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TARGET COSTING IMPLEMENTATION IN MALAYSIAN AUTOMOTIVE INDUSTRY: AN EXPLORATORY STUDY

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Abstract

Increasing competition coupled with changes of customers' expectations has led many automotive companies to constantly upgrade its management accounting practices such as Target Costing (TC). This study aims to explore TC implementation in Malaysian automotive industry. Semi-structured interview and site-visit approaches are employed by which the basic implementation stages of TC are explored. The results indicated some clear differences in the methods used to achieve TC by Malaysian automotive companies than the US and Japanese companies. The differences have been noted in determining selling prices and estimated costs as well as the less involvement of suppliers in the TC practices. The factors of intense competition, functional knowledge of employees and cooperation between departments has been found to be the most influential factors of TC implementation. The results have been ultimately used as a constructive validity method to enhance knowledge on the topic of interest and develop the questionnaire survey for future research.

Keywords: Target Costing; Organizational Capabilities; Automotive Industry

Introduction

Increasing competition coupled with changes of customers' expectations has led many automotive companies to constantly upgrade their management accounting practices to ensure their competitiveness globally. Hence, automotive companies today are looking for ways in which they can make their products more competitive. Target Costing (TC) has been proposed as one of the ways that companies can adopt in ensuring product competitiveness in terms of price, design and structure development. These three elements are the main concern of TC in ensuring the targets of high quality products with lower costs and a shorter time based on the market-driven basic and customer-oriented attributes. Accordingly, in TC practices, once the selling price is determined based on the market price, the company should develop a product with the cost that can achieve an acceptable profit margin. However, the best practice of TC depends aggressively on Organizational Capabilities (OCs) where organizational functions combine with cross-functional teams. In the TC literature (e.g. Joshi, 2001; Swenson *et al*., 2005; Kocsoy *et al*., 2008; Huh *et al*., 2008), OCs have been recognized as the most important factor for TC implementation.

In the Malaysian context, automotive industry should respond to the global competitive pressure to ensure their competitive edge and sustainability among its global competitors within such industry. As Malaysian manufacturing companies, in general, have established several effective management accounting techniques such as Just-In-Time (JIT), Activity-Based Costing (ABC), Lean Production System, Total Quality Management (TQM), and Balanced Scorecard (BSC) (Hamood *et al*., 2011), TC implementation for automotive companies in particular is crucially important. By implementing TC, their products would be differentiated as being of higher quality, acceptable price, and shorter delivery time, hence creating their customers' value and maintain their overseas competitiveness.

The main objective of this study is to explore the TC implementation stages adapted from Ellram's (2006) theoretical model. The remainder of the study is organized into six sections. Section two that follows, provides an overview of previous studies pertaining to TC implementation in the automotive industries in both Japanese and non-Japanese context. It will discuss how the TC has been converted to the non-Japanese environment.

Section three presents the research method adopted in this study. The study findings are discussed in section four. Finally, the study is concluded with a brief discussion in section five. Contribution and future research directions are proposed in section six.

Literature Review

TC was developed by TOYOTA Corporation in the beginning of the 1960s and it has been used since that period by the Japanese automotive industry in general (Afonso *et al*., 2008). It has been reviewed by accounting literature as an excellent tool to manage cost of products and services, and most widely noted as a practice to support new product development (NPD) (Ellram, 2006). Cooper and Slagmulder (1997) described TC as a feed-forward cost management technique rather than the traditional feedback technique used to mange products cost during the production process. Kato (1993) stressed that the "…target costing is not a simple cost-reduction technique, but a complete strategic profit management system". This is supported by Cooper and Slagmulder's (1997) claim that the concept of TC should be a "cost management" and not a "cost reduction". Hence, TC enables companies to manage their products cost and ultimately future profit target by determining the products' features at which the products must be manufactured.

With increasing competition among automotive companies worldwide, many of these companies are seeking to produce higher quality products at lower costs (e.g. Japanese companies such as Toyota, Nissan, Matsushia, and Daihatsu) (Cooper & Slagmulder, 1997; Tanaka, 1993). As such, adopting TC is mainly initiated as a cost management technique to drastically manage product features; cost, quality, and functionality; at the earlier stages of products life cycles. However, Japanese automotive industries have globally become more diverse in their products and market-oriented in their growth. This actually requires shorter product life cycles with more focus on the costs occurring at each stage of product life (planning, design and manufacturing).

