An Investigation of Establishing the Total Quality Management (TQM) System and Its Role in Improving Satisfaction in the Fars Pegah Dairy Corporation

Gholamreza Memarzadeh Tehran, Mehrzad Sarfarazi, Mohammad Hassan Behboodi

Associate Professor, Faculty of Management and Accounting, Qazvin Branch, Islamic Azad University, Qazvin, Iran
PhD Candidate of Human Resource Management, Faculty of Management and Accounting, Qazvin Branch, Islamic Azad University, Qazvin, Iran
Adjunct Instructor, Kazerun Branch, Islamic Azad University, Kazerun, Fars, Iran

Abstract: The total quality management is one of the most successful management approaches and has successfully met the demands of customers, organizations and the society. This management approach incorporates various approaches in a logical way and using a new attitude, so that the customers (either domestic or foreign) are the chief concern of the organization. The purpose of present study is to explore the relationships between establishing the total quality management system and its role in improving satisfaction in customers. The population consists of managers in three levels of top, middle, and executive and staff employed permanently, by indenture, and by contract in the Fars Pegah dairy corporation. The number of the managers was 26 and the number of employees was 336. The questionnaire consisted of 33 questions which were developed by the researcher based on the hypotheses. In order to measure the validity, the content validity was adopted. In order to measure the reliability, the Cronbach's alpha was used. Data were processes in SPSS and MINITAB. They were analyzed using both descriptive and inferential statistics. The findings showed a significant correlation between establishing the total management system and improving customer satisfaction. It could be concluded that managers should implement strategic planning to improve customer satisfaction with their products and services. Moreover, the customers' opinions and desires should be considered in planning and decision making processes. In order to implement the TQM, staff should be encouraged to boost relations with customers and therefore, satisfy them. Managers should base their decision making on the satisfaction of the customers so that they can attract more customers.

Keywords: total quality management, customer satisfaction

Introduction

The Total Quality Management is a kind of system and method by which organizations are run. In this system, managers spend all the energy to constantly improve all business activities, operations and processes. Therefore, quality is nothing more than satisfying the customers' needs. To achieve this goal, all business processes must be improved since the customers seek the outcome of these improvements.

The TQM, which has been developed to maximize the possibility of the survival of an industry in severe competitive environments, considers the satisfaction of the customers as the primary and central goal, and is based on the key role of quality in maintaining and developing the market, which is why the number of QTM-employing companies has been increasing.

The present study seeks to explore the relationships between implementing the TQM and customer satisfaction. Also, this study seeks to answer such questions as whether the support of top managers of TQM plans will lead to customer satisfaction or whether strategic planning based on TQM will lead to customer satisfaction, whether getting feedbacks from customers will lead to their increased satisfaction, and whether establishing a TQM system and empowering staff are related.

Hypotheses

The primary hypothesis

Establishing the TQM and customer satisfaction are significantly correlated.

Secondary hypotheses

1- It seems that the more the managers support the TQM plans, the more the customers' satisfaction.
2- It seems that strategic planning in TQM by managers leads to customer satisfaction.
3- It seems that getting feedback from customers about implementing the TQM leads to increased customer satisfaction.
4- There is a significant correlation between the TQM and empowering staff to increase customer satisfaction.
5- There is a significant correlation between measuring and analyzing the TQM and improving customer satisfaction.

Methodology
Methodology includes a set of rules, tools, valid and organized methods for investigating facts, discovering the unknown and finding a solution to problems (Ezati, 1997, p.20).

A survey selects small or large populations and studies the selected samples to explore the relative degrees of distribution and interactions among psychological and sociological variables (Kerlinger, Fred N. 1995, p.213).

The population is a set of real or imaginary members to whom the findings are transferred (Delavar, 2005, p.167)

The population is the set of all elements which have one or more common features (Hooman, 1994, p.147)

Based on the purposes of the study, the method adopted here is a survey-descriptive one which is a branch of field study. The population consists of top, middle, and executive managers and the staff of the Fars Pegah Dairy Corporation.

