Analysis Of The Effect Of The Implementation Of TQM On Quality Costs

BUDHIAWAN AJI WICAKSONO¹, BAMBANG SUNARKO²

¹,²Management Department, Faculty of Economic and Business, Universitas Jenderal Soedirman, Indonesia

Abstract
The research objective is to analyse the influence of focus on customers, obsession with quality, education and training, benchmarking, teamwork and continuous improvement in quality costs. The hypothesis proposed is Customer Focus, obsession with Quality, Education and Training, Benchmarking, Teamwork and Continuous Improvement affect quality costs. The number of respondents taken in this study was 80 respondents. The analytical tool used is using the SPSS application program with techniques. Multiple regression analysis and hypothesis testing using f and t-test.

Keywords
Customer Focus, Quality Obsession, Education And Training, Benchmarking, Team Collaboration, Continuous Improvement, Quality Costs

INTRODUCTION
In the current millennial era, the number of SMEs that appear in Indonesia, especially in the province of Central Java, this is a positive response because it can increase the amount of the economy of a country. However, business people, especially SMEs, must be able to read future trends related to the middle class, urban, urban society and millennial generations and be able to properly manage the business being carried out so that they can get maximum benefit and be sustainable. With this, business people, especially SMEs, can help improve the economy of the country where personal income increases and will affect the country's per capita income.

Quality has become an essential competitive dimension for manufacturing and service companies, also for small and large businesses. Quality is an integrated theme for companies (Hansen & Mowen, 2005: 13). Quality costs (cost of quality) is the cost incurred by the company to increase and maintain the quality of a product or service. Blocher, Lin & Chen, (2000) stated quality costs are costs incurred because there is an awareness of the need to avoid mistakes so that no waste or costs occur due to an error in the product that has already been done and must be repaired. So if quality cost efficiency can change depending on the size of the production costs that occur. The higher the costs incurred by the producer for quality costs. It will provide better quality cost efficiency because the level of failure obtained has been reduced.

Heizer & Barry (2009) states that TQM (TQM) refers to the emphasis on quality that covers the entire organisation, from suppliers to customers. TQM emphasises management's commitment to getting company direction that continues to achieve excellence in all aspects of products and services that are important to customers. The basis of the thought of a TQM is the best way to compete by producing the best quality. The process of Producing the best quality, there must be an effort to improve human capabilities, processes and the environment continually. The best way to continuously improve the ability of these components is to implement TQM.

According to Goetsch and Davis (1994), the 10 elements of TQM must be a company in supporting the implementation of TQM Namely: Focus on customers, obsession with quality, scientific approach, long-term commitment, teamwork, continuous improvement, education and training, Controlled Freedom, Unity of Purpose, Employee involvement and empowerment. Of the ten elements in this TQM to anticipate failure or prevention in order to maintain the quality of products or services, quality cost efficiency is needed.

¹ Correspondence to: ajiwicaksono30@gmail.com

Received: Jan, 15, 2019
Revised: Jan, 25, 2019
Accepted: Feb, 4, 2019
In Banyumas Regency, there are several types of MSMEs, one of which is in Pekuncen Subdistrict, Semedo Village, which has an area of 612,350 Ha and has 2 hamlets and consists of 6 RWs and 42 Neighborhood Houses. Semedo Village is very well known as an ant sugar producing village the best to become ant sugar suppliers to various regions of Indonesia. In Semedo village there are 400 houses.

In order to maintain the good name of the products among the people and survive in the increasingly high competition in the Banyumas district, the sugar producers of Semedo in Pekuncen Subdistrict must improve the quality of their products. However, improving the quality of the product will undoubtedly incur costs that cannot be eliminated even though the product produced is excellent. So what companies need to do to compensate for this is finding ways to be efficient in costs while the company carries out quality improvements. Implementation of TQM can be used as the best step in improving product quality and also to save costs incurred by the company.

LITERATURE REVIEW AND HYPOTHESES

Quality Costs
Quality costs are costs incurred because there is an awareness of the need to avoid mistakes so that no waste or costs occur due to errors in the product that have already been made and must be corrected (Blocher, Lin & Chen, 2000). The quality as a cost that may occur due to poor quality, quality costs associated with the creation, identification, improvement, and prevention of damage (Tjiptono and Diana, 2003).

Focus on Customers
In TQM customer determines the quality of the product or service delivered to them, whereas internal customers play a significant role in determining the quality of the people, processes, and the environment associated with multiple products or services. (Fandy Tjiptono, 2001).

