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TARGET COSTING PRACTICES: A REVIEW OF LITERATURE

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Abstract

Advanced management accounting techniques have been seen by IFAC's (1998) evolution framework as a shift towards value creation and providing timely and relevant information needed for decision making. The adoption of advanced management accounting techniques, such as Target Costing (TC), requires organizations to be able to deal with challenges and problems that may occur during the adoption process. In today's competitive environment, many companies are continuously seeking to produce high quality and functional products based on customers' expectations gleaned from market research. In meeting these objectives, TC has been widely adopted under the original leadership of Japanese TC since the 1960s. Hence, this paper aims to review the literature investigating the TC practices in non-Japanese contexts. The study focuses on the TC concept and its application in ten countries. The information is based on 35 articles which were written in English, translated, and published in various refereed international journals. Furthermore, this paper discusses the factors, issues and challenges that influence TC application in the countries, as well as the applicability level of this technique in the Malaysian context. In general, the evidence reviewed reveals a significant variation in TC practices, steps followed and participants involved in TC application in the 10 countries surveyed. In addition, environmental factors and issues relating to product features improvement are crucial for a successful implementation of TC. The paper concludes by stating that efficient supply chain management is an important element in successful TC implementation. Essentially, manufacturing firms should establish closer ties with suppliers who have a distinctive role to enhance product value in TC practices.

Keywords: *Target costing; Influential factors; Issues and challenges*

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Introduction

In today's highly competitive manufacturing environment, many are against the use of traditional cost and management accounting techniques. Many manufacturers worldwide are relying heavily on advanced cost and management accounting techniques. Advanced techniques have been seen by the evolution framework of the International Federation of Accountant (IFAC, 1998) as a shift towards value creation and providing timely and relevant information needed for decision making, especially in response to today's highly competitive environment. These techniques are sought to overcome the deficiencies of the traditional methods of coping with the fast changing manufacturing environment. Among the advanced techniques, Target Costing (TC) has widely been adopted and promoted as a response to structural changes in the manufacturing environment thus achieving cost reduction and maintaining profitability. Traditionally, cost reduction and cost control activities focused mainly on the production stage rather than the design and development stage of products. Hence, TC is an effective cost management technique to manage and control product costs at the design and development stage of product life cycle. According to Kato (1993), TC is an important technique for managing product costs during the design and development stage. Additionally, Cooper & Slagmulder (1999) consider TC as a primary technique employed to manage companies' future profits.

However, increasing pressure of supply chains coupled with the new pressure of capital market is forcing companies to adopt Japanese cost management systems (Juhmani, 2010). As TC technique was largely developed by Japanese companies (Kato, 1993; Tani *et al*., 1994), many Western companies have attempted to adopt TC to discipline their product development (Cooper & Slagmulder, 1997) and there are numerous studies which support its successful implementation. In contrast, little research has examined TC application, influential factors on TC adoption, and perceived benefits from TC application in Malaysian contexts. The review of literature attempts to accomplish the following purposes; to shed light on TC application including steps followed in its adoption; to examine the factors influencing its adoption; to discuss the benefits perceived from TC application; to identify the future expectations of TC adoption; and to investigate the extent to which Malaysian companies adopt TC technique as well as the barriers to its successful adoption. It is hoped that the information obtained from the literature review could be used by Malaysian organisations to successfully adopt TC. The structure of the paper is as follows: the first part provides an overview of TC practices. The second part discusses factors influencing TC practices, while the third and fourth parts examine the basic methods and steps of TC. The fifth part discusses certain issues and challenges of TC practices. The paper concludes with a brief discussion of the extent to which Malaysian companies implement the TC approach.