Table 1 shows the population size.

Sample size and measuring method:
Since the variance of the measured attribute was clear, first the variance was measured by 25 preliminary questionnaires and then the sample size was determined using the following equation:

\[ n = \frac{N \tau^2 s^2}{Nd^2 + \tau^2 s^2} = \frac{362 \times 1.96^2 \times 0.48^2}{362 \times 0.05^2 + 1.96^2 \times 0.48^2} = 137 \]

137 samples were selected and 130 questionnaires were received by the researcher.

Sampling method
Sampling was conducted using a cluster sampling method. Samples were selected randomly among all cities in the Fars Province; the questionnaires were distributed randomly, and then collected. The sample was the Fars Pegah Dairy Corporation.

Data gathering tools
Questionnaires are one of the most common ways of data gathering (Delavar, 2005, p.120).

The tool in this study is researcher-made. The questionnaire includes 33 questions developed based on the Likert scale. First, the respondents are required to answer general questions about gender, age, education, years of work and years of management.

Validity
Validity tests the degree to which the questionnaire measures the specified attribute. Without knowing the validity of the tool, it is impossible to trust its output (Sarmad et al, 2000, p.170).

In order to measure validity, content validity was used. To do so, the questionnaire was developed after studying the literature and theories related to developing questionnaires, and then it was given to a number of scholars in the field and after doing some modifications; it was validated and prepared to be distributed in the population.

Reliability
Reliability refers to the degree to which the tool produces consistent results under consistent circumstances. It ranges between zeros (unreliable) to 1 (reliable).

In this study, the Cronbach's alpha was used to measure reliability. It is used to measure the internal consistency of tools including questionnaires or tests measuring different attributes. In this tool, the respondents can choose among different numerical values. In order to measure the Cronbach's alpha, first, the variance of the scores of each subset of questions (or subtest) and the total variance are measured and then alpha is estimated using this equation:

\[ r_a = \frac{J}{J-1} \left( 1 - \frac{\sum S_i^2}{S^2} \right) = \frac{33}{32} \left( 1 - \frac{19.33}{159.337} \right) = .919 \]

Where, \( S_i^2 \) is the variance of the M subtest, \( S^2 \) is the total variance of the test

Findings:
Table 2 shows the comparison of the index of the top managers' support of the TQM plans with the standard score.

Source: findings of the study
\[ H_0 : \mu \leq 3 \]
\[ H_1 : \mu > 3 \]

\( H_0 \) = if the managers support the TQM plans more, customer satisfaction will not increase.
\( H_1 \) = if the managers support the TQM plans more, customer satisfaction will increase.

The mean score for the respondents was 3.60 with 0.768 as the standard deviation. Since the observed t was significant at P<0.01, the zero hypothesis is rejected. The more the managers support the TQM plans, the more customer satisfaction will increase.

Testing the questions related to the second secondary hypothesis:
The second secondary hypothesis: it seems that strategic planning in the TQM by managers will lead to an improvement in customer satisfaction.
Table 3: the comparison of the index scores of improving the influence of strategic planning in the TQM with the standard score
Source: findings of the study

\[ H_0 : \mu \leq 3 \]
\[ H_1 : \mu > 3 \]

\( H_0 = \) strategic planning in the TQM will not lead to increased customer satisfaction.
\( H_1 = \) strategic planning in the TQM will lead to increased customer satisfaction.

The mean score of the respondents was 3.40 and the standard deviation was 0.605. Since the observed \( t \) was significant at \( P<0.01 \), the zero hypothesis is rejected. In other words, strategic planning in the TQM will result in increased customer satisfaction.