Monden and Hamada (1991) examined the TC processes in Japanese automotive companies and divided them into five steps as follows: 1. corporate planning; 2. developing the specific new product project; 3.

determining the basic plan for a specific new product; 4. product design; and 5. the production transfer plan. Through these steps, they emphasize the effective role of the management accounting system in determining target profits, target costs and estimated costs. In addition, Ellram (2006) developed a theoretical model which provides an in-depth description of the steps of TC practices within US companies. Figure 2 shows the TC process, step by step executed in US companies. He found a very tight linkage between supply management and the design function in the TC practice, especially at step 1, 4, and 5, which contrasts with Japanese focus as they pay much attention on the management accounting system in setting TC (Monden & Hamada, 1991; Cooper & Slagmulder, 1997).

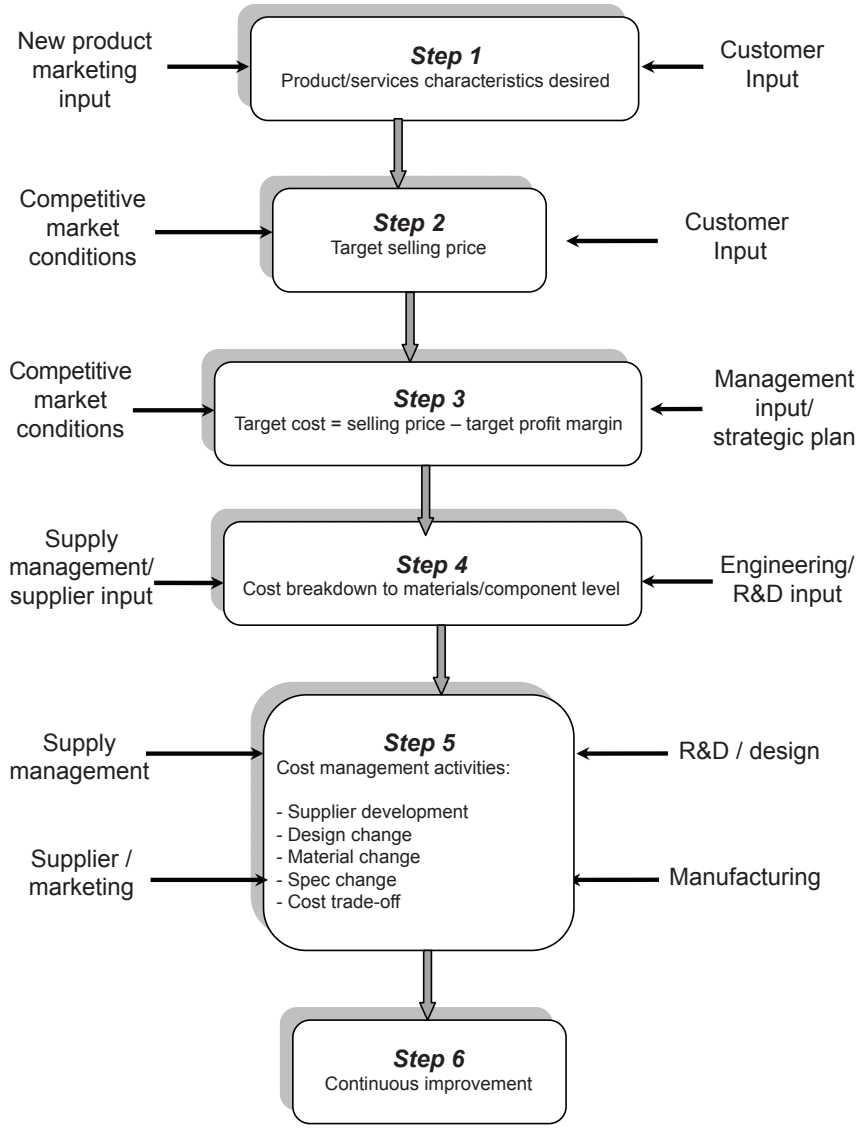

Figure 1: Target Costing Process (Ellram, 2006, pg. 15)