Historical Overview of Target Costing Practices

Target Costing (TC) technique has been adopted worldwide. While Kato (1993) found that about 80 per cent of Japanese assembly companies had applied TC, Tani *et al.* (1994) revealed that 60.6 per cent of Japanese manufacturing companies listed in the Tokyo Stock Exchange had adopted this technique. Additionally, Chenhall & Langfield-Smith (1998) found that 38 per cent of Australian manufacturing companies employed TC practice, and Joshi (2001) found that 35 per cent of Indian manufacturing companies also had adopted this practice. Moreover, Dekker & Smidt (2003) found that 59.4 per cent of Dutch manufacturers had adopted TC, and Rattray et al (2007) found that 38.71 per cent of New Zealand manufacturing companies used TC.. Kocsoy *et al.* (2008) found that the average application ratio of TC among 90 Turkish companies selected in the survey was 30 per cent, and this figure indicates that the TC is newer in Turkish companies than Japanese, US and European companies. A recent study conducted by Juhmani (2010), shows that the adoption rate of 61.5 per cent of TC in Bahraini manufacturing firms is evident in both the process-oriented manufacturing method and assembly-oriented manufacturing method. His results also reveal that the most important benefit of TC is to assist companies in making the trade-offs between cost, quality and functionality. This is followed by cost reduction, controlling quality, product development, customer satisfaction, and continuous design improvements and introducing products on a timely basis. These benefits are similar to those found in studies done by Tani *et al*. (1994) and Dekker & Smith (2003). However, a study conducted by the Consortium for Advanced Manufacturing-International (CAM-I) in 1999 to determine best practices of TC among US companies, demonstrates different tenets of TC than those commonly used by Japanese companies (Swenson *et al.,* 2005). The study found that many US companies had interpreted certain aspects of TC differently, in particular, Design to Cost and Design to Manufacturability in setting the steps of TC adoption. Rattray's *et al.* (2007) findings of the survey conducted on 80 New Zealand manufacturers with a response rate of 31 (39 per cent) found that the 38.71 per cent of TC adoption rate indicates that this technique was being used by a moderate number of New Zealand manufacturing companies. However, Indian and Australian studies noted that adoption of TC had benefits, but more benefits were reported by the respondents of Indian companies than Australian companies (ranked 4 out of 21, 30 out of 30 respectively). This indicates that Indian companies perceive the importance of cost management during the product planning and development cycle rather than after production process. Meanwhile, the Indian respondents gave, a higher emphasis on the future (ranked 1), whereas the Australian respondents assigned a lower emphasis on TC among other techniques (ranked 40). Although both countries have retained and given more importance to the traditional techniques in the future, there is

still a distinct inclination to adoption of TC practices within Indian companies. In Chinese contexts, Duh *et al.* (2009) used a survey to explore Chinese firms' use of management accounting and control in terms of facilitators, impediments and performance effects. They found that most of Chinese firms adopted TC generally to benefit organizational performance. A point worth noting is that most respondents confirmed the usefulness of TC in performance evaluation and the preparation of budgets.

Table 1 shows the TC application in 10 countries based on the literature reviewed. It is noteworthy that all the studies conducted outside Japan indicate that the motivation for adopting TC technique is the benefits of this practice. They also revealed that the focus was on cost control of existing products. The Japanese focused on cost reduction in the early stages of the new products in the product life cycles. In particular, Huh *et al.* (2008) found TC as a most effective tool for cost reduction (scored 3.81 out of 5), followed by efficiency (scored 3.68 out of 5) and marketability (scored 3.22 out of 5). Moreover, Juhmani (2010) found that the majority of Bahraini manufacturing firms adopting TC used this technique for redesigning existing products. In Japanese contexts, TC processes seem to start with identification of product characteristics in response to marketplace and customers' requirements. A distinct difference of TC practised between Japan and other countries can be seen in the active role of the departments involved in TC setting.

Setting up TC requires a cooperative effort of organizational members from various functional areas (Swenson *et al.,* 2005). Based on CAM-I definition of TC, the principle of cross-functional team is essential in TC setting up and this involves participants from within and outside an organization. According to Swenson *et al.* (2005), internal participants include marketing, purchasing, production, servicing and accounting, whereas external participants include suppliers, dealers, distributers, and recyclers. However, to identify the departments involved in the application of TC, literature on this subject confirms the importance of the Target Costing Management (TCM) team in an organization. According to Tani *et al*. (1994), TCM is concerned with the achievement of target costs simultaneously with planning, development and detailed design of new products. In Bahraini contexts, Juhmani (2010) found a high participation level from the manufacturing department followed by sales, accounting/finance, product design, product planning, purchasing, and product development and suppliers departments. The results indicate the moderate involvement of most departments within Bahraini companies, and that, the manufacturing department was the most actively involved, while overseas studies (e. g. Tani *et al*., 1994; Dekker & Smith, 2003 revealed that product design and development departments were the most actively involved.

Table (1): Target Costing Application

Country	Articles	Target Costing Application
Japan	Kato (1993) Tani et al. (1994) Tani (1995) Feil et al. (2004) Huh et al. (2008)	• Cost reduction and cost control focus in the early stages of product life-cycles • Engineering function involvement • Strong power of managers of product planning, development, detailed design, production engineering, purchasing and sales. • No involvement of financial or accounting function. • Overlapped product development • Simultaneous engineering involvement • Target Costing Management (TCM)
United States	Hibbets et al. (2003) Ellram (2006)	• A very tight linkage between supply management and the design function in the TC practice • The involvement of R&D, supply management and suppliers are in the early stages of TC process • The impact of competitive environment and strategy
New Zealand	Rattray et al. (2007)	• More focus on cost reduction and satisfying of customer needs. • High involvement of manufacturing, product development and design in TC process • Suppliers are not involved in TC process
India	Joshi (2001)	• Low adoption rate indicates the uncertainty avoidance factor, conservative attitudes of managers, quite expensive to adopt, and lack of training and expertise. • TC adoption perceived better benefits and higher emphasis.
Australia	Chenhall & Langfield-Smith (1998)	• Low adoption, benefits and emphasis • The impact of firm size and Australian close culture and business
Netherland	Dekker & Smidt (2003)	• Cost reduction, timely product introduction and customer satisfaction goals • The involvement of product development and design departments • No involvement of accounting department.
Turkey	Kocsoy et al. (2008)	• Pre-design customer analysis for setting TC • Long-Term Product and Profit Planning • Use cross-functional team to determine cost and cost reduction process. • High use of simultaneous engineering. • Less use of competition-oriented pricing method in setting the price. • The common method in determining the profit target is Return on Sales (ROS). • Cost estimations are determined during the product designation phase.
Brazil	Filomena et al. (2009)	• TC operationalization model • Break down cost targets into: product parts, product features, and product common elements
Sweden	Ax et al. (2008)	• A positive relationship between TC adoption and intensity of competition • A negative relationship between TC adoption and PEU • The positive effect of intense competition on TC adoption is moderated by PEU in a negative direction.
Bahrain	Juhmani (2010)	• No statistically significant relationship between TC adoption and firm size. • High achievement of TC is associated with higher performance. • High percentage use of low cost strategy in adopting TC. • High adoption rate of TC in redesigning existing products. • High involvement o manufacturing department in TC.

