MANAGER'S BELIEFS ABOUT QUALITY IMPROVEMENT: AN INVESTIGATION ON THE MALAYSIAN ELECTRICAL AND ELECTRONICS INDUSTRY

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ABSTRACT

As quality improvement is a highly controversial issue in the business community, it is interesting to see whether decisions about implementation are influenced by the managers' beliefs about the effect of quality improvement on the companies' market performance. This paper investigates managers' beliefs about quality improvement, which have promoted the growth of competitive advantage amongst Malaysian electrical and electronics companies that adopted the approaches to quality improvement of TQM or ISO 9000.

INTRODUCTION

It is widely discussed in the literature that quality improvement has helped many companies and countries around the world to achieve substantial gains in their economies. Quality improvement, however, has proved to be amongst the most controversial and difficult management problems to resolve throughout the world. This statement is evidenced from the studies, *Quality Management in the Russian Industry* by Lapidus (1996), *Yugoslavia Road Towards Quality* by Heleta, *et al,* (1996) and *TQM in Practice: Malaysian Experience* by Cheong (1996).

These companies and countries are likely to experience quality problems differently. Mukerjee, *et al,* (1997) demonstrates that because people work in different environments and have to deal with different product and process technologies, they face different problems in managing quality. Mukerjee *et al.* (1997) believes that a way of dealing with this problem is to focus on the management of knowledge. This is in line with Mehta (1996) when she claims that most of the current problems in quality improvement are due to limited knowledge about quality. She adds that if the knowledge possessed by a firm is sound, it will be well placed to create good products and the related processes. However, for the most part, the literature provides no guidance on how to solve the quality problems in different environments. On the contrary, the literature implicitly believes that quality improvement is universally beneficial (Bertin, 1996). This paper hypothesises that, as quality problems become increasingly big issues, managers' beliefs on the potential for quality improvement to give better improvement are likely to rise. This paper, therefore, studies whether the rise of the beliefs on quality

improvement is happening amongst the Malaysian electrical and electronics companies.

HYPOTHESES DEVELOPMENT

Whilst much of the evidence on the efficiency of quality improvement supports the company's ability in having competitive advantage, questions concerning whether managers in the electrical and electronics companies believe in efficient quality improvement remain to be unanswered. There has been very little study of managers' perceptions of quality improvement efficiency. Studies by Kuei and Madu (1995), Donk, *et al*, (1993) and Ebrahimpour, *et a,* (1993), that examined the link between managers' decisions and their perceptions of quality, are exceptions. Kuei and Madu (1995) state that the way managers reacted to quality improvement depended on their perceptions of factors associated with the benefits of quality improvement. They found evidence suggesting that the beliefs' managers held about improvement (e.g., improve customer satisfaction) had an effect on their ability to be in the quality market.

According to Donk, *et al*, (1993), it is possible to improve quality improvement and its implementation through the study of manager's beliefs about quality improvement. Belief is defined as the collective programming of the mind, which distinguished the members of one category of people from another (Hofstede, 1980). The approach to measuring the managers' beliefs has been developed by Sander (1990) using an in-depth open interview through a paper-and-pencil survey of organisational members. The belief contains a pool of experiences and core competence's which can be mobilised on behalf of quality improvement. Quality improvement, as a consequence of belief maintenance, relies on characteristics and processes, which are already effective in the company. It is based on intimate understanding of the patterns that the company is developing and to which it is adapting itself, at the same time, bridging the part to the future.

Understanding of the consequences and results of managerial beliefs concerning the benefits of quality management is important because managers necessarily make decisions on a combination of objective and subjective information (Ebrahimpour, *et al,* 1993). As Simon (1961) pointed out, managerial decision making is characterised by bounded rationality and, thus, the adoption of different quality improvement approaches is not based solely on calculations of objective performance and efficiency criteria. Beliefs and perceptions are equally real as objective criteria and are key motivations that affect the decision making process.

Given their findings, the intention of this paper is to see if managers' beliefs in the way quality improvement improve customer satisfaction could help explain the different approaches of quality improvement. However, it must be emphasised that the major motivation for this study is not to investigate the belief in the implementation of quality activities amongst managers, because such analysis

would require more detailed data that can only be obtained from case study surveys. Nonetheless, this paper intends to provide initial findings on the effects of managers' beliefs about quality improvement on the market. While support for the intention mentioned here is not as strong as in the case study research, it is believed that the findings are still significant.