Table 1 shows how TC is being used among automotive industries and what are the variables used to determine the applicability of this practice in non-Japanese companies compared with its initial use in Japanese companies. In manufacturing industries as a whole, several authors have assumed that TC is applicable only in the early stages of the product life cycle. For example, Shank and Fisher (1999) believe that TC must be applied early in the product life cycle based on the proposition that costs are fixed after a product is in manufacturing. In automotive industry in particular, Monden and Hamada (1991) mentioned that the main reason of the importance of TC application in Japanese automobile companies is that the ratio of variable costs to total costs has increased remarkably (up to 90 per cent) and the ratio of direct material costs to total variables costs is about 85 percent. This indicates the important role of the management to adopt TC to control these costs compared with fixed costs. In contrary, Kocsoy *et al*. (2008) found that approximately 70 per cent of Turkish companies determine TC for all of the products in the production line, 22 per cent determine only for the new products, and 11 per cent determine only for the important parts of a product. This supports the findings of the study conducted by Rattray *et al*. (2007) on non-automotive companies which indicate that the TC is being used among New Zealand manufacturing companies to all existing products.

It is widely agreed that the TC is an opened system that depends aggressively on many tools and techniques towards its successful implementation. Kato (1993) consider the information system as an indispensible tool to support TC implementation stages in Japanese companies. To identify the tools and techniques intrinsically linked and departments involved in the TC implementation, Tani *et al*. (1994) and Tani (1995) confirm the importance of Target Costing Management (TCM) team in the organizational structure. According to Tani (1995) and Feil *et al*. (2004), TCM was established in 1963 at Toyota and has been spread to other Japanese automobile companies and their suppliers. It is mainly concerned with the achievement of target costs simultaneously with planning, development and detailed design of new products by using methods such as Value Engineering (VE). Meanwhile, Tani (1995) pointed out that each functional manager who is responsible for a stage in any production process should influence the activities of the functional managers of the subsequent production processes. Through this cooperation between relative members, the main elements of TC including cost reduction, quality and timely introduction can be achieved. In contrary, the power of certain managers coupled with technological innovation and

market competition were found an influential factor on TC implementation (Huh *et al*., 2008).

Another aspect of TC implementation in Japanese automotive industry is its linkage to "Kaizen Costing" which is commonly called "continues improvement". Both TC and Kaizen Costing are integrated part of Japanese management accounting system (MAS) (Feil *at al*., 2004). While TC focuses on product cost reduction to reach the product cost determined by market, Kaizen Costing helps to decrease the actual costs in the production phase. However, the most important feature of TC among Japanese automotive companies is the focus on product development through a cross-functional team's cooperation.

Table 1: Selected Studies on Target Costing Application in Automotive Industries

Country	Article	TC Application	Variables used in TC practice
Japan	Monden and Hamada (1991) Kato (1993) Tani et al. (1994) Tani (1995) Feil et al. (2004) Huh et al. (2008)	TC steps Higher ratio of VC than FC The close linkage between TC and Kaizen costing The active role of MAS	Environmental uncertainty Information system Organizational structure – TCM Customers' needs – market orientation market competition – technological innovation – timely introduction Influential powers: sales managers – product planning manager – product managers – purchasing managers – production engineering managers
Turkey	Kocsoy et al. (2008)	Determination of TC for all product	Customer expectation Long-term product and profit planning Profitability ratio Cost-based profit margin Cost estimation: pre-production, during designation phase, after production Costs components: production costs, marketing and distribution cost, service/support costs, recycling costs. Cross-functional teams Suppliers participation Methods to reduce costs: VE, TQM, Kaizen, VA, on time production, action/operation costing, simultaneous engineering
China	Ju et al. (2009)	Develop a methodology for TC control for the design stage: BP neural network Genetic Algorithm	Cost ratio estimation Cost calculation Attribute identification/refinement Cost items, cost structure, and cost changes Supplier satisfaction
US	Ibusuki and Kaminski (2007)	Incorporate VE and TC during PDP at three subsequent stages: VE concept, VE project, and VE validation	Customer attributes Supplier sharing in providing technical information Product's functions Product's components
Germany	Horvath and Tani (1997)	Cost-reduction goal	Market-oriented basis Lead time reduction High quality

