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Target Cost Management (TCM): a case study of an automotive company

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Abstract

Target Cost Management is well known as the Japanese companies’ competitive tool. Some studies claim that it is very hard to implement it outside Japan. The purpose of this paper is to explore how the TCM is being practiced and what the major factors are that influence TCM in non-Japanese environment. By using a case study approach, this paper compares TCM practices at a Malaysian automotive manufacturer with the previous case studies of Japanese automotive manufacturers. The results found that although the fundamental concept is similar, there are differences in details processes due to the adaptation with the contextual constraints.

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1. Introduction

Under the current global competitive market, companies must offer the right products with the right prices, and must manage their cost and profit to remain profitable. Studies show that many established Japanese companies use Target Cost Management (TCM), one form of Strategic Management Accounting (SMA), as their competitive tool since 1970s (Kato, Boer & Chow, 1995). The TCM implementation helps the Japanese companies to manage their strategies and operate speedily at a profitable margin. This is because TCM ensures products are sufficiently profitable when launched by managing the cost during the design stage while ensuring the products meet the quality and reliability standards, and other customers’ needs (Kato, 1993). Furthermore, the market-driven concept in TCM

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(Ansari, Bell & Okano, 2007) helps companies to set the right price and right cost, reduces the risk of not making sufficient profit, and makes better and faster product development (Tani et al., 1994).

However, despite these noted benefits, many companies still underestimate the power of TCM as a critical competitive tool (Ansari et al., 2007). This might be due to most of the TCM studies that have been conducted in the Japanese environment and focused on narrow aspects of TCM. The lack of explanation of TCM differences has caused a misunderstanding in TCM practices (Tani et al., 1994). In terms of TCM practices in Malaysia, a survey study by Tho et al. (1998) found that 41 per cent of 241 companies claim that they have implemented TCM. On the other hand, a survey study made by Nishimura (2005) in Singapore, Malaysia and Thailand found that the TCM implementation and its definition in Japanese affiliated companies of these three countries are not the same as in Japan. Nevertheless, since both studies only focused on the exploratory descriptive research of TCM, the actual TCM practices in Malaysia remain comparatively unknown because no in-depth empirical case study has been made to investigate it. Since TCM has been noted as a serious competitive tool used by the Japanese companies, more research from different perspectives is necessary to understand the TCM practices, so that it can be applied in the developing countries as a business competitive tool. Accordingly, the current study attempts to address the following questions: (1) How is TCM being practiced in the Malaysian environment? (2) What are the major factors that influence the design of TCM implementation process in Malaysia?

2. Literature review

Generally, TCM was not developed wholly from an established theory but gradually from practical applications (Feil et al., 2004). Accordingly, previous studies identified various names of TCM, such as ‘Cost Planning’, ‘Target Costing’, ‘Cost Projection’, ‘basis net price’, and ‘design to cost’ (Sakurai, 1989; Yazdifar & Askarany, 2012), and definitions of TCM (Ansari et al., 2007). As TCM developed, the perspective of TCM also shifted from a cost reduction tool to a profit management tool (Feil et al., 2004), which added to the variety of TCM definitions. Nevertheless, most of the Japanese scholars agree that TCM is neither a costing system nor a system to set the target cost (Tani, 1995). Accordingly, under a broad definition by Japan Accounting Association in 1996, TCM is ‘a comprehensive profit management activity in which targets are set as to quality, prices, reliability and delivery date at the time of product planning and development, to conform to the needs of customers, and respective target are designed to attain simultaneously in all the processes from the start (upstream) to the end (downstream).’ (Huh et al., 2008, p. 91).

TCM concept is based on the price led approach or backwards approach where the target-selling price is set by the market before the product is being designed (Ansari et al., 2007). Then, the target cost is set by subtracting the target profit from the target-selling price. As the target-selling price of the product with certain specifications is already set by the market and the companies already fix their target profit, the companies are bound by the target cost in producing the new product. Thus, the companies must reconcile their costs to meet the target-selling price by using various management science methods to improve the costs and eliminate the waste along the value chain (Monden & Hamada, 1991). This is because the companies are only able to gain their target profit by achieving the target cost. Eventually, this helps the companies to produce competitive products and reduce the risk of not making sufficient profit (Kato et al., 1995).

3. Research methodology

This research used a case study method as suggested by Yin (2003). Since TCM is quite new outside Japan, the case study method is able to provide a valuable insight into the body of knowledge, which is not possible to provide by the traditional empirical and modelling approach (Ellram, 2006). It allows more relevant data collection because the entire organization can be investigated in depth and with great attention to detail (Yin, 2003).

