Using the EFQM Model to share the Experience of TQM and develop Improvement Strategies for SMEs

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ABSTRACT
The research is focus on the EFQM model includes TQM spirit and organization structures to assess the company to improve quality. In this research, we attempted to examine the degree of TQM implementation in a Taiwanese SME by means of an exhaustive survey of company staff and customers. It is hoped this strategy is also applicable to other SMEs in Taiwan. When data collection was completed, a calculation was made for the means of weighting the raw data, and the formula for the testing of related samples applied. With the reliability test, a SEM (Structure Equation Model), and a CFA (Confirmatory Factor Analysis) were used to verify and test the EFQM model by means of the collaborating company. After the above data were analyses, the cause and effect diagram was used to discuss the results.

Keywords: TQM, European Foundation for Quality Management, SMEs, Structure Equation Model, Confirmatory Factor Analysis.

1.0 Research Backgrounds

The concepts and techniques of TQM are the same for any business, large or small. To date, the benefits of TQM have primarily been enjoyed by large manufacturing companies. Many small businesses are now beginning to realize they too can benefit from TQM implementation. In some cases, companies require that their suppliers (many of whom are small and medium sized enterprises) also implement TQM. Whatever the motivation, small and medium sized enterprises are becoming increasingly interested in TQM. This research presents a systematic approach for understanding and successfully implementing the concepts and techniques of TQM in Taiwan, as well as developing an improvement strategy in Small and Medium Sized Enterprises (SMEs).

The ideas of the quality gurus\(^1\) have led to the widespread adoption of TQM in corporations all over the world for the last two decades. TQM provides a systematic method for (1) Ensuring customer satisfaction; (2) Managing processes; (3) Continuous improvement; (4) Working in teams; (5) Encouraging personal initiative [Ehresmsn, 1994]. Service quality should not only be concerned with external customers, but also with internal customers (employees) [Zeithaml, Parasuraman, & Berry, 1990]. A TQM system is applied to incoming goods, manufactured components and assembled products at appropriate stages in the manufacturing process [Williams, R L. 1993]. It is carried out mainly by staff employed specifically for this purpose [Asher, 1992]. In TQM every single staff member should keep in mind the slogan “do it right at first”. Therefore the degree of success with which TQM has been implemented should (also) be evaluated by a company’s HRM (Human Resource Management) [Dickens, 1995].

The advent of the European Union (EU) has brought on the adoption of national and international

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quality standards. In Taiwan, many SMEs that expect to export their products to the EU are now planning to conform to quality standards [SEMs Economic Association of Taiwanese Economic Ministry, 1997]. These quality standards are now being required for doing business in the international marketplace. Many European companies are now requiring their suppliers, both within and outside the EU, to comply with prevailing quality standards [Lamprecht, 1995]. Because of this Taiwanese companies need to improve quality standards. The question is whether Taiwanese SMEs will be able to survive in the twenty-first century business world.

2.0 The Characteristics of the EFQM Model

The objective of this research is to use the EFQM to evaluate the situation of SME’s in Taiwan. Some of the inspiration comes from a review of the literature which is mentioned in the previous chapters of this research. At a conceptual level the whole concept of the research is based on TQM ideas, ISO theories, and Quality Assurance. From my research, I learned that within the TQM field the most commonly used research model is the EFQM model. This model includes TQM spirit and organization structures to assess the company to improve quality. The model is especially suitable and exactly designed for SMEs in Taiwan.