In addition to Japanese context, Ju *et al*. (2009) presented a methodology used for TC control during the design stage of Chinese automobile industry. In their study, the methodology developed consists of two steps; the target cost estimation and target cost realization. For each step, a particular model is further developed. A Back Propagation (BP) neural network is developed to estimate target costs of various design at the early stage, whereas a Genetic Algorithm is developed to balance target costs reduction and supplier satisfaction. They reported that if the total procurement cost decreased by 2%, the average supplier satisfaction would drop by 4.17%, and in this case, the automobile company should be alert to the potential risk caused by the suppliers. Similarly, the preliminary study conducted by Ibusuki and Kaminski (2007) suggests a methodology for the Product Development Process (PDP) in an automotive industry aiming to incorporate TC and VE. They found that VE and TC are complementary processes and identified some positive points that the keys to the success of this integration. This, however, justifies the idea that while VE helps to identify where the achievement of cost reduction could be, the TC shows the target to be achieved so as to ensure the long-term profitability strategic plan of a company.

In the study of Japanese-German comparison of TC, Horvath and Tani (1997) found that the cost reduction is the most important goal followed by market orientated product development and lead time reduction without sacrificing the higher quality of product. Besides to the important of cross-functional teams participation in TC practice in all countries reviewed, management accountants or controllers have an important role than others in German automotive companies. In general, through review of the literature, it can be said that the variables used in establishing the TC implementation are mainly involve the deriving elements of TC principles; price-led, customer-focused, design-centered and cross-functional.

Research Methodology

Case study approach is selected to execute the current study as an exploratory study of TC implementation in Malaysian automotive industry. Selecting case study is most suitable in the TC practice especially in the case that this practice is not widely being implemented (Ellram, 2006). Previous

studies conducted on Malaysian manufacturing companies revealed that the TC technique was ranked the lowest level of importance among other management accounting techniques (Omar *et al*., 2002; Mahfar & Omar, 2004; Smith *et al.*, 2008). This implicates the limited implementation of TC approach within the Malaysian manufacturing companies as an advanced management accounting technique. Hence, the case study approach is preferable to pursue the study objectives and, in particular, to explore why TC technique is not being implemented and how to be successfully implemented.

Research Method Development

The case study often includes several methods and combines many steps conducted to achieve the research goals. This study uses two methodological steps. First, the TC literature pertaining to the implementation stages of TC was reviewed. Through review of the literature, the common TC stages are adapted in the current study to ultimately provide a thorough understanding of the topic of interest. In particular, the six-stage TC implementation model of Ellram (2006) is adapted. Second, the case study was conducted to follow-up and collect information on the TC implementation stages. The data for this case study were gathered through the qualitative research employed. The qualitative approach further includes two methodological methods; the semi-structured interview with a focus group including senior managers and other departments' managers, as well as the site-visit concerning on the Project Room[1] to gather information about the executive of the project based on customers' requirements. The interview with the focus group was audio taped and transcribed, and the site-visit was also reported. All information gathered based on this approach including the interview transcript and site-visit report were returned back to the participants for their review and approval. Both methods interview and site-visit paved a way to find out the various themes emerged from the information on the exploration and explanation of TC involvement and description of its implementation stages. The drafts findings were provided to the sample case company for further comments and suggestions.

1 Project Room is the room where the project is displayed in the boards including project plan, control, design, specifications, and time-line.

The Sample Case

MHC[2] Manufacturing Malaysia Sdn Bhd is the sample case selected to conduct the current study. MHC is a Malaysian largest supplier of auto parts and components and the top center for plastic products in Malaysia. The services and products provided by MHC include product design and development, testing, injection molding, blow molding, assembly and painting. The company also supplies quality-consistent parts inclusive of bumpers, full instrument panels, interior trim assemblies and headlamp housings for both the local and international automotive industry. Over the years, the company's expertise in secondary production processes has been developed comprising vacuum forming, polyurethane foaming, ultrasonic plastic welding, component assembly and painting.