Testing the questions related to the third secondary hypothesis:

Table 4 shows the comparison of the index scores of the influence of getting feedback from customers

\[ H_0 : \mu \leq 3 \]
\[ H_1 : \mu > 3 \]

\( H_0 = \) getting feedback from customers about implementing the TQM system will not lead to increased customer satisfaction
\( H_1 = \) getting feedback from customers about implementing the TQM system will lead to increased customer satisfaction

The mean score of the respondents was 3.33 and the standard deviation was 0.692. Since the observed \( t \) was significant at \( P<0.01 \), the zero hypothesis is rejected. In other words, getting feedback from customers about implementing the TQM system will lead to customer satisfaction.

Testing the questions related to the fourth hypothesis:

Table 5 shows the comparison of index scores for the influence of implementing the TQM on empowering staff with the standard score

\[ H_0 : \mu \leq 3 \]
\[ H_1 : \mu > 3 \]

\( H_0 = \) implementing the TQM and empowering staff will not increase customer satisfaction
\( H_1 = \) implementing the TQM and empowering staff will increase customer satisfaction

The mean score of the respondents was 3.07 and the standard deviation was 0.81. Since the observed \( t \) was significant at \( P<0.01 \), the zero hypothesis is rejected. In other words there is a significant relationship between implementing the TQM system and empowering staff to increase customer satisfaction.

Testing the questions for the 5th secondary hypothesis:

The 5th secondary hypothesis: there is a significant relationship between measuring and analyzing the TQM and customer satisfaction

Table 6 shows the comparison of the index score of measuring and analyzing the TQM with the standard score

\[ H_0 : \mu \leq 3 \]
\[ H_1 : \mu > 3 \]

\( H_0 = \) there is not a significant relationship between measuring and analyzing the TQM and increasing customer satisfaction
\( H_1 = \) there is a significant relationship between measuring and analyzing the TQM and increasing customer satisfaction

The mean score of the respondents was 3.51 and the standard deviation was 0.631. Since the observed \( t \) was significant at \( P<0.01 \), the zero hypothesis is rejected. In other words, there is a significant relationship between measuring and analyzing the TQM and increasing customer satisfaction.

Testing the questions related the primary hypothesis:

The primary hypothesis: there is a significant relationship between establishing the TQM and improve in customer satisfaction

Table 7 show the comparison of the index score of the influence of establishing the TQM with the standard score

\[ H_0 : \mu \leq 3 \]
\[ H_1 : \mu > 3 \]

\( H_0 = \) there is not a significant relationship between establishing the TQM and improvement in customer satisfaction
\( H_1 = \) there is a significant relationship between establishing the TQM and improving customer satisfaction

The mean score of the respondents was 3.25 and the standard deviation was 0.693. Since the observed \( t \) was significant at \( P<0.01 \), the zero hypothesis is rejected. In other words, there is a significant relationship between establishing the TQM and increasing customer satisfaction.

The variance analysis

Table 8 shows a comparison of the mean scores of the respondents based on the number of years of management

