The Power of Customer Relationship Management in Enhancing Product Quality and Customer Satisfaction

Arawati Agus [1] and Za'faran Hassan [2+]

[1] Graduate School of Business, Universiti Kebangsaan Malaysia, 43600 Bangi, Malaysia

[2] Faculty of Business Management, Universiti Teknologi MARA, 40450, Shah Alam, Selangor, Malaysia

Abstract. This paper investigates the relationship between customer relationship management (CRM) in supply chain management (SCM) and its power to enhance product quality and customer satisfaction of Malaysian manufacturing companies. Senior production managers were interviewed utilizing a structured survey instrument to gauge their perceptions of CRM, product quality performance and customer satisfaction. Inferential statistical analyses were conducted by utilizing data from 250 companies. Associations between CRM dimensions, product quality and customer satisfaction were analyzed through statistical methods such as cluster analysis, Friedman's test and structural equation modelling (SEM). The findings of cluster analysis and Friedman's test indicate that 'High customer satisfaction achievers' possess higher levels of CRM implementations and give priorities to dimensions such as 'Measures & evaluates customer satisfaction, 'Evaluates relationship with customers continuously' and 'Provides Follow up and after sale services than 'low customer satisfaction achievers'. The result of the partially mediated SEM model reveals that CRM exhibits direct impact on customer satisfaction and also indirect effect mediated by product quality. Overall, findings of the study provide a striking demonstration of the importance of customer relationship management in SCM to enhance product quality and customer satisfaction in Malaysian manufacturing companies.

Keywords: Supply chain management, customer relationship management, product quality, customer satisfaction, structural equation modeling.

1. Introduction

In today competitive business environment, manufacturing companies have identified the need to become more customer oriented in their supply chain management. According to Ganeshan and Harrison [1], supply chain management (SCM) involves the activities of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. Christopher [2] defined SCM as "the management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole". SCM comprises functions like distribution planning, demand forecasting, purchasing, requirement planning, production planning, warehousing, material handling, inventory, packaging, order processing, and transportation etc. All these functions are considered as foundations of SCM in today's business environment. As global competition increases, manufacturing companies should be more involved in how their customers do business to survive due to intense competition. They need to focus on customer related process that has an impact on enhancing product quality and customer satisfaction. Customer relationship management in SCM is a whole new way of thinking, and includes the integration of vision, culture, and strategy to serve the customer with high quality, low cost and short delivery time.

Increasing global competition, the demands of customers for higher product quality, greater product selection, and better customer service while striving to contain costs. Ideally, CRM is implemented throughout the supply chain with the signal moving backward from the customer all the way back to the most basic raw materials [3]. The rising costs of attracting new customers today have led many Malaysian manufacturing companies to adopt cooperative, mutually relationship strategies with customers, minimize wastage and defects, improve product quality to maintain or improve performance and customer satisfaction. Supply chain management has the potential to assist the organization in achieving both cost and value

advantage [2]. However, to achieve this, requires manufacturing companies to revise their relationship with their customers. Empirically, the main objectives of this paper are:

- To empirically examine the importance of each CRM dimensions on performance
- To empirically assess the importance of each customer relationship management indicator on product quality.
- To empirically investigate whether customer relationship management has significant impact on customer satisfaction.

2. Customer Relationship Management (Literature Review)

Research findings [2], [4], indicates that effective supply chain management leads to increased customer satisfaction and improved organizational performance. However, according to [5], empirical based evidences on these contentions are still scarce. Having a competitive advantage generally implies that an organization can have lower prices, higher quality, higher dependability and shorter delivery time when compared to its competitors [7]. [6] studied the relationship between SCM practices, competitive advantage and organizational performance and found that higher levels of SCM practice can lead to enhanced competitive advantage and improved organizational performance. The importance of CRM, on the other hand, was highlighted by [8]. They found empirical evidence that customer relationship has an impact on the effectiveness of SCM strategy which led to financial and market performance. [9] concluded that companies with broader supply chain integration - with customers and suppliers - showed largest performance improvement. According to [10], the relationship between chain integration with financial performance was indirect and fully mediated by customer service performance.

Customer relationship management has been defined in various ways. According to [13], CRM is "the strategic use of information, processes, technology, and people to manage the customer's relationship with your company across the whole customer life cycle." [11] defined customer relationship management as a set of firms' activities in managing its relationships with customers to improve customer satisfaction. [14] describe CRM as "a comprehensive strategy and process of acquiring, retaining, and partnering with selective customers to create superior value for the company and the customer. It involves the integration of marketing, sales, customer service, and the supply-chain functions of the organization to achieve greater efficiencies and effectiveness in delivering customer value". [12] explain CRM as an "enterprise approach to understanding and influencing customer behavior through meaningful communications in order to improve customer acquisition, customer retention, customer loyalty, and customer profitability". Specifically, CRM measures in this study was operationalized based upon five different kinds of activities that manufacturers commonly used to integrate their operations with customers namely 'evaluates relationships with customers continuously', 'facilitates and helps immediate customers', 'measures and evaluates customer satisfaction and expectation', 'provide follow up and after sale services to customers' and 'involve customers in product and process designs'.

3. Hypotheses

A structural equation model is used in this study to analyze the structural effect of customer relationship management (CRM) on performance result. This study proposes that customer relationship management (CRM) has important influence on product quality performance and customer satisfaction. Therefore, the following main hypotheses are investigated:

H_1 : Customer relationship management has a positive structural effect on product quality

H_2 : Customer relationship management has a positive structural effect on customer satisfaction

H_3 : Product Quality has a positive structural effect on customer satisfaction

4. Research Method

Sample companies were chosen from manufacturing companies in Malaysia. The sampling frame was retrieved from the Federation of Malaysian Manufacturers Directory (FMM). **Two hundred and fifty** responses were received and were analyzed using the SPSS package. The primary purpose of the research

was to measure senior quality managers' or production manager's perception of customer relationship management practice in SCM and to gain insight into the benefits of implementing customer relationship management in the manufacturing industry. The goal is to understand and reveal determinants of customer relationship management in SCM that can enhance product quality and customer satisfaction. Face to face interviews with production managers were carried out for checking the information accuracy, validating the outcome of analysis and developing an understanding of practical aspects of customer relationship management principles adoption. This paper was part of a larger research on the impact of SCM on performance and competitiveness. The instrument developed in this study is a structured survey questionnaire which consists of three major parts. The first part comprises several questions regarding companies' background or profiles. The second part consists of questions on SCM including customer relationship management (CRM). The third and last part incorporates questions or statements regarding performances and competitiveness. To enable respondents to indicate their answers, seven–point interval scales were used for the questionnaire regarding the level of Customer Relationship Management (CRM). The respondents were asked to indicate customer relationship management (CRM) based on the scale of 1 (Strongly disagree) to 7 (Strongly agree) on the statements of the close-ended questions using interval or Likert-liked measurements.

5. Cluster Analysis and Friedman's Rank Test

The cluster analysis and Friedman's rank test were carried out with the objective of determining which of the CRM dimensions were given high priorities by high customer satisfaction achievers. Since customer satisfaction was a very importance outcome in CRM, the following analysis was based on customer satisfaction clustering. The result from cluster analysis statistically segmented these manufacturing companies into two clusters based on customer satisfaction measurement and were labeled in this study as "High customer satisfaction achievers" and "Low customer satisfaction achievers". The result from Table 1 suggested that higher levels of CRM practices were realized in "High customer satisfaction achievers" than "Low customer satisfaction achievers". "High customer satisfaction achievers" set high priorities on CRM dimensions such as 'Measures & evaluates customer satisfaction', 'Evaluates relationship with customers continuously' and 'Provides follow up and after sale services. However, both clusters still found difficulties in involving customers in product and process designs. The findings suggested what dimensions or plans to implement with company's limited resources in enhancing customer satisfaction.

Table 1: Rankings of CRM Dimensions Based on Customer Satisfaction Clustering

Customer relationship management (CRM)	High customer satisfaction achievers (n = 194, chi-square = 30.255, significant = 0.000, overall cluster's mean = 5.76)				Low customer satisfaction achievers (n = 56, chi-square = 17.742, significant = 0.001, overall cluster's mean = 4.12)			
	Friedman's Test	Rank	Mean	Std. Dev.	Friedman's Test	Rank	Mean	Std. Dev.
Measures & evaluates customer satisfaction (MEASCS)	3.24	1	5.933	1.101	3.21	2	4.964	1.334
Facilitates and assists our customers (FACICUST)	2.88	4	5.768	.9988	2.99	4	4.839	1.276
Evaluates relationship with customers continuously (RELCUST)	3.18	2	5.907	1.014	3.21	3	4.911	1.297
Provides Follow up and after sale services (FAFTERS)	3.03	3	5.742	1.236	3.21	1	5.036	1.127
Involve customers in product and process designs (PPDESIGN)	2.67	5	5.433	1.460	2.38	5	4.429	1.512

6. Structural Equation Modelling (SEM)

Given the confirmatory nature of this study, the statistical analysis technique called structural equation modeling (SEM) was utilized. The findings of the partially mediated SEM model indicated that the resulting Chi-square value was 44.99 with 41 degrees of freedom and p-value of 0.308 (Figure 1). These statistical

values supported the null hypothesis suggesting that the model had a good fit (H_0). In addition, other statistical structural indices such as Goodness of fit index (GFI = 0.969), Bentler comparative fit index (CFI = 0.998), Normed fit index (NFI = 0.976) and Tucker and Lewis Index (TLI =0.997), further suggested that the model had a satisfactory fit (Figure 2). Since the probability value and structural modeling indices were well above the recommended level, the model was considered to be a reasonable representation of the data [15], [16], [17], [18].
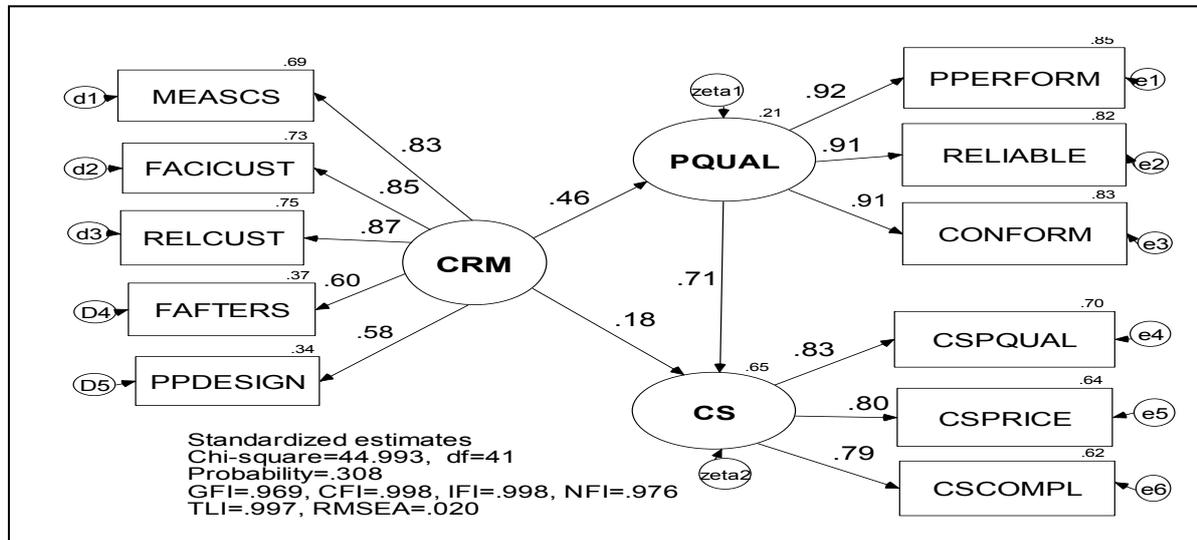

Fig. 1: The Relationship between CRM, Product Quality and Customer Satisfaction

The direct structural effect of customer relationship management on product quality (structural effect = 0.46) was considered high given the complex causal linkages. Therefore, we had enough evidence to accept the proposition that customer relationship management has a positive and significant structural effect on product quality (H_1 was supported). The direct structural effect of CRM on customer satisfaction was moderate and significant (structural effect = 0.18) which supported hypothesis H_2. Subsequently, the direct structural effect of product quality on customer satisfaction (structural effect = 0.71) was also high and significant which supported the third hypothesis (H_3 direct effect was supported).

Reviewing the structural loadings of each CRM dimensions on performances, it was highlighted that 'evaluate relationships with customers continuously' (structural loading = 0.87) had the highest contribution towards CRM implementation. This was followed by 'facilitates and helps immediate customers' (structural loading = 0.85), 'measures and evaluate customer satisfaction and expectation' (structural loading = 0.83), 'provide follow up and after sale services to customers' (structural loading = 0.60) and 'involve customers in product and process designs' (structural loading = 0.58). These findings suggest that ultimately customer relationship management had positive influences on product quality and customer satisfaction.

7. Conclusion and Implications

For today's organizations, simply delivering a quality product or service to a customer is not enough. To be successful, organizations must strive to establish and maintain solid relationships with prospects, customers, partners, and stakeholders. Companies allocate significant resources to customer satisfaction measurement and improvement. Customers seek equity with product and service providers. If they feel that they've paid a price that equals the quality they've received, all is right with the marketplace. However, if the quality of their purchase is at an extreme -- less than or greater than they expected it to be -- customers feel motivated to regain balance in the buyer-seller equation. This paper attempts to investigate the structural relationships between CRM, product quality and customer satisfaction within the Malaysia context. It seeks to clarify a number of confusions in this area and to offer an overview of what needs to be done to enhance product quality and customer satisfaction. The findings and evidences of the study lead to several conclusions:

- CRM has **positive** and **significant** effect on product quality and customer satisfaction especially though dimensions namely 'Evaluates relationship with customers continuously, 'Facilitates and assists our customers and 'Measures & evaluates customer satisfaction'.
- 'High customer satisfaction achievers' possess higher levels of CRM dimensions such as 'Measures & evaluate customer satisfaction, 'Evaluate relationship with customers continuously' and 'Provides follow up and after sale services' than 'low customer satisfaction achievers'. But both clusters still experience difficulties in allowing customers to participate in product and process designs.

In conclusion, we can say that CRM and quality are two faces of the same coin - Delivering what the customer needs, when the customer needs without error, with the highest quality of product and service: While Quality is about "how and what" (<u>how</u> to deliver the products and services) aspect of the CRM, the intelligence and data availability for the right delivery process is the "who and when" (<u>whom</u> to deliver) part of CRM. Quality is about creation and CRM is about serving. CRM systematically connects the competitive cycle of customer feedback into the marketing process, thus contributing to strategic competitiveness of the firm. Therefore, the findings of this research can be very fruitful to Malaysian firms in strategizing for customer satisfaction. Empirical research, thus far, on CRM amongst Malaysian firms, have not studied the linkage between CRM and its impact on product quality and customer satisfaction

8. References

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