The case company is Company A (pseudonym) which was established through a joint venture project between Malaysian and Japanese companies. Since its establishment in 1990s, the case company has sold more than 2 million units of passenger cars of various models inclusive of export markets and has become Malaysia’s automotive market leader for several consecutive years. It has a big size organization with total average revenue of the past 3 years more than USD500 million and with more than 5,000 employees. Even though there is no guarantee that the case company
represents the best TCM practices, based on the researcher's judgment and preliminary studies of several companies, it appears that the case company best fit the study as it has designed, documented and reflected the TCM concept. Since this research intended to cover a complete cycle of TCM implementation process (from planning until production stage), it only focused on one car model, Model X1, which is a full model change of the most saleable passenger car.

This research was conducted in four main steps. First, all the related literature was reviewed to understand the topic and research gap. Given that among all countries, the Japanese auto companies are the most mature, and the longest and most consistent users of TCM (Ansari et al., 2007), the conceptual framework of TCM implementation process was developed from the review of TCM case studies conducted at the Japanese automotive companies (Cooper & Slagmulder, 1999; Lee & Monden, 1996; Okano, 2005; Monden & Hamada, 1991; Kato et al., 1995). The conceptual framework was categorized in PDCA (Plan-Do-Check-Action) stages and seven TCM steps and used as a guideline to conduct the case study. Second, multi-sources of data collection through interviews, direct observation and documentations were collected to obtain a wide perspective and in-depth understanding concerning the TCM practices. The direct observation data was collected through company presentations, meetings, field visits and interviews. Documents that were reviewed include those from the general documents such as press releases, and case company official website, and those from the internal documents such as TCM related activities reports and proposals. By using interview protocol adapted from Ellram (2000), the interview data collection was gathered through in-depth interviews with a few key personnel of Company A who were involved with TCM from several departments and a few of Company A’s suppliers. The interviews covered various managerial levels from technical staff to top management who were involved with TCM. In total, there were 24 respondents and 24 interview sessions, which, on average, lasted 1 to 2 hours for each session. The written summaries of transcribed interviews were given to the respondents to validate the content interpretation. Third, after all the qualitative data had been coded, analysed, categorized in PDCA stages and seven TCM steps, the pattern matching was conducted by comparing the empirical based pattern against the conceptual pattern. The pattern was analyzed and compared in terms of what, who, when and how items (Yin, 2003). Fourth, the findings were reviewed by the two practitioners and a few academicians who had no involvement in the research. These whole processes help to increase the realibility and validity of the case study (Yin, 2003).

4. Results

4.1. Plan Stage- Step 1: Setting the target-selling price

The literature indicate that the Japanese companies set a tentative target selling price for their product by considering various internal and external factors such as top management strategies, profitability objectives, product attributes and functionality, and competitors’ reaction. Concurrently based on the overall corporate planning, a thorough market research was conducted to identify the product features and specifications required by the customers (Cooper & Slagmulder, 1999). As suggested by the literature, this step occurred at the case company. Nevertheless, even though the case company conducted various market surveys, a new product market survey was conducted after the product features and specifications were already conceptualized. Company A did not conduct a new product market survey to identify each feature and specification the customers’ required for new product nor to decide the features and specifications solely from the customers’ feedbacks. Instead, the objective of this new product market survey was only to verify or justify the prior assumptions concerning the upper body related new product features and specifications. This difference might be due to the range of changes that could be made by the case company for the new product against its original or base model. Since Company A used its joint venture’s model base platform, the platform parts such as chassis, engine and transmission parts were carried over from its joint venture company’s base model. The case company only customized the upper body of the product to suit Malaysian market’s requirement in terms of styling, features and ride comfort. This limits the level of customer orientation in its new product development. Thus:

Proposition 1: The degree of customer orientation may influence the design of TCM implementation process.

In the Malaysian context, with many joint venture companies, most of the products are designed and developed in the respective company headquarters overseas. The subsidiary companies in Malaysia have limited scope in
determining the design or making major changes from the base design. Accordingly, the degree of customer orientation in terms of identifying and integrating all customer requirements in products’ features and specifications might be different compared with Japanese companies. Thus, this research suggests that the degree of customer orientation may influence the design of TCM implementation process.