SURVEY

Surveys are useful in obtaining factual information as well as eliciting opinion which otherwise would be very difficult to obtain. In the Malaysian cases, details on quality improvement are not readily available for public consultation, unlike in the US, UK and Australia (Fuchsberg, 1989; Lascelles and Dale, 1990; Sohal, *et al*, 1992). Details on quality improvement are even harder to get. Accordingly, a questionnaire was prepared in which questions relating to companies' quality improvement as well as opinions relating to their beliefs and knowledge of the improvement is included.

This study involved sending a questionnaire to each of the quality managers of the companies as listed in the 1995 Standards & Industrial Research Institute of Malaysia (SIRIM) Directory. These quality companies represent companies that implement quality improvement in Malaysia and were chosen since they were deemed more likely to be heavily engaged in quality improvement than the non-listed companies.

In examining whether the beliefs about quality improvement have any effect on the market, a frequency analysis of such beliefs, for example; reputations, product levels, markets and competitive advantage are presented. Looking at frequencies of these beliefs, managers do seem to believe that the improvement in quality products would bring benefits to the company. To check whether the same result would still hold when the sample is sub-divided by their approaches to quality improvement, a statistical analysis of beliefs about quality improvement between those companies both electrical and electronics industries is conducted. For the purpose of testing company behaviour, therefore, the companies were divided into two groups: companies implementing TQM and companies registering with ISO 9000 Series Standard.

Most of the data about beliefs collected from the survey is in the form of categories. Therefore, parametric tests would not serve the purpose (to test the relationship between companies' approaches and their beliefs in the improvement) because the assumptions underlying the parametric test cannot be met with the use of categorical variables. One of the assumptions for using a parametric test is the requirement for variables involved to be measured should at least be in an interval scale so that it is possible to use arithmetic operations on the scores. Therefore, most of the tests in the study are based on non-parametric or distribution free tests, though whenever possible parametric tests are also undertaken. For example, in order to test for association between variables, chi-square tests are used when data

measurement is nominal (categorical). Alternatively t-tests are chosen to compare means between groups when continuous data are available.

SURVEY RESULTS

Frequency Analysis

There is a great competitive advantage for Malaysian companies as they are now extensively implementing quality improvement. The companies strive to achieve a good reputation for their products, which makes the improvement more visible to competitors by applying the improvement more rigorously as a way of achieving a greater competitive advantage.

Even though Malaysian companies have realised only recently that quality improvement is a major advantage in strategic competition, the majority of respondents did believe that their quality improvement would necessarily affect their product reputations, both locally and internationally. Of these companies that believed that their products have good reputations compared to their competitors, 25% believed themselves to be the market leader, 36% in the top three and 25% in the top seven. About 1% of the remaining respondents believed that they were in the top 12 and top 20, respectively. In line with the extensive implementation of quality improvement, companies are expected to have good reputations for their products, though about 10% of the respondents believed that their products did not include any of the reputation mentioned in the question. Though these companies believed that none of their products had such a good reputation, nonetheless, given that they are the quality companies, they still compete in the market.

Responses to the study also indicate that at the end of 1996, 36% of quality managers believed that their product is in the top 3, whereas 25% believed their products are the market leaders and in the top 7, respectively. In the business environment, the type of culture, politics, and economics of the country have considerable influence on the product's reputation in the market. These factors can cause breaches of the products in the market. Therefore, companies which indicated that they are 'the market leader', are likely to believe that they has a high business potential in dominating the local and international markets.

Besides the belief in the reputation of their products, the respondents also felt that their quality improvement would necessarily affect their markets. For instance, when asked whether they agreed that their products would be less risky, and that quality improvement would have consequently been improved, if the companies registered for ISO Series Standard, 67% agreed, while 28% disagreed. The others were either unsure about it or did not give any response. A similar result is observed for certified companies in relation to Product Certification (PC). When asked whether they agreed that their customers would upgrade the rating of their products if they were certified, 89% agreed. These findings indicate that

respondents do share the view that customer pressure was the most important motivating factor for pursuing ISO 9000 and PC. Managers in the sample appear to believe that customers are able to differentiate between quality products and the impact of quality on the company's status whether registered / certified or not. This belief is supported by most of the empirical studies cited in the literature. The most comprehensive study identified in the literature review on certification is by the Science and Engineering Policy Studies Unit (SEPSU) (1994, as cited in Terziovski, *et al*, 1997). SEPSU argues that there is a relationship between the manager's motives for implementing certification and improved business value.