Obsession With Quality
In organisations that implement TQM, the final determinant of quality is internal and external customers. With the quality specified, organisations must be obsessed with fulfilling or exceeding what is determined (Hansen and Mowen, 2009). According to Tampubolon MP (2004), the achievement of quality targets will be beneficial for companies in placing their position in the market (market position).

Education And Training
In organisations that implement TQM, education and training are fundamental factors. Everyone is expected and encouraged to continue learning. In this case, the principle applies that learning is a process that does not end and knows no age limit. By learning, everyone in the company can improve their technical skills and professional expertise. (Tjiptono, 2003).

Benchmarking
Benchmarking is a continuous search and real implementation of better practices that lead to superior competitive performance (Watson, 1993) and benchmarking is an instrument to make improvements (Tjiptono & Diana, 2003). The first step is to identify manufacturing processes and practices and other operations in a company that need repairs. The next step is to look for other companies that are successful in operating activities that are almost the same (equivalent). After that try to make detailed observations and measurements on how successful companies carry out their activities and operational processes.

Teamwork
Teamwork is a team whose individual efforts produce higher performance than the number of individual inputs (Robbins and Judge, 2008: 466). K Gov teamwork is one of the fundamental elements in TQM (Tjiptono & Diana, 2003). Teams are a group of people who have a common goal.

Continuous Improvement
Continuous improvement is one of the most fundamental elements of TQM. Kaizen is a Japanese concept which means continuous improvement. This approach can only work well when accompanied by the right human resource efforts. Human factors are the most critical dimensions in improving quality and productivity (Tjiptono & Diana, 2003). Continuous improvement as a process that can eliminate waste and meet customer needs or desires (Fayzollahi, 2013).
Formulation Of Hypothesis

Goetsch and Davis in Tjiptono and Diana (2003) state that in TQM, both internal and external customers are drivers. In order to implement TQM, companies must understand their customers, because if a company understands what customers want, the company can focus on the quality of their products that will be given to consumers. In the research conducted by Hamdani and Irsutami (2016) the focus on quality has a positive effect on quality cost efficiency. If the focus on the customer is increased, it will improve the cost efficiency of quality. Based on the description, the writer proposes the hypothesis:

H1: Customer Focus has a positive effect on Quality Cost Efficiency

Sari (2009) argues that obsession with quality is the attitude and commitment of the company to continue to provide the best quality for each product that is carried out only to meet customer needs. In order to provide the best quality, the company must keep the production process under control so that prevention costs are needed. In a study conducted by Hamdani and Irsutami (2016) obsession with quality has a positive effect on quality cost efficiency in other words if the variable obsession with quality is improved, it will improve quality cost efficiency. Based on the description the author proposed a hypothesis that is:

H2: An obsession with quality has a positive effect on Quality Cost Efficiency

The success of the application of TQM in the business / industrial world has been the inspiration for quality improvements in other sectors or fields, including the education sector. The adoption of TQM in the industrial sector is not much different from what is applied in the field of education. TQM entered the education sector around 1980 (Supriyanto, 1999: 32). At first, TQM was held in universities and began to develop around 1990 in the United Kingdom and America. According to Sallis (2006: 73), TQM in education is a philosophy of continuous improvement, which can provide a set of practical tools for each educational institution in meeting the needs, desires, and expectations of its customers, now and in the future. Training according to Dessler (2009) is the process of teaching new or existing employees, the basic skills they need to carry out their jobs. To improve employee quality and improves employee innovation capabilities, and companies should conduct education and training. However, the sacrifice that must be made by the company is by issuing training costs. Based on the research of Hamdani and Irsutami (2016) education and training have a positive effect on quality cost efficiency, the meaning is that if the education and training variables are improved, it will improve the efficiency of quality costs. Based on these descriptions, the authors propose the following hypotheses:

H3: Education and Training have a positive effect on Quality Cost Efficiency

Benchmarking is a continuous search and real implementation of better practices that lead to superior competitive performance. Gregory H. Watson (1993). Camp (1989) argues that benchmarking is a continuous process of searching for new ideas and new methods, practices and processes, and one attempt to adopt practices or adapt the best methods, then apply them to get the best results from the best (best of the best). According to Gregory H Watson (1993) says that benchmarking is a more efficient way to make improvements and managers can reduce trials and errors. With the existence of new and more effective ideas and methods which are then applied by the company, the quality of the products produced will be better and the costs incurred will decrease, because the process carried out in production becomes more effective and efficient based on the description. That is:

H4: Benchmarking has a positive effect on Quality Cost Efficiency

Goetsch and Davis in Tjiptono and Diana (2003) state that in organisations that implement TQM, teamwork, partnerships, and relationships are intertwined and fostered, both among company employees and with suppliers, government institutions, and surrounding communities. This is done so that there is good synergy so that it can improve the quality of the workforce and reduce errors due to communication failures. Based on the results of Hamdani and Irsutami (2016) team collaboration has an adverse effect on quality cost efficiency in other words if the team collaboration variable is improved, it will reduce quality cost efficiency. Based on these descriptions the authors propose hypotheses, namely:

H5: Team Cooperation has an adverse effect on Quality Cost Efficiency

Sari (2009) concluded that continuous improvement of the system is a process of improving production and management
towards a better production and management system on an ongoing basis. When a company consistently maintains continuous improvement, it will affect the quality costs incurred. The more quality improves in the production process, and the quality of the product, the costs incurred to maintain these qualities will decrease. In a study conducted by Hamdani and Isrutami (2016) continuous improvement has a positive effect on quality cost efficiency, indicating that if continuous improvement is improved, it will improve quality cost efficiency. Based on these descriptions the authors put forward a hypothesis, namely:

**H6: Continuous improvement has a positive effect on Quality Cost Efficiency**

**METHODS**

This type of research is a case study research using survey methods and using a questionnaire to be distributed to respondents who aim to gather information about facts, actions, opinions, and characteristics of respondents who are considered as population. This research was conducted at the centre of the ant sugar industry in the Semedo Village area, Pekuncen District, Banyumas Regency. The sampling method in this study is a simple random sampling. Is said to be simple for making members of the population stiffened sample randomly without regard to strata that exist within this population (Sugiyono, 2012: 82). In this study, to determine the minimum sample size, researchers used the Slovin formula. The form of Slovin formula is as follows (Suliyanto, 2006).

In this study, researchers used a sampling error rate of 10%. So the minimum number of samples taken is 80 respondents. Data collection techniques using questionnaires. The questionnaire used contained questions related to customer focus, obsession with quality, education and training, benchmarking, teamwork, continuous improvement, and quality costs with the Likert scale score.

**RESULTS AND DISCUSSION**

The result shows that the sample consists of Male respondents yak 78 (97.5%) and two women (2.5%). Ba male respondents are more dominant. Testing the hypothesis of the influence of focus on customer variables, obsession with quality, education and training, benchmarking, teamwork, and continuous improvement in quality costs in this study was carried out by multiple regression analysis techniques. Based on the output of multiple regression analysis with the help of software SPSS 16.0 for Windows. Regression equation models are stated as follows:

\[ Y = \alpha + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + e \]

\[ Y = \text{Quality Costs} \]
\[ X_1 = \text{Customer Focus} \]
\[ X_2 = \text{Obsession with quality} \]
\[ X_3 = \text{Team} \]
\[ X_4 = \text{Benchmarking} \]
\[ X_5 = \text{Education and training} \]
\[ X_6 = \text{Continuous improvement} \]
\[ b_1, b_2, b_4, b_5, b_6 = \text{Coefficient Reg.} \]
\[ e = \text{error} \]

**Table 1. Results of Multiple Regression Analysis**

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>Reg. Coef</th>
<th>( t ) count</th>
<th>( t ) table (one tailed)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Customer focus (X₁)</td>
<td>0.1269</td>
<td>2.1803</td>
<td>1.6660</td>
<td>0.0324</td>
</tr>
<tr>
<td>2.</td>
<td>Obsession with quality (X₂)</td>
<td>0.1990</td>
<td>3.4208</td>
<td>1.6660</td>
<td>0.0010</td>
</tr>
<tr>
<td>3.</td>
<td>Education and training (X₃)</td>
<td>0.2359</td>
<td>3.9752</td>
<td>1.6660</td>
<td>0.0002</td>
</tr>
<tr>
<td>4.</td>
<td>Benchmarking (X₄)</td>
<td>0.1350</td>
<td>2.9623</td>
<td>1.6660</td>
<td>0.0041</td>
</tr>
<tr>
<td>5.</td>
<td>Teamwork (X₅)</td>
<td>-0.065</td>
<td>-2.116</td>
<td>1.6660</td>
<td>0.0377</td>
</tr>
<tr>
<td>6.</td>
<td>Improving the continuous (X₆)</td>
<td>0.0718</td>
<td>2.1678</td>
<td>1.6660</td>
<td>0.0334</td>
</tr>
</tbody>
</table>

The multiple regression equation is as follows:

\[ Y = 3.8090 + 0.1269X₁ + 0.1990X₂ + 0.2359X₃ + 0.1350X₄ - 0.0659X₅ + 0.0718X₆ \]

Constant of 3.8090 shows that if the focus variable on the customer, obsession with quality, education and training, benchmarking, teamwork and continuous improvement is constant, the cost of quality amounting to 3,8090 units.

The regression coefficient of focus on customers is 0.1269. The regression variable of the focus variable on the customer is positive, this means that the relationship between the focus on the customer towards the cost of quality is positive, or it can also be stated that the better the focus of the Banyumas Pekuncen Semut Sugar Industry players on the customer, the more cost-efficient the quality.
The regression coefficient of obsession with quality is 0.1990. Variable regression coefficient obsession with quality is positive, and this means that the relationship between obsession with quality and cost of quality is positive, this indicates that the perpetrators of Sugar Industry in Pekuncen Banyumas to quality will improve cost efficiency quality.

The education and training regression coefficient are 0.2359. Variable regression coefficient education and training are positive, and this means that the relationship between education and training on quality costs is positive. The more intensive education and training followed by the Pekuncen Banyumas Semut Sugar Industry will increase the cost efficiency of product quality.

The benchmarking regression coefficient is 0.1350. Variable regression coefficient benchmarking is positive; this means that the relationship between benchmarking against quality costs is positive. This condition can be interpreted that more efficient benchmarking, the more efficient the cost for the quality of products.

The regression coefficient of teamwork is -0.0659. Variable regression coefficient the team collaboration is negative, negative values indicate that the direction of the relationship between teamwork and quality costs is negative. It can be interpreted that the more efficient the desire to cooperate with the Pekuncen Banyumas Semut Sugar Industry team, the lower the quality costs that will be incurred.

The analysis of continuous improvement regression coefficient amounting to 0.0718. Continuous improvement variable regression coefficient the value is positive; a positive value indicates that the direction of the relationship between continuous improvement the cost of quality is positive. It can be interpreted that continuous improvement is carried out continuously, the more efficient the quality costs that will be incurred.

To find out how much the independent variable influences the dependent variable, it is necessary to know the coefficient of determination. Based on calculation results are known the value of Adjusted R Square 0.6 075 means that for 60.75% of the variation changes the variable cost of quality can be explained by changes in the variable focus on customer, obsession on quality, education and training, benchmarking, teamwork, and improvement continuous while 39.25% the rest can be explained by other variables not examined.

Simultaneous test or t test is used to test the effect of jointly independent variables on the dependent variable. Based on the calculations, the value of F table for multiple regression analysis of 21.3760. This shows that the value of F count 21.3760> F value of table 2.2256 or sig. (0.000) < α (0.05), it can be concluded that the variable focus on customers, obsession with quality, education and training, benchmarking, teamwork, and continuous improvement jointly influence the cost of quality.

The direct influence of each independent variable on the dependent variable is explained by looking at the results obtained through the t-test. In this study, the t-test was conducted to analyse the first and second hypotheses using a 95% confidence level. Based on 95% confidence level or α = 0.05 and degrees of freedom df = nk = 80 - 7 = 73, it is known that the value of t table for one-tailed testing is 1.6660. As for the results of t count obtained through calculations using software assistance SPSS 16.0 for Windows. The test results for the t test are as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>t count</th>
<th>t table</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on customers</td>
<td>2.1803</td>
<td>1.6660</td>
<td>0.0324</td>
</tr>
<tr>
<td>Obsession with quality</td>
<td>3.4208</td>
<td>1.6660</td>
<td>0.0010</td>
</tr>
<tr>
<td>Education and training</td>
<td>3.9752</td>
<td>1.6660</td>
<td>0.0002</td>
</tr>
<tr>
<td>Benchmarking</td>
<td>2.9623</td>
<td>1.6660</td>
<td>0.0041</td>
</tr>
<tr>
<td>Teamwork</td>
<td>-2.1161</td>
<td>1.6660</td>
<td>0.0377</td>
</tr>
<tr>
<td>Continuous improvement</td>
<td>2.1678</td>
<td>1.6660</td>
<td>0.0334</td>
</tr>
</tbody>
</table>