Findings

For perusing the research main objective concerning on the TC implementation stages, the major question of this study is:

> *How the TC is being practiced in Malaysian automotive industry and how the Malaysian-based automotive companies should adapt the TC implementation stages to ensure its products competitiveness globally?*

The answer of this question is explored below through the theoretical model analysis of the six implementation stages of TC adapted from Ellram (2006) and shown in Figure 1. The following description of the TC implementation stages shows how these stages are being practiced in the current Malaysian case company.

Stage 1: Identify Products Characteristics

TC literature affirm that the first stage of TC implementation is identification of products and services characteristics based on the marketplace requirements and customers expectations before production process to be launched (e.g. Kato, 1993; Cooper, 1995; Ansari & Bell, 1997; Cooper &

2 Following request of the company, the case company will be called MHC.

Slagmulder, 1997; Dekker & Smith, 2003; Feil *et al*., 2004; Hamood *et al*., 2011). The findings of the current case study support this affirmation indicating that the main resource for products characteristics identification is the market research and customers specifications. Besides that, products characteristics are identified based on the internal organizational capabilities and technology as indicated:

> *"…if the customers' requirements are higher, this needs higher technology … the higher technology is very important to achieve higher desires that depend on the technology used…"*
>
> (Quality Manager)

This indeed indicates that the product specifications are often determined based on customers' requirements and the new technology often gets involved to achieve those requirements. The process by which the product would be designed based on the customers' requirements includes two options whether to follow-up the customers drawing provided or to draw the project and show the customers to approve:

> *"…it depends … when the customers give us the drawing it will be done…. and the other one we do the drawing and show the customers…"*
>
> (Project Manager)

In general, these findings are closely similar with the findings explored by Ellram (2006) in US-based companies adopting TC, except that the US-based companies depended aggressively on the competitive intelligence of new products development to identify the opportunities or threats to which they respond. For example, Ellram (2006) found that in eight out of 11 US companies the supply management function was specifically included in the earlier stage of the TC process including the responsibility of suppliers to identify product characteristics. In the current study, the interviewees indicated that the suppliers' involvement is limited to some of new products but not to all products.

Stage 2: Identify Products Selling Price

In the TC second stage, the target selling price of products is determined. Basically, the selling price is often determined with the identification of products characteristics as both depend on market research and customers inputs. However, the findings indicate that the selling price determination depends on the competitive market and based on the products and customers requirements for each product where different products have different price:

> *"...selling price starts with the market just to see what kind of product and which price the product will be sold but it depends on customers..."*
>
> (Finance Manager)

The interviewees indicate that the sever competition among companies in such industry makes them much more imperative when they determine product selling price. In essence, due to the fact that the case study has specific large industrial customers up to 30 customers, the price would be negotiated with these customers at the same time that the products characteristics are being determined. This actually is consistent with the findings of Ellram (2006) in US companies and not been raised in the other previous studies. In addition, the proposition of large companies' dependence in setting products prices on major customers is the new relevance in today's higher competitive market. For example, Ellram (2006) found that the Dell Company often dictates pricing to companies like Intel and Sony who are the major customers. This was found in the current case study as the direct pressure of price.

One issue not addressed in the TC literature is that the change in the target price through the production processes as the market changes and new technology emerges. The current case study confirms that the selling price is subject to change as the market condition is changed and new technology is emerged. The interviewees argued that when the customers' requirements need high technology, this will include a particular charge added to the determined price if these changes occur thorough the new product development stage.

Stage 3: Compute Product Allowable Target Cost

The third stage of TC implementation is the calculation of product allowable TC. As expected to be as suggested by Ellram's (2006) theoretical model adapted in this study, the interviewees explained that the profit margin is fixed and determined in commitment with business unit's profit as a part of the long-term strategic planning. However, the results indicate that the stage 1, 2, and 3 are emerged and executed within the meeting held in the Project Room before the product to be designed and the production process to be launched. Hence, hold a meeting with top management to approve new product development including specifications and price is represented by final approval of Chief Operating Officer (COO) signature. This process occurs just as mentioned in the literature review and is consistent with Ellram's (2006) theoretical model. However, the three stages mentioned above often converge to one stage and set together in the "Project Agreement" based in the discussion held in the Project Room. Figure 2 depicts the new project development where the project specifications, design, details and confirmation will be approved, and the area of concerns how to achieve it will be determined accordingly.