Since the observed \( t \) was not significant at \( P<0.05 \), the responses of the subjects with different numbers of working years were not different. In other
words, people with different numbers of working years had the same ideas about the influence of the support of the TQM plans by managers on customer satisfaction, the influence of strategic planning in the TQM on customer satisfaction, the influence of getting feedback from customers about the TQM on customer satisfaction, the influence of implementing the TQM on empowering staff to increase customer satisfaction, the influence of measuring and analyzing the TQM on increasing customer satisfaction, and the influence of establishing the TQM on increasing customer satisfaction. Staff with no years of management considered the greatest influence in that of supporting the TQM plans by top managers and then, the influence of measuring and analyzing the TQM, the influence of strategic planning in the TQM by managers, the influence of getting feedback from customers, the influence of establishing the TQM and the influence of implementing the TQM in empowering staff on customer satisfaction, respectively. Staff with management experience between 0 to 5 years, considered the greatest influence in that of measuring and analyzing the TQM on customer satisfaction and then, the influence of the support of the TQM plans by top managers, the influence of strategic planning in the TQM, the influence of implementing the TQM on empowering staff, the influence of getting feedback from customers, and the influence of establishing the TQM system on customer satisfaction, respectively. Staff with 5-10 years of management, saw the greatest influence in that of supporting the TQM plans by top managers to increase customer satisfaction, and then the influence of implementing the TQM system on empowering staff, the influence of implementing the TQM in the TQM, the influence of getting feedback from customers, and the influence of measuring and analyzing the TQM system on customer satisfaction, respectively. Staff with 10-15 years of management considered the greatest influence in that of supporting the TQM plans by top managers, and then the influence of getting feedback from customers, the influence of measuring and analyzing the TQM, the influence of strategic planning in the TQM, the influence of implementing the TQM system on empowering staff, and the influence of establishing the TQM on increasing customer satisfaction, respectively. Staff with 15 to 20 years of management considered the greatest influence in that of implementing the TQM on empowering staff to increase customer satisfaction, and then, the influence of measuring and analyzing the TQM, the influence of strategic planning in the TQM, the influence of establishing the TQM, the influence of getting feedback from customers, and the influence of supporting the TQM by top managers on increasing customer satisfaction, respectively.

The Independent t Test

Table 9 shows the comparison of the scores of male and female respondents regarding the indexes of the study

Since the observed t was not significant at P<0.05, there is not a difference between the male and female responses. In other words, male and female respondents had the same ideas about the influence of the support of the TQM plans by managers on customer satisfaction, the influence of strategic planning in the TQM on customer satisfaction, the influence of getting feedback from customers about the TQM on customer satisfaction, the influence of implementing the TQM on empowering staff to increase customer satisfaction, the influence of measuring and analyzing the TQM on increasing customer satisfaction, and the influence of establishing the TQM on increasing customer satisfaction. Men considered the greatest influences in that of supporting the TQM plans by top managers, and then the influence of measuring and analyzing the TQM, the influence of strategic planning in the TQM, the influence of getting feedback from customers, the influence of establishing the TQM system, and the influence of implementing the TQM in empowering staff on increasing customer satisfaction, respectively. Women, considered the greatest influence in that of supporting the TQM by top managers, and then the influence of measuring and analyzing the TQM, the influence of strategic planning in the TQM, the influence of getting feedback from customers, the influence of establishing the TQM, and the influence of implementing the TQM in empowering staff on increasing customer satisfaction, respectively.

Implications

1- Given the fact that the more the top managers support the TQM plans, the more satisfied the customers will be, it is suggested that managers provide service based on the customers' needs, desires, and expectations, so that they can maintain their position in the market.

2- Since it was found that strategic planning in the TQM will result in increased customer satisfaction, it is proposed that strategies, policies, technics, methods, and long-term and short-term goals be developed in line with the needs and desires of the customers so that the organizations
can both keep their current customers and attract new customers.

3- Since in this study it was concluded that getting feedback from customers about implementing the TQM system will lead to increased customer satisfaction, it is proposed that organizations know the customers' ideas and needs through interviews or questionnaires and consider them in planning. Moreover, organizations must consider customers' demands in recruiting new staff and let customers conduct some parts of the job interviews to make sure the new employee has a favorable character for the customers.

4- Since in this study it was concluded that implementing the TQM will lead to increased customer satisfaction, it is recommended that top managers make staff familiar with the customers' needs by making customers participate in setting goals, making decisions, policies and plans and train staff on how to have a good and proper relationship with the customers. As Jack Welch, the CEO of General Motors told his staff that companies cannot guarantee your jobs; it is the customers who do it (Hassan Alodari, marketing and Market management, p. 76).

5- Since in this study it was concluded that measuring and analyzing the TQM will lead to increased customer satisfaction, managers must use questionnaires and interviews in order to find out who customers are, how they demand their products and services, and who they ask for services and products and why, so that they can produce service and products based on the customers' needs and satisfy them.