The Australian Manufacturing Council (AMC) reported similar findings (1994, as cited in Terziovski *et al*, 1997). They discovered that more than 50% of the companies working in the export market agreed that the process of gaining certification had been a significant factor in improving customer perceptions of product quality. Hence by implication, the decisions on ISO 9000 registration and PC are important in improving their business performance. The AMC study concludes that those certifications are likely to lead to perceived quality improvements, as well as overall performances in the quality market. This study found that the primary business value of certifications was to open doors to markets. In summary, the benefits attributable to certifications were mainly quality market efficiency and business value.

The belief in the efficiency of the quality market, however, does not seem to influence opinions on international market competitive advantage. Batchelor (1992) generally contradicts the studies by SEPSU and AMC. He found that the belief in market advantage with regard to the certifications could be implicitly confounded by other factors. For example, managers who agree that certifications offer international market advantage may think so because their products are linked to company plans as stated in the quality policy of their parent company.

Respondents are equally divided over whether the wide use of ISO 9000 amongst UK companies gives them an advantage in international competition compared to Malaysian companies. 60% of the respondents agreed while 19% disagreed with this statement (the remaining were either neutral or unsure). The belief that ISO 9000 gives UK companies an advantage in international competition may indicate that respondents do not believe in the efficient quality market. This may also reflect the belief that the efficiency of quality market cannot rely on the quality of product even if the quality improvement is implemented in an efficient manner. Whether this view is shared by more of the supporters of ISO 9000 than those of TQM, is subject to further study.

Statistical Analysis

If managers believe in the existence of an efficient quality improvement in their companies, there should not be any systematic difference in opinions or beliefs

between quality companies that have a TQM compared to those registered with ISO 9000. Below are four formal statements of hypotheses regarding the approach to quality improvement;

H_1 Quality improvement would enable companies to better assesses the role of their quality department.

H_2 Quality improvement would enable companies to be familiar with the quality activities implemented.

H_3 Quality improvement would enable companies to better assess the level of communication and interaction between departments.

H_4 Quality improvement would encourage customers to upgrade the rating of the company's products.

Managers in the electrical and electronics companies who implement TQM do appear to have a different view about the role of quality improvement than those whose companies are registered with ISO 9000. However, out of the 4 hypotheses tested, only one hypothesis is supported with a very high statistical significance level of less than 1%, with two-tail test for both groups. Those who register for ISO 9000 are more likely to agree with the belief that the implementation would encourage customers to upgrade the rating of the company's product than those who implement TQM.

However, TQM companies appear to have a stronger opinion than the ISO companies that have similarly implemented quality improvement for the role of the quality department and the familiarisation of quality practices. A slightly different story emerged regarding these two tests. It appears that the findings of these two tests are more significant (at 5% level of significance) in the TQM than in the ISO companies. For instance, the belief that quality improvement enable better familiarisation with the implementation of quality activities is supported, though at a somewhat lower significant level for the ISO companies compared to the TQM companies. There is, however, little evidence was found to support that the managers of TQM companies are more familiarised with quality activities implemented as a consequence of quality improvement than are those in companies who have only registered for ISO. In addition to this greater familiarity with quality practices, another important issue is that of the role of the quality department. The results show that the TQM companies are more ready than ISO 9000 companies in recognising the significant role of a quality department. When these two results are put together, the overall picture suggests that the TQM companies have an ability to allow a significant role to their quality departments and this may be a key factor contributing to the familiarisation of quality practices in meeting the quality standards.

Both TQM and ISO 9000 companies appear to give weak support for the opinion that quality improvement would enable companies to increase their communication and interaction level. This, in turn indicates that both TQM and ISO 9000 companies do not think that with quality improvement, they can improve their level of communication and interaction amongst employees in the company. However, if managers truly believe in efficient quality improvement, then the results for the belief that communication and interaction level would improve should be significant. This is what has been shown by Akin (1996) in his study on the communication in Arselik Company in relation to the implementation of TQM. He discovered that two-way communication at all levels improved after quality improvement had been introduced in the company. This study, however, shows that the electrical and electronics companies in Malaysia do not believe this.

Managers of the TQM companies, however, do not share the same view as managers of the ISO 9000 companies on the quality market because the managers of the TQM companies are in general more enthusiastic to have better quality improvement in their company, than the quality market. On the other hand, companies registered with ISO 9000 are more interested in achieving the market advantages that they can obtain from the registration to enable them to compete in the international market. Yung (1997) in his study supports this statement by claiming that the ISO 9000 does not bring a cultural change in attitudes on quality, as evidence shows that most companies apply for ISO 9000 because of customer requirements and advantage in the competitive market (yet do not introduce internal quality and productivity improvement). This differs ISO 9000 from TQM, which is a management system to mobilise and motivate employees for continuous quality and productivity improvement. Table 1 and Table 2 further illustrate the results of both TQM and ISO 9000 approaches.