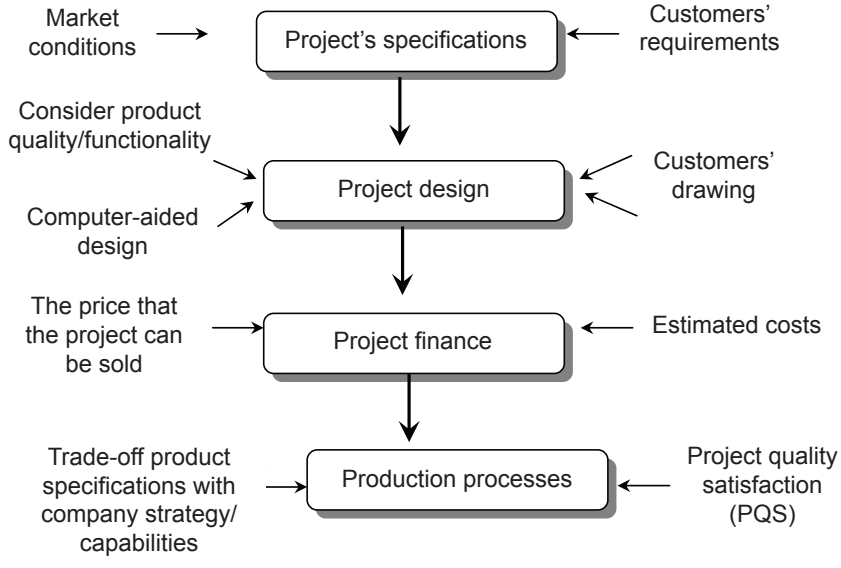

Figure 2: New Project Development

Stage 4: Target Cost Allocation

TC literature reported that the TC process starts with this stage where TC calculated would be allocated to products components and parts. Based on Tanaka (1993), there are two methods to allocate TC to product; the functional area method and the components method. These two methods have been examined in the current case study. Following a cost center used to allocate indirect costs, the case supports the functional area methods where each department is the cost center for TC allocation or any indirect costs allocation. The results indicate that once the product targeted cost has been determined, it would be allocated to various parts and components. This is preferred in TC practices as it will consider the customers' requirements and their preference to products components. Tanaka (1993) mentioned that the functional area method is recommended when the new product development process is complex and extensive. The current case and Ellram's (2006) US cases studied use the "raw materials bills" as a cost base to allocate TC on the costs centers including marketing, manufacturing and general administrative departments.

Stage 5: Target Cost Follow-Up Activities

This stage is the sensitive stage in the TC practice as it represents the crux role of cost management in the company (Ellram, 2006). Many methods come into action in this stage such as VE, Quality Function Deployment (QFD) and Design for Manufacture and Assembly (DFMA) (Cooper & Slamulder, 1997). The crucial role of these methods is to achieve cost reduction objective. In the case study, cost reduction only can be achieved by raw materials reduction based on the negotiation with suppliers. The interviews affirmed that the product quality, functionality and target profit are not being subject for any reduction. This approves the active role of suppliers in achieving TC. In addition, many disciplinary teams are involved in closing the gaps between estimated costs and TC using the cost reduction program. The most common aspect and success factor for TC implementation is the cross-functional team work in the TC achievement. This is mostly considered in the case study but they still face some issues and challenges in this regard. Chief Operating Officer (COO) stated:

> *"…we have a "project team". The project team often includes all relative departments; finance, engineering, operation, production planning; everybody gets to be involved in the project development, so we have a project team that involves joint sharing…"*

The results reveal that all relevant departments are working together to support TC achievement. Moreover, the cross-functional teams' cooperation, with unexpectedly the exception of suppliers' participation, was found to be a major factor in achieving TC objective. Instead, suppliers are supposed to write and give feedback in the design stage as a way to close the gap between allowable TC and estimated costs. On the other hand, staff functional knowledge and cross-functional transfer of employees were revealed by the COO of the case study to be one of the challenges faced when they follow-up TC activities. Each project has one staff representative from each department, and in turn, each staff has many projects which represent the main challenge facing the project achievement productively. COO also described:

> *"…every project we have "project team". Like for example, every project we have processes, then under the production line we have one person, finance one person, production planning one person, …. we have about 25 persons who are all take under one project and one person in project planning, for example, each person have about 40 projects. Then another project we have same. So we appeal to confirm each project achievement to ensure productivity. In automotive we have processes so without them, we cannot run actively…"*

The less involvement of suppliers in TC achievement is the major difference found in the current case study than those of US auto firms studied by Ellram (2006). Ellram (2006) found that the supply management was working closely with suppliers in developing cost breakdowns. The main challenge behind this is the supply chain management and relationship management which focus on how to manage the relationship with customers and suppliers. Product planning department is the other one appeared to be less involved in TC achievement. The interviewees argued that the R&D department plays active role in new product planning and development and replaces

the product planning department. Figure 3 was developed to depict the most methods used in TC achievement for new projects. The raw materials cost reduction without affecting the product quality required by customers is the main way used to reduce product cost. They may sometimes change the materials in order to achieve cost reduction, but without any attempt to change product specifications. This contrasts with Ellram (2006) findings where most of the US cases studied change product specifications as a way to achieve TC. Hence, the interviewees stated that if the raw materials are expensive, the product quality and functionality cannot be reduced and they prefer to negotiate with suppliers in terms of the changes needed in the raw materials to reduce costs.

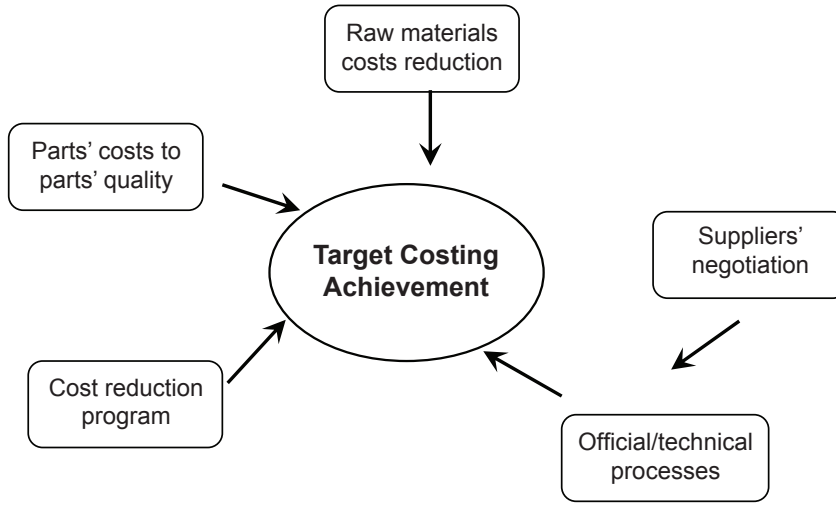

Figure 3: Methods Used to Achieve Target Costing

However, in the case that all these ways cannot be used to achieve TC, they often go to official and other technical processes if they need the reduction in product costs. The other official ways used in cost reduction process are addressed in the Cost Reduction Program that they have, including wastage elimination and control, reduce inventory holding cost, reduction of machine set-up time, etc.

Stage 6: Continuous Improvement

This stage is important once the TC has been achieved. The stage involves continuous improvement efforts for monitoring TC to be maintained. According to Cooper and Slagmulder (1997), the products should never be produced until the TC is achieved. This argument has been noticed in the current case particularly once the project requires them to be in higher performance. However, the continuous improvement is often represented in Japanese companies by adopting Kaizen Costing System (Kota, 1993; Cooper & Slagmulder, 1997). In the current case study, many systems are followed to assess products quality and functionality to meet customers' requirements, and quality department is responsible to check whether the product design initially meets the customers' specifications or not. One of these is "Test Quality System" that considers the quality requirements demanded by customers and also assesses the project level as an overall. Project Quality Satisfaction "PQS" is the other system used to check what has been done in the product level and also assesses the quality requirements that meet customers desires and the product level in general. The other program is "Cost Tracking System" by which the departments involved in TC practice are restricted with the costs decided first in the Project Room, and this has been considered by all the interviewees. This findings is closely consistent with the Ellram's (2006) findings where the US-based auto case studied have an automated cost tracking system used to assess cost versus target at any point of a time. Moreover, Long-Term Agreement "LTA" was found to be one of the plans used to maintain the customers of the case study. In meeting customers' requirements, the relationship management plays a vital role in interpreting the customers' requirements in relation to product quality and product performance which is the fundamental issue in their relationship with the customers. In this regard, the COO revealed that the relationship management is being considered as one of the challenges faced.