4.2. Plan stage-Step 2: Setting the target profit

The second step involves setting the target profit for future product. In setting the target profit, the Japanese companies consider two important elements, of which the target profit must be realistic and must be able to offset the product life cycle cost (Cooper & Slagmulder, 1999). Literature (Lee & Monden, 1996; Cooper & Slagmulder, 1999; Kato et al., 1995) indicate that there are many ways to set the target profit such as based on Return On Sales (ROS) ratio for the industry, the company’s past and future ROS in a weighted ratio, long or mid-term profit planning, and target profit guidelines. Among all methods, literature (Kato et al., 1995) highlights that setting the target profit based on long or mid-term profit planning is the best method to integrate the company’s profit and product planning. This is because the long and mid-term profit planning is considered as an agreed commitment, which all the employees have to commit to achieve (Kato et al., 1995). However, there is a lack of explanation in the literature concerning the prerequisite of target profit selection method. This case study found that in setting the target profit, the case company used the base model profit ratio from a particular month of historical accounting statement with some adjustments. Then, the monthly average base model profit level and the monthly average budget based business plan profit level were used as reference points to justify the target profit of the new products. This simple method was used due to the absence of long or mid-term profit planning, which considers the future competitive market condition, and target profit guidelines information. Thus:

Proposition 2: The degree of information availability may influence the design of TCM implementation process.

In general, the financial accounting information is not suitable for operation related decisions and strategies (Johnson & Kaplan, 1991). However, many Malaysian companies still rely on financial accounting information for management accounting activities (Nishimura, 2005). Since TCM implementation requires a considerable amount of information (Kato et al., 1995), the unavailability of cost management information forced the case company to use financial accounting information with some adjustments. Thus, as proposed in the proposition two, the degree of information availability may influence the design of TCM implementation process.

4.3. Plan stage-Step 3: Setting the target cost

In general, the total target cost can be derived by subtracting the target profit from the target-selling price (Kato et al., 1995). However, previous research (Cooper & Slagmulder, 1999) found that the Japanese companies differentiate the target cost and allowable cost. The allowable cost is set based on the top management’s target and calculated by subtracting the target profit from the target-selling price. On the other hand, the target cost is set somewhere between the allowable cost and the estimated cost. The estimated cost is calculated from the current product cost by considering the cost-decreasing and cost-increasing factors. Target cost is more realistic compared with allowable cost which motivates the employees to achieve it (Monden & Hamada, 1991). Unlike the Japanese companies, the case company did not differentiate the allowable cost and target cost. After deducting the target profit from the target-selling price, no adjustment was made to make the target cost more attainable. Nevertheless, before the development started, the case company created an achievement scenario, a set of concrete cost reduction strategies to cover the difference between the target cost and the estimated cost such as identify potential parts for cost reduction through value engineering. These achievement scenarios were monitored along the development stage and must be materialized before the mass production stage.

In terms of calculating the product estimated cost, Japanese companies make their cost estimation based on project assumptions. Among the assumptions considered are foreign exchange rates and numbers or processes (Kato et al., 1995). In the case company, this activity occurred consistent with prior literature. However, in terms of local purchased parts cost estimation, unlike Japanese automotive companies, which rely heavily on their suppliers (Cooper & Slagmulder, 1999), Company A did not rely solely on its suppliers. Instead, the local purchased parts cost estimation
was done together by TCM members from several departments. Nevertheless, the cost estimation was calculated for the exclusive or changing parts only, i.e. parts that have design changes from its base model. For the functional changing parts, which the TCM members did not have the expertise or only had limited cost information, Company A relied on the suppliers’ estimation. The estimated cost eventually became the target cost of each changing part. As for the non-changing parts, current price were used as its estimated cost.

In terms of setting the target cost, literature highlight that the Japanese companies break down the target cost into each cost item and major functions such as engine, transmission, and audio system (Cooper & Slagmulder, 1999; Monden & Hamada, 1991). Then, cost engineers for each design group decompose the target cost to the group component and parts level to set each purchased part target cost (Cooper & Slagmulder, 1999; Kato et al., 1995). At the case company, the process of setting the target cost was more complex. This was because usually from the initial stage, the total estimated cost was unable to meet the total target cost. Accordingly, in this stage, the cost reduction target was planned to meet the target cost. The total cost reduction target amount involved the differences between the total estimated cost and the total target cost. For this activity, the cost items were categorized into controllable and uncontrollable costs. A controllable cost item was defined as cost item that the cost reduction activities were able to be conducted. An uncontrollable cost item was defined as cost item that the cost reduction activities were unable to be conducted. Then, for each controllable cost item, it was further divided into two categories, new exclusive and carry over. New exclusive was the cost item that was exclusively related to the new product development. Carry over was vice versa. Based on this total cost reduction target amount, Cost Planning Department imposed the cost reduction target ratio equally to each new exclusive controllable cost item only. Then, the target cost of each cost item was set by summing up the estimated cost with its cost reduction amount. As for the local purchased parts, the target cost was broken down further until each design group only and no breakdown was made until parts level. From here, each design group was responsible to meet their design group target cost.