The EFQM model for SME’s - henceforth referred to as “the model” - reflects the key features of running an outstanding organization, and each element of the model has a weighed score. The model can be used to apply a Quality Award and can also be used for self-assessment. Self-assessment means taking a hard look at your organization and scoring it against an ideal or model. The results should ideally indicate the organization’s strengths and areas for improvement, and provide the basis for future strategy and improvement plans. The EFQM looks as follows:

![Figure 1 The EFQM’s Business Excellence Model](image)

The model’s nine boxes represent the criteria used to assess an organization’s progress towards excellence, grouped into two dimensions of “Enablers” and “Results”. The equivalent percentages indicate a criterion’s relative importance to the whole. The model in this research for SMEs covers the same essential business excellence elements as the model for larger organizations, and uses the same nine-box structure. However, to better reflect the structure and methods of SME’s, the definitions and descriptions have been modified and the criteria subdivided into fewer criterion parts. The fundamental concepts underlying the SME model and their link to TQM will now be discussed one by one.
3.0 The Research Method

3.1 Data collection

The author divided the data collection into two parts. In the first part, the authors tried to find out what employees think of the concerning company’s implementation of TQM. In this research survey, the authors sub divided the data collection into 2 phases. Phase one was the collection of data utilized in the method of person-to-person interviews. The authors examined how managers and employees collaborate at different level in the company. The data obtained will be treated as pre-test material to enable rephrasing and regrouping of the question. Phase two consisted of handing out a questionnaire to the employees of the target company. The data collected in this phase were expected to be of prime importance to this research project. In the second part, the author conducted a survey by means of collecting data from the company’s customers in order to know customer’s ideas and to understand the possible discrepancy in theory and in practice of the company’s customer service.

3.2 Structure Equation Model (SEM) analysis

When examining the topic of EFQM model factors, this research discusses the different levels of favorable and unfavorable items represented by several questions. As mentioned in the previous chapter, the EFQM model consists of nine criteria. These are leadership, strategy and planning, people management, resources, quality system & processes, people satisfaction, customer satisfaction, impact on society, and business results. Since the research was limited by the number of cases in the final dataset, only one factor analysis technique could be afforded. A Confirmatory Factor Analysis (CFA) was chosen in stead of the more common Exploratory Factor Analysis (EFA) because the new measures were developed from extensive literature research and thus were developed from extensive literature research. CFA was performed using AMOS 6.0 measurement models were constructed based on variable definition. Subsequently, these models were modified based on item correlation coefficients, parameter estimated, and modification indices. Items that did not provide significant contribution to the proposed constructs were dropped until satisfactory models were achieved. Several fit indices were referenced to support the use of the modified models in subsequent analyses. Construct reliability was assessed by calculating composite reliability and average variance extracted. Cronbach’s alpha reliability was used to test the internal consistency of each measure.

4.0 Survey Analysis and Discussion

The modified model of SMEs in Taiwan is shown in Figure 2. This model includes one latent factors of EFQM. Nine items contribute to the manifestation of the EFQM. Error covariance of e4 and e5, as well as e6 and e9 were believed to be correlated because each pair measured similar EFQM function, and thus were linked in the final model.

Items and parameter estimates for EFQM measurement model are listed in Table 3. All items have a standard estimate if larger than with significant P-value. Table 1 presents the goodness of fit statistics on the final model.
The fit is considered better the closer the chi-square value is to the degrees of freedom (df) for a model. The chi-square to df ratio is 37.04 for the final EFQM which indicates a good fit between the observed and reproduced covariance matrices. Chi-square is non-significant (p = 0.057) which is desirable. The root mean square error of approximation (RMSEA) equals to 0.06 which is indicative of reasonable fit according to Browne and Cudeck (1993) and MacCallum et al. (1996). The goodness of fit index of (GFI) equals to 0.93 suggests an acceptable fit, and the standardized RMR of 0.02 regarding the model’s fit as it does meet the acceptable value of < 0.05. The relative fit indices such as CFI, RFI, NFI, and TFI indicate a reasonable fit of the model over the independence model, with values near the .90 threshold, although NFI equals to 0.89 just below the threshold. The standard estimates of the model for SMEs in Taiwan are at significant t-value of 0.70, 0.67, 0.53, 0.79, 0.64, 0.71, 0.38, 0.38 and 0.28, respectively as Table 3 has shown. After changing to percentage, it becomes the explanation power of 14%, 13%, 10%, 16%, 13%, 14%, 7%, 7% and 6% represent the factors of “leadership”, “strategy and planning”, “people management”, “resources”, “quality system & processes”, “people satisfaction”, “customer satisfaction”, “impact on society”, and “business results”, respectively. The results compare with the original EFQM model is shown at Table 2.
Table 2: The compare of explanation power of factors between Taiwanese SMEs and EFQM model