Discussion and Conclusion

The main objective of this study is to explore the TC implementation in Malaysian automotive industry. For perusing this objective, the case study is conducted to represent the wide range of Malaysian companies acting in automotive industry especially those in parts and components

manufacturing. The case study conducted is mainly to explore how the TC is being practiced and confirm the TC implementation stages adapted from Ellram's (2006) theoretical model. The study used interview and site-visit research approaches for the aim to gather validated information about the TC practices. The interview was held with relevant managers representing of variety functions and including open-end questions about the general and specific involvement of TC approach. The site-visit approach was been executed to the Project Room in which each project is often displayed in five boards including project plan, control, design, specifications, and time-line.

Conducting the current case study, even limited in one case sample, provides useful information on the actual implementation of TC among Malaysian automotive companies especially those acting in parts and components manufacturing. The results indicate some clear differences in the methods used to achieve TC by Malaysian companies than US and Japanese companies. This can be noted particularly in the suppliers' involvement in the design stage. However, in Japanese companies, TC follow-up activities include engineers' responsibilities in resolving the tensions created by the market on one hand and the suppliers' participation on the other hand (Cooper & Slagmulder, 1997), whereas US companies depend on the team work in conjunction with suppliers in achieving TC (Ellram, 2006). This was not found in the current case and it might belong to the nature of products that solely depend on home-made components rather than suppliers' components. Hence, it is interesting to find that suppliers are not involved in the meeting that often held in Project Room as they support raw materials rather than components, but they are maintained with an important relationship with purchase department.

The results of this study give some supports to confrontational strategy recommended by Cooper (1995) to TC implementation as all interviewees indicated their continuous efforts to reduce costs without sacrificing product quality and functionality. With the growing acceptance of customers' relationship, the case study efforts are to give their customers the unique products, and relatively the customers don't see to the costs but further they focus on product quality. This affects their readiness to completely proceed with the implementation concept of the TC system. Previously, case studies conducted in Japan (e.g. Kato, 1993; Tani *et al*., 1994; Cooper & Slagmulder; 1997, Field *et al*., 2004) and in US (e.g. Ellram, 2006) show similar stages

followed in TC implementation except the active involvement of suppliers that has been raised higher in US than Japan. In the current case, suppliers are not involved in the product design and development stage as they are only engaged in raw materials purchased if needed. In other words, despite the relationship of suppliers found in the current case study, the main role of suppliers in TC practices indicated in previous studies; including their involvement in the stages of product concept development, their close working with designers and their participation in providing alternatives for cost breakdowns; has not been noted. Only the role found is that their participation when needed in the negotiation regarding the raw materials costs as a way to reduce product costs.

In general, the results indicate that there is a misunderstanding about what the TC practically means even it was well theoretically understood. In a certain extent, the six basic stages of TC implementation were consistent with Ellram's (2006) theoretical model, but some differences also have been found in comparison with US and Japanese companies TC. These differences were particularly highlighted in determining the sale price and estimated costs and the involvement of suppliers and some departments in the TC practice. The methods used in achieving TC were further not sufficient than those previously indicated in US and Japanese TC literature.

Contribution and Future Research Direction

As the main objective of this study is to explore the perceived practice of TC among Malaysian automotive industry and its implementation stages, the study provides a knowledge regarding the general and specific involvement of TC and how the TC implementation stages are being practiced among Malaysian automotive companies especially those acting in parts and components manufacturing. Through conducting this study, it is very interesting to provide a clear direction for developing a questionnaire survey for future research based on the results found. Constructive information through the interview and site-visit approaches support the general idea on the topic of interest initialized based on the previous studies. Since no empirical study has ever been conducted in Malaysia so as to compare the expected findings of this study, an exploratory study is most suitable method as a constructive validity method to enhance knowledge on the topic of

interest. Accordingly, the questionnaire survey has been developed based on the constructive inputs obtained from this exploratory study.

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