6- It is recommended that organizations and companies train their staff and all people who deal with customers to develop customer loyalty and this way, distinguish themselves from their rivals.

7- It is recommended that managers give innovative services with better and improved quality and by satisfying the customers' needs, produce better returns for shareholders and better income for producers. This is accomplished only if customers participate in decision making.

8- As it has always been stated before, customer satisfaction means the survival of the company, it is proposed that companies fulfill the customers' demands in such a way that they return for future services and meet their demands over their level of expectation.

Table 1: the population size

<table>
<thead>
<tr>
<th></th>
<th>362</th>
<th>185</th>
<th>151</th>
<th>12</th>
<th>4</th>
<th>8</th>
<th>2</th>
<th>***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract staff</td>
<td>Permanent and indenture staff</td>
<td>supervisors</td>
<td>Vice managers</td>
<td>managers</td>
<td>Top managers</td>
<td>The Fars Pegah Dairy Corporation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: the comparison of the index of the top managers' support of the TQM plans with the standard score

<table>
<thead>
<tr>
<th>P</th>
<th>t</th>
<th>Standard deviation</th>
<th>mean</th>
<th>index</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/000</td>
<td>8/944</td>
<td>0/768</td>
<td>3/60</td>
<td>The influence of the top managers' support of the TQM plan</td>
</tr>
</tbody>
</table>

Table 3: the comparison of the index scores of improving the influence of strategic planning in the TQM with the standard score

<table>
<thead>
<tr>
<th>P</th>
<th>t</th>
<th>Standard deviation</th>
<th>mean</th>
<th>index</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/000</td>
<td>7/32</td>
<td>0/605</td>
<td>3/40</td>
<td>The influence of strategic planning in the TQM</td>
</tr>
</tbody>
</table>

Table 4: the comparison of the index scores of the influence of getting feedback from customers

<table>
<thead>
<tr>
<th>P</th>
<th>t</th>
<th>Standard deviation</th>
<th>mean</th>
<th>index</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/000</td>
<td>5/48</td>
<td>0/692</td>
<td>3/33</td>
<td>The influence of getting feedback from customers</td>
</tr>
</tbody>
</table>

Table 5: the comparison of index scores for the influence of implementing the TQM on empowering staff with the standard score

<table>
<thead>
<tr>
<th>P</th>
<th>t</th>
<th>Standard deviation</th>
<th>mean</th>
<th>index</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/000</td>
<td>1/034</td>
<td>0/81</td>
<td>3/07</td>
<td>The influence of implementing the TQM on empowering staff</td>
</tr>
</tbody>
</table>

Table 6: the comparison of the index score of measuring and analyzing the TQM with the standard score

<table>
<thead>
<tr>
<th>P</th>
<th>t</th>
<th>Standard deviation</th>
<th>mean</th>
<th>index</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/000</td>
<td>9/14</td>
<td>0/631</td>
<td>3/51</td>
<td>The influence of measuring and analyzing the TQM</td>
</tr>
</tbody>
</table>

Table 7: the comparison of the index score of the influence of establishing the TQM with the standard score

<table>
<thead>
<tr>
<th>P</th>
<th>t</th>
<th>Standard deviation</th>
<th>mean</th>
<th>index</th>
</tr>
</thead>
<tbody>
<tr>
<td>0/000</td>
<td>4/062</td>
<td>0/693</td>
<td>3/25</td>
<td>The influence of establishing the TQM</td>
</tr>
</tbody>
</table>
Table 8: a comparison of the mean scores of the respondents based on the number of years of management