<table>
<thead>
<tr>
<th>Factors</th>
<th>Taiwanese SMEs</th>
<th>EFQM</th>
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<tbody>
<tr>
<td>DE</td>
<td>14%</td>
<td>10%</td>
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<tr>
<td>SP</td>
<td>13%</td>
<td>8%</td>
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<tr>
<td>PM</td>
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<td>66%</td>
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<td>RE</td>
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<tr>
<td>CS</td>
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<td>IS</td>
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5.0 Discussions and Conclusions

5.1 Discussions

By means of the analysis of the above statistical technique, the results we found they include in two phases:

1. The factors of Taiwanese SMEs model is consisted of nine portfolios, these are “leadership”, “strategy and planning”, “people management”, “resources”, “quality system & processes”, “people satisfaction”, “customer satisfaction”, “impact on society”, and “business results”.

2. Among the factors of the model, Taiwanese SMEs are quite different from the EFQM model, first of all, “leadership”, “strategy and planning”, “resources”, “people satisfaction”, “customer satisfaction” and “business results”. All of these factors are rather exceeded or less than the EFQM model 5%. Especially, the factors of “customer satisfaction”, “Business results” and “resources” are the most different issues in all a whole. Secondly, the factors in the “enables” dimension is 66% of the factors of “leadership”, “strategy and planning”, “people management”, “resources”, “quality system & processes” in Taiwanese SMEs, all together, while the EFQM model is only 50%. On the contract, the factors in the “results” dimension is only 34% of the factors of “people satisfaction”, “customer satisfaction”, “impact on society”, and “business results”, while the EFQM model is 50%.

5.2 Concrete suggestions on how to implement TQM for SMEs in Taiwan

1. In order to commit and improve TQM some criteria must be fulfilled. Most of the SMEs are family run and according to the definition of SMEs, their business turnover and the number of employees are not high. If SMEs want to become larger.

2. Effective and good leadership should be necessary. Good leadership is necessary not only for managers, but also for all employees at each level. To successfully implement TQM in SMEs. Employees and managers should have a clear understanding of TQM. To say it with Deming, their slogan should be “Do it right at first”. If they keep this in mind, the degree of quality products and processes will increase. It is also important to give them enough authority to do their job. Employees in the company have a clear understanding of TQM and have enough authority.
3. A strategy and planning for the implementation of TQM as Williams [1994] designed. When the wish exists to commit policy strategy and planning, a company should make sure that leaders have a high level of awareness of what is expected from them.

4. Companies also need to focus on people management. As Dickens [1995] in HRM urged people management and how to encourage and manage people, the authors suggest that companies should encourage employees within their team to successfully face the changes involved when improving TQM. Although processing changes may lead to some mistakes or conflicts, companies should strive to establish a transparent communication system for all employees. This would help employees to do things more smoothly and quickly.

5. A company must not forget to provide employees with the necessary financial support for new technologies and knowledge, in other words, how to effectively use company resources [Boundes, Dobbins & Foler 1995]. Besides, it is also necessary to prepare a complete audit system for internal and external auditing.

6. After the above conditions have been fulfilled, the company should implement quality systems and processes. The aims of the system are to give good customer service and to ensure quality products and services. When processing the aims of the system it is necessary for the employees to have enough time to provide services, otherwise they would not be able to finish their tasks.

7. After a certain period of the time has elapsed, the company has to review its business results and has to measure the people satisfaction [Kotey, and Meredith, 1994; Fernandez, 1995]. If a company doesn’t have a hierarchical system with good prospects for its employees, the employee rotation will be very high. If this is the case, the new employee may create new problem and costs might have to be made for retraining program. Rework and scrap may also occur in this stage. These kinds of things are negatively influence SMEs financial status. Finally, companies have to check and measure the inventory system and detection system to prevent unnecessary waste.

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Authors’ Backgrounds
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