Table 1: Results of the approach to TQM

Test of Association		Test for Direction of Association			
Ref. No.	**Hypothesis** Approach to TQM is associated with the belief that:-	Pearson Chi-Square Value	Coeff.	Std. Error	Significance Level
H_1	QI would enable companies to better assess the role of quality department	8.43*	0.71	0.81	0.0822**
H_2	QI would enable companies to be familiar with the quality practices	4.29*	0.22	0.51	0.0587**
H_3	QI would enable companies to increase communication and interaction level	4.71*	0.34	0.55	0.5406*
H_4	QI would encourage customers to upgrade the rating of the product	7.55**	1.45	0.67	0.0303**

Table 2: Results of the approach to ISO 9000

Test of Association		Test for Direction of Association			
Ref. No.	**Hypothesis** Approach to ISO 9000 is associated with the belief that:-	Pearson Chi-Square Value	Coeff.	Std. Error	Significance Level
H_1	QI would enable companies to assess the better role of the quality department	4.64*	1.69	0.86	0.0493**
H_2	QI would enable companies to be familiar with the quality practices	8.99*	0.59	0.84	0.4899*
H_3	QI would enable companies to increase communication and interaction level	2.36*	0.88	0.74	0.2323*
H_4	QI would encourage customers to upgrade their rating of your product	19.76***	0.96	0.77	0.0024***

*** Significant at 1% or less
** Significant at 5% or less
* Significant at 10% or less (two-tailed test)

SUMMARY

In this paper, the possible beliefs amongst managers in electrical and electronic companies about quality improvement have been examined for influencing their perceptions on quality market. Systematically, they believe that the decisions of quality improvement are important to quality market. These findings are similar to Aston *et al,* (1994) who concluded that the influence of quality improvement on market varies depending on the managers' perceptions of the improvement made by companies.

When partitioning the data into TQM versus ISO 9000, companies with TQM approach are found to be most commonly associated with quality improvement. Since quality improvement is related to TQM, an intuitive rationale that may explain the observed positive association between quality improvement and approach of TQM is that managers of TQM are free from pressures imposed by government, especially from the SIRIM (ISO 9000 and Product Certification are organised by SIRIM). Whilst these results provide evidence that the decisions on approaches do seem to influence the beliefs perceived to have on quality improvement, it is recognised that the hypothesised beliefs may not be the only explanation justifying the observed findings. There may be other factors and complex linkages between beliefs and approaches that may influence the views taken by the managers.

REFERENCES

Bertin, E. J. (1996). Quality on the Board of Directors. International Conference on Quality – Yokohama (JUSE), p. 91-96.

Cheong, P. L. (1996). TQM in practise: Malaysian experience. International Conference on Quality –Yokohama (JUSE), p. 221-115.

Donk, V., Pieter, D. and G. Sanders. (1993). Organisational culture as a missing link in quality management. The International Journal of Quality and Reliability Management, 10, (5), p. 5-16.

Ebrahimpour, M., and Cullen, J. B. (1993). Quality management in Japanese and American firms operating in the United States: A comparative study of styles and motivational beliefs". Management International Review, (33), p. 23-34.

Heleta, M., Stanivukovic, D. and Majstorovic, V. (1996). Quality system as base for TQM development - Yugoslavia road towards TQM. International Conference on Quality – Yokohama (JUSE), p. 59 - 68.

Hofstede, G. (1993). Organisational cultures as a missing link in quality management. In V. Donk, V., Pieter, D., and G. Sanders (Eds.), The International Journal of Quality and Reliability Management, 10 (5), p. 5-16.

Kuci, C. H. and Madu, C. N. (1995). Managers' perceptions of factors associated with quality dimensions for the different types of firms. Quality Management Journal, 2(3), p. 67-80.

Lapidus, V.A., (1996). Total quality management (TQM) in the Russian industry. International Conference on Quality – Yokohama (JUSE), p. 43-47.

Mehta, J. (1996). Quality management for global prosperity. International Conference on Quality – Yokohama (JUSE), p. 48-56.

Sanders, G., (1993). Organisational cultures as a missing link in quality management. In V. Donk, V., Pieter, D., and G. Sanders (Eds.), The International Journal of Quality and Reliability Management, 10 (5), p. 5-16.

Simon, H. A. (1961). Administrative behaviour. New York: McMillan.

Terviovski, M., Samson, D. and Dow, D. (1997). The business value of quality management systems certification evidence from Australia and New Zealand. Journal of Operations Management. 15, p. 1-18.