Based on the results of the t-test in table 3, then conclusions can be drawn on the first to the sixth hypothesis. The variable t count obsession obtains the first hypothesis based on the results of the t-test from multiple regression analysis with variable the with quality of 2.1803 greater than t table value (1.6660), or the significance value is smaller than α (0.05). Thus, the first hypothesis which states that customer focus has a positive and significant effect on acceptable quality costs. The results of these statistical tests show that the focus on customers has a positive effect on quality costs. This result shows that the higher the focus on the customer, the more cost-efficient the quality of the ant sugar crafters will be.
The second hypothesis based on the results of the t-test from multiple regression analysis can be seen that the value of \( t_{\text{count}} \) variable obsession with quality of 3.4208 is greater than \( t_{\text{table}} \) value or significance value smaller than \( \alpha \) (0.05). Thus, the second hypothesis which states that obsession with quality has a positive and significant effect on quality costs received. These results indicate that obsession with quality has a positive effect on quality costs. This shows that the higher the obsession with quality is offered, the higher the cost-efficiency of the quality.

The third hypothesis based on the results of the t-test from multiple regression analysis shows that the value of \( t_{\text{count}} \) variable education and training of 3.9752 is higher than the value of \( t_{\text{table}} \) or a significance value smaller than \( \alpha \) (0.05). Thus, the third states that education and training have a positive and significant effect on acceptable quality costs. These results indicate that education and training have a positive effect on quality costs. This result shows that the higher the intensity of education and training carried out by the ant sugar crafters, the more cost-efficient the quality is issued.

The fourth hypothesis based on the results of the t-test from multiple regression analysis can be seen that the value of \( t_{\text{count}} \) variable benchmarking of 2.9623 is higher than the value of \( t_{\text{table}} \) or a significance value smaller than \( \alpha \) (0.05). Thus, the third one states that benchmarking has a positive and significant effect on acceptable quality costs. These results indicate that benchmarking has a positive effect on quality costs. This shows that the higher the intensity of education and training carried out by the ant sugar crafters, the more cost-efficient the quality is issued.

The fifth hypothesis based on the results of the t-test from multiple regression analysis shows that the value of \( t_{\text{count}} \) variable team collaboration is -2.1161 smaller than the \( t_{\text{table}} \) value or significance value smaller than \( \alpha \) (0.05). Thus, the fifth states that team collaboration has a negative effect on quality costs received. These results indicate that the team's high collaboration has lower the quality costs incurred by the ant sugar crafters.

The sixth hypothesis based on the results of the t-test from multiple regression analysis shows that the value of \( t_{\text{count}} \) variable continuous improvement of 2.1678 is higher than the value of \( t_{\text{table}} \) or a significance value greater than \( \alpha \) (0.05). Thus, the sixth states that continuous improvement has a positive and significant effect on acceptable quality costs. These results indicate that the continuous improvements made are the more cost-efficient qualities that are produced by the ant sugar crafters.

**CONCLUSION**

Based on the results of this study, it can be concluded that the existence of these influences shows that the more focused the ant sugar industry is, the more cost-efficient the quality must be spent. The result also shows that the more efficient the obsession with the ant sugar industry, the more efficient the cost of quality must be spent. The existence of education and training shows that the more active the education and training activities are carried out, the more cost-efficient the quality. Besides, the existence of team collaboration shows, the better the cooperation of the team of ant sugar makers, the lower the quality costs that must be This study also shows that the more continuous improvement efforts are made, the more cost the quality will be efficient.

The implication of this research is the producer sugar ants Village Semedo to improve the efficient cost of quality, producers of sugar ants may do so by using the results of research evaluations of this study. First, more focusing on customer demand, among others by accepting all the criticisms and suggestions to improve the quality of ant sugar products and identify the needs of each customer in order to be able to meet the desired product. Second, increasing obsession with product quality, among others, always sending the same product according to customer expectations and making a selection of methods to evaluate the quality of products sold in the market. Third, producing follow an education in training continues to increase its production of bags cauldron. Fourth, improving team collaboration, among others, by working with all team members to be responsible for product quality and maximising all the capabilities of all team members to improve product quality. Fifth, making continuous improvements by considering input from consumers to improve product quality and set improvement targets according to specified
standards following the results of quality cost research here, namely on the issue of quality cost efficiency refer to the part of production costs and competitive advantage at low costs. It can be concluded that production process control system in the Village Semedo is needed to increase the income of ant sugar makers in Semedo Village through controlling raw material costs by selecting quality raw materials to get good quality products.

REFERENCES