<table>
<thead>
<tr>
<th>Index</th>
<th>0 year</th>
<th>0-5 year</th>
<th>5-10 years</th>
<th>10-15 years</th>
<th>15-20 years</th>
<th>20+ years</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support of top managers</td>
<td>3.56</td>
<td>0.751</td>
<td>3.63</td>
<td>0.823</td>
<td>4.08</td>
<td>0.543</td>
<td>3.63</td>
<td>0.751</td>
</tr>
<tr>
<td>The influence of strategic planning in TQM</td>
<td>3.38</td>
<td>0.592</td>
<td>3.25</td>
<td>0.630</td>
<td>4.07</td>
<td>0.471</td>
<td>3.60</td>
<td>0.302</td>
</tr>
<tr>
<td>Getting feedback from customers</td>
<td>3.30</td>
<td>0.682</td>
<td>3.20</td>
<td>0.302</td>
<td>3.60</td>
<td>0.709</td>
<td>3.88</td>
<td>0.280</td>
</tr>
<tr>
<td>The influence of implementing the TQM on staff empowerment</td>
<td>3.06</td>
<td>0.490</td>
<td>3.12</td>
<td>0.933</td>
<td>3.88</td>
<td>0.709</td>
<td>3.95</td>
<td>0.768</td>
</tr>
</tbody>
</table>

Table 9: the comparison of the scores of male and female respondents regarding the indexes of the study

<table>
<thead>
<tr>
<th>Index</th>
<th>female mean</th>
<th>female variance</th>
<th>male mean</th>
<th>male variance</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supporting the TQM by top managers</td>
<td>3.60</td>
<td>0.749</td>
<td>3.65</td>
<td>0.749</td>
<td>-0.274</td>
<td>0.784</td>
</tr>
<tr>
<td>Strategic planning in the TQM</td>
<td>3.40</td>
<td>0.589</td>
<td>3.38</td>
<td>0.589</td>
<td>0.141</td>
<td>0.888</td>
</tr>
<tr>
<td>Getting feedback from customers</td>
<td>3.33</td>
<td>0.679</td>
<td>3.33</td>
<td>0.679</td>
<td>0.012</td>
<td>0.911</td>
</tr>
<tr>
<td>Implementing the TQM in empowering staff</td>
<td>3.06</td>
<td>0.490</td>
<td>3.12</td>
<td>0.490</td>
<td>-0.026</td>
<td>0.974</td>
</tr>
<tr>
<td>Measuring and analyzing the TQM</td>
<td>3.50</td>
<td>0.648</td>
<td>3.56</td>
<td>0.648</td>
<td>-0.042</td>
<td>0.674</td>
</tr>
<tr>
<td>Establishing the TQM</td>
<td>3.25</td>
<td>0.695</td>
<td>3.22</td>
<td>0.695</td>
<td>0.175</td>
<td>0.861</td>
</tr>
</tbody>
</table>

References
3- Sarafrazi, Mehrzad; Memarzadeh, Gholam Reza (2007), "customer orientation a basic requiremen in establishing the TQM". The first national conference of management and its branches, the Young Researchers Club, Azad University of Firoozkoooh, August, 2007, p.474.
5- Sarafrazi, Mehrzad (2003) "Investigating the Effectiveness of decision making policies of innovative managers compared to adaptable managers based on the theory of Kerton Adjustment innovation(KAI), M.A thesis, Azad University of Dehaghan, Department of Management, p.123.
16- Majodi Nia, Mehdi (2004) "investigating the factors related to customer satisfaction with bank facilities".
The Journal of Economy and Bank, issues 44 and 45, Tehran.


19- Adab, Hossein (1993) "Improving quality product of staff participation". Tadbir monthly journal, issue 34, the publications of Tehran Industrial management Organization.


22- Barandoost, Rambod (2000) "Implementing total quality management", Tadbir monthly journal, issue 110, the publications of Tehran Industrial management Organization.


29- Kelada, J(1994) pas de Reengineering sans Qualite total, Lexpansion Management Review.


42- Kelada, J., pas de Reengineering sans Qualite totale, Lexpansion Management Review. (1994)