4.4. Plan stage- Step 4: Making the profitability feasibility study

This fourth step represents the assessment of project profitability. According to Monden and Hamada (1991), the special department, i.e. Cost Management Department compiles all the cost items and calculates the profitability feasibility study to assess the target profit achievability. Since the objective is to ensure the product is able to earn an adequate profit margin over its life cycle, a reserve budget is also allocated as future forecasted cost to cater design related problems that might occur during the trial production process. After the profitability assessment, the project will be adopted if it appears profitable and it will be eliminated or modified if the project appears unprofitable (Cooper & Slagmulder, 1999). In the case company, the process occurred as highlighted in the literature. However, previous literature did not explain in depth the process of profitability feasibility study in terms of how it was made. In the case company, Cost Planning Department was responsible to compile all the cost items and calculated the profitability feasibility study. Profitability feasibility format sheet was used to calculate the profitability feasibility study. Generally, this format sheet was similar to the accounting profit and loss format in which it sets out the target-selling price, all the estimated costs and simulated profit in one sheet. Inside the profitability feasibility format sheet, all the cost items which were gathered from related departments were tabulated and categorized into seven categories – local purchased parts cost, CKD purchased parts cost, in-house cost, sales and distribution cost, fixed cost such as overhead and investment, and other expenses cost such as transportation, as well as tax and duty cost. The reserve budget was also included in the other expenses category as a risk management. The purpose of risk management was to cater for any additional unexpected material market cost up impact or government’s requirements, and unexpected engineering changes during the trial production process. Then, based on the project assumptions, the Cost Planning Department simulated the total per unit cost and profit for each variant and in weighted average. Then, the profitability result was compared against the target cost and target profit. The profitability result was presented to the top management as one of the critical criteria for the project assessment before proceeding to the development stage.

4.5. Do stage -Step 5: Achieving the target cost

In this stage, all the cost reduction plans are implemented to achieve the target cost. The literature indicates that
usually the total estimated cost does not achieve the target cost. Accordingly, further cost reduction is required to reduce the cost to meet the target cost level (Kato et al., 1995). Generally, VE is the main activity conducted by the Japanese companies to close the gap between the target cost and the estimated cost (Lee & Monden, 1996). Based on the results, the trial drawings are adjusted accordingly. This cost reduction process is a continuous activity until it meets the target cost (Monden & Hamada, 1991). Japanese suppliers also proactively participate to achieve the target cost by suggesting alternative design prospects (Cooper & Slagmulder, 1999). In general, this case study supports the previous literature findings in terms of VE as a tool to achieve the target cost and teamwork in achieving the target cost. Among the VE activities conducted were deleting or changing non-value added child parts or process, and changing the type, size or thickness of the material. Consistent with literature (Sakurai, 1989), the VE items would not sacrifice the basic safety requirement of the vehicle. Since the local purchased parts amounting to almost 50 per cent of the total vehicle cost, it gave a significant impact to cost reduction result. Thus, the case company focused more on the local purchased parts instead of other cost items for cost reduction activities. Nevertheless, along the development period, the case company is more focused on negotiation activities with suppliers rather than continuously conducting VE to meet the purchased parts target cost. Among the reasons were limited benchmark information for VE activities and uncertainty of VE result, in which the VE failure would make the cost higher.

Compared with the Japanese companies close relationship with their suppliers, this research found that the case company relationship with its suppliers was rather low. Furthermore, unlike the Japanese suppliers, the suppliers of the case company hardly suggested any cost reduction ideas. Accordingly, attaining this target cost upon initial quotation submission was the main criteria for the selection of suppliers. Based on technical changes in each development stage, the selected suppliers submitted their updated quotations to the Purchasing Department. If the supplier’s quoted price was higher than the estimated technical cost changes, the case company usually used negotiation to persuade suppliers to meet the target cost. However, some suppliers were not willing to meet the target cost based on negotiation only. Accordingly, the challenge meetings were conducted between the suppliers and Company A’s TCM members. Before each challenge meeting, an internal meeting was conducted among the TCM task force members to brainstorm and obtain consensus concerning the cost reduction ideas. Then, by using these cost reduction ideas, further negotiation was conducted with the suppliers to meet the target cost until both parties were satisfied with the cost level. Thus:

\textit{Proposition 3: The degree of supplier relationship may influence the design of TCM implementation process}

According to Ellram (2000), TCM companies will reach a full integration stage when they have a close supplier relationship. The close relationship between the Japanese companies and their suppliers (Kato et al., 1995) helps the Japanese companies to transmit down the competitive pressure to their suppliers and generate cost reduction throughout the supply chain (Cooper & Slagmulder, 1999). However, unlike Japan, the supplier relationship in Malaysia is rather low (Nor & Sumarmo, 2005). Thus, as proposed in the proposition three, a loose supplier relationship environment may influence the design of TCM implementation process.