In a study of the relationship between organizational capabilities and TC performance of Japanese companies, Huh *et al.* (2008) found that 74 per cent of the companies in the survey had an official department to support TC functions. Interestingly, they found that the most important success factor for Japanese companies was top management support followed by tools and information system, cost estimation, and information sharing. Furthermore, the survey of Dekker & Smidt (2003) showed a significant difference between the involvement of the several functional departments in the application of the TC practice in Dutch firms. The product development and design department was shown to be significantly more involved than other departments, while the accounting department seemed to be least involved. This is similar to the Japanese situation where the TC application mainly aims to cost reduction, and therefore, the engineering function is involved but not the financial or accounting function. Similarly, Tani (1995) found that the managers of product planning, development, detailed design, production engineering, purchasing and sales had relatively strong power in the TCM, whereas the accounting managers were not significantly involved in product development. Hence, his results empirically support Dekker & Smidt's (2003) claim that the Japanese companies utilize overlapped product development or simultaneous engineering. This is consistent with the finding of Kocsoy *et al.* (2008). They found a high usage level of simultaneous engineering among Turkish companies adopting TC to decrease product costs to the desired level.

The study conducted by Ellram (2006) from a case study of 11 organizations actively engaged in the TC process in the United States (US) compared the TC processes with the popular TC model in Japanese companies. These processes include the identification of desired product characteristics, target selling price, product target cost, target cost allocated to bill of materials, cost management activities, and continuous improvement. While these processes are not extremely different from those used in Japanese companies, there are different parties involved in different processes. For example, R&D, supply management, and suppliers are more frequently involved in the early stages of TC process in the US than in Japan. This implies the importance of supply management in the US as a part of continuous improvement efforts. As a consequence, Kocsoy *et al.* (2008) found that the low participation rate (2.91 – 29.6 per cent) of suppliers was a constraint for the success of TC activities within Turkish companies. Juhmani's (2010) results similarly revealed that the extent of suppliers' involvement in Bahrain was low. Moreover, the Ellram's (2006) finding contrasts with Rattray *et al.* (2007) where he found that suppliers were not considerably involved in TC practices among US companies. This, however, may stem from the lack of trust or lack of awareness of the benefits of the partnership-oriented relationship with suppliers.

Factors Influencing Target Costing Application

Numerous studies, as reviewed by Duh *et al.* (2009), have shown that management accounting practices are contingent on different environmental and organizational factors such as competition, strategy and industry. For successful adoption of TC, companies should give much attention to the influential factors related to the product development strategy and customers' expectations through the market research process. This is to find the product's features in terms of price, quality, functionality and timeliness which constitute the fundamental elements of the TC process. According to Swenson *et al.* (2005), organizations should evaluate three areas to determine their readiness to implement TC. These include: (1) organization's culture and infrastructure, (2) TC's principles, and (3) procedures and tools needed to support TC implementation. Recently, there have been many attempts in the TC literature to present the factors that may influence TC application. Generally, these factors are environmental and organizational factors such as an intensity of competition, perceived environmental uncertainty (PEU), organization size, national culture, and competitive environment and strategy. These factors are discussed below.

Environmental Factors

1. Intensity of competition and PEU:

With intense competition, companies are adopting newly-developed cost and management accounting systems to customize their products and services with focus on costs, quality, and functionality. Cooper (1995), who developed the *survival triple,* argues that as the intense competition increases, the tradeoff between all these dimensions and the TC adoption must be taken into consideration. Indeed, there is strong evidence to support the positive relationship between TC adoption and the intensity of competition (Tani, 1995; Dekker & Smidt, 2003; Hibbets *et al.,* 2003; Ax *et al.*, 2008). More evidence supporting this relationship is realized in the study of Kocsoy *et al.* (2008), where they found that most Turkish companies applying TC were operating in an environment of very high ambiguity and competition. Similarity, Tani (1995) argues that Japanese companies have adopted TