1 = 23$	$R_2 = 32$

Source: computation from Table 2.
R_1 = Sum of 1st column of rank
= 8+7+4+3+1 = 23
R_2 = Sum of 2nd column of rank
= 10+9+6+2+5 = 32

$$H = \frac{12}{N(N+1)}\sum_j^k \frac{R^2 j}{nj} - 3(N+1) \quad (4)$$
$$= \frac{12}{10(10+1)}\left[\frac{23^2}{5} + \frac{32^2}{5} - 3(10+1)\right]$$
$$= \frac{12}{110}\left[\frac{529}{5} + \frac{1024}{5} - 33\right]$$
$$= 0.10909[105.8 + 204.8] - 33 = 31.3197$$

Study 2: Total quality management for wastage and increase in customer satisfaction

From the same 120 employees the feedback was collector for lowering the price of the product based on the total quality management by reducing the wastage and increasing the customer satisfaction. The obtained data is indicated in Table 3. The Fig. 3 shows the various options chosen by the employees for the implementation of reduction of wastage and increase of customer satisfaction. In the same way, the Fig. 4 indicates the percentage of various employees chosen the options.

Table 3. Total quality management and lowering the level of products wastage and increase in customer satisfaction (Source: Field survey, 2021)

Responses	Frequency	Percentage
Strongly agree	53	44.16
Agree	50	41.66
Undecided	6	5
Strongly disagree	6	5
Disagree	5	4.16
Total	120	100

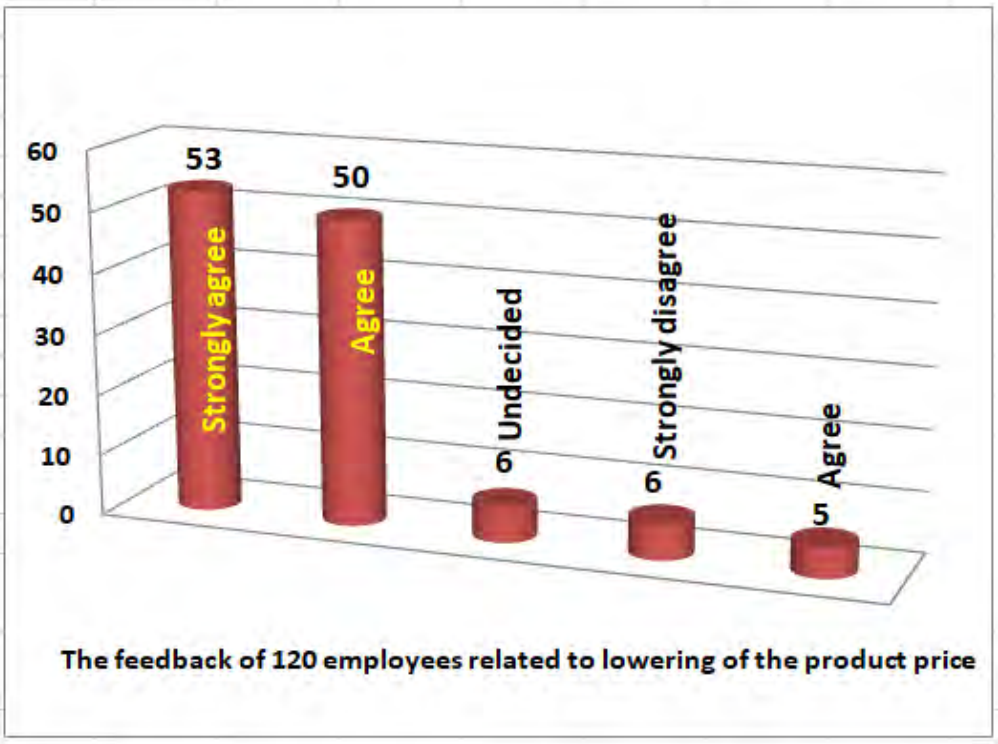

Figure 3 Feedback of the employees about the reduction of product price

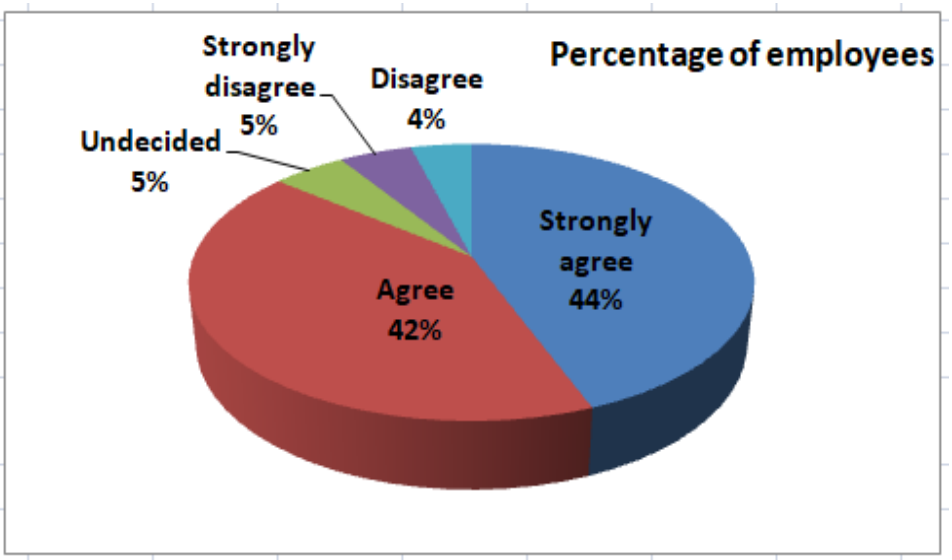

Figure 4 The percentage of feedback provided by various employees for reduction of product price

The ranking of all the observations for the k groups in a series assigning ranks from I to N we have is indicated in Table 4.

Table 4. Ranks of groups (Source: computation from table 3)

Frequency	Percentage
8	10
7	9
4	6
3	5
1	2
Total R1 = 23	R2 = 32

$$= \frac{12}{10(10+1)}\left[\frac{23^2}{5} + \frac{32^2}{5} - 3(10+1)\right]$$

$$= \frac{12}{110}\left[\frac{529}{5} + \frac{1024}{5}\right] - 33$$

$$= 0.1090[105.8 + 204.8] - 33 = 95.123$$

Results and Discussion

Since the calculated value of 31.3197 > x_2 table 3.841, we reject the null hypothesis and accept the alternative hypothesis. This implies that total quality management increases organizations return on investment. This finding was supported by the view of Rahman, (2001) who stressed that leadership, processes, products and services, people and customer focus were significantly correlated with revenue, profit and the number of customers. Other empirical evidence that support this result includes Gaspersz, (2005) study which focuses attention to quality generates positive impact to business performance through both the impact on production costs and earnings.

Since the calculated value of 95.123 > x_2 table 3.841, we reject the null hypothesis and accept H_1 the alternative hypothesis. This implies that total quality management contributes significantly to the achievement of lowering the level of product wastage and increases in customer's satisfaction. This is supported by the view of Oakland, (1993) referring to quality as the meeting of customers requirements, and reliability as the ability of a product to continue to meet the customer requirements.

Conclusion

The study examined the impact of total quality management on performance of brewery industry in north Gondar, Ethiopia – an empirical study of selected breweries. The study revealed that there is positive and significant relationship between total quality management and increasing organizational return on investment. There is also a significant relationship between total quality management contributing to the achievement of lowering the level of product wastage and the level of product wastage and increases in customer satisfaction. To conclude, total quality management is imperative for better organizational performance and growth.

Recommendations

In view of the findings and conclusion of the study, the following recommendations were proposed for effective implementation of total quality management in organizations.

(1) Employees have to be trained and involved in building of total quality management philosophy.

(2) Continuous TQM education should be undertaken at all levels, even for those firms that have already acquired a high degree of awareness of the concept (TQM).

(3) Commitment to total quality management must be backed by action.

(4) Management should embark on enlightenment campaign so that staff can be aware of the opportunities available for employees coupled with this, there should be seminars organized outside business environment on ways to handle customers' problems questions and answer session and innovation in the organization as a whole.

(5) Management and organization should be incorporated of organizational products, as this will help to reduce challenges posed by adopting total quality management principles.

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Appendix
Research Questionnaire

Department of Mechanical Engineering
Institute of Science and Technology
University of Gondar, Ethiopia

31th October, 2021

Dear Sir/Madam,

The questionnaires are framed to apply the total quality management technique it increased to the organization return on investment of a selected Breweries company in north Gondar. You have been chosen to select the correct answer among them. You are therefore humbly requested to provide honest and sincere answer and mark the correct answer by clicking on and responses to questions by ticking as appropriately as you can in the boxes/spaces provided.

(1) Your Brewery organizations adopts Total Quality Management (TQM) techniques/tools in production and services deliver
(a) Strongly Agree (SA) [ ] (b) Agree (A) [ ] (c) Undecided (U) [ ]
(d) Disagree (D) [ ] (e) Strongly Disagree (SD) [ ]

(2) Breweries firms in Ethiopia have adopted implementation strategies of TQM to enhance goal attainment of improved market share, profit goal, customer satisfaction etc.
(a) Strongly Agree (SA) [ ] (b) Agree (A) [ ] (c) Undecided (U) [ ]
(d) Disagree (D) [ ] (e) Strongly Disagree (SD) [ ]

(3) Top management commitment to strategies for quality improvement and implementation the organizations vision consistently to attain goals organization is necessary.
(a) Strongly Agree (SA) [ ] (b) Agree (A) [ ] (c) Undecided (U) [ ]
(d) Disagree (D) [ ] (e) Strongly Disagree (SD) [ ]