4.6. Check stage-Step 6: Monitoring and reporting the cost achievement status

The literature highlights that the Japanese companies continuously monitoring and reporting the target cost achievement status to ensure that the corrective actions could be taken before the actual cost exceeds the target cost. Basically, the meetings are conducted by periodic basis starting from the target cost approval timing until the mass production. If the design changes cause an increase in cost, the company has to find alternative ways by offsetting it with savings from somewhere else (Cooper & Slagmulder, 1999; Kato et al., 1995). The present study supports this conclusion. Nevertheless, this case study found that instead of monitoring and reporting the achievement status of all the cost items at the same frequency, the case company reported and monitored the local purchased parts cost achievement status more frequently – on a monthly basis – than other cost items. However, due to the absence of the target cost for each individual part, Company A monitored the cost achievement status of the local purchased parts by design group basis only. In this stage too, the profitability feasibility study was finalized to calculate the total estimated cost and total simulated profit. The result was presented to top management as one of the critical criteria that must be passed in order to proceed to mass production stage.
4.7. Action stage-Step 7: Cost improvement

After the mass production, Japanese companies evaluate the overall TCM results against the original targets. The objective is to evaluate the degree of target cost achievement status. If the target cost is not achieved, the detail analysis and study will be conducted to find the causes, where the gap occurs and the department’s responsibility. Accordingly, the Cost Maintenance activities are conducted to prevent the cost from going up. The Kaizen Costing activities are also conducted to achieve the cost reduction targets through continuous improvement activities of the current models to meet the target profit (Monden & Hamada, 1991; Kato et al., 1999). In the organization studied, the findings did not support previous literature in attaining the target cost in the mass production stage using the Cost Maintenance or Kaizen Costing activities. There was no continuation to achieve the target cost in the mass production stage. Even though the cost improvement activities and lean manufacturing activities were conducted in the mass production stage, there was no clear evidence that the target cost of the TCM was linked with these systems. Additionally, due to the absence of Kaizen Costing, the in-house target cost, which was set during the design stage, was hardly monitored after the mass production stage. Furthermore, as the case company used the actual costing method, no comparison was made concerning the standard cost and target cost variance at the mass production stage. Accordingly, there was a lack of an accurate cost information cycle between the design and the production stages. Since the case company did not continue the cost reduction activities in the mass production stage by using Kaizen Costing or Cost Maintenance activities, the case company introduced Model X2, a new development project for the model X1, as the cost reduction project to make the product cost more competitive. Thus:

Proposition 4: The degree of integration with other systems may influence the design of TCM implementation process.

The ideal situation for TCM is full integration with the other activities (Ellram, 2000). The successful implementation of TCM requires the implementation of lean manufacturing system and Advance Manufacturing Technologies (AMT) (Kato et al., 1995; Sakurai, 1989). Nevertheless, not all organizations have the resources and support to create the ideal situation (Ellram, 2000). Thus, as proposed in the fourth proposition, the degree of integration with other systems may influence the design of TCM implementation process.

5. Conclusion

This single case study specifically explored how the TCM is being practised in Malaysia compared with Japanese theoretical model, and the major factors influencing the design of TCM implementation process. This case study research was based on Yin’s (2003) case study method in which the data were collected through multi-sources of data collection. This case study found that the fundamental concept of TCM practices at the case company was similar to the Japanese companies’ practices. Nevertheless, there were some differences in details processes. The differences were due to the case company coordinated and reconfigured its resources to adapt with the contextual constraints as highlighted in the four propositions developed.

This research gives a useful insight to the potential implementers in non-Japanese environment context to understand the major factors that may influence the design of TCM implementation process for more successful implementation specifically in the Malaysian context. Nevertheless, since this case study only focused on a single case study in a single industry, the findings can only be replicated to the organizations that have a similar situation in terms of the nature of the problem and problem definition (Cavana et al., 2001). Future research should conduct multiple case studies in various industries to understand the TCM practices in the Malaysian context. Given the findings of this research, future research directions could cover on the followings. First, the propositions on the factors influencing TCM should be statistically tested using various industries and large respondents. Second, since TCM is a dynamic process, how TCM implementation process evolves over time in the same organization could be an interesting topic to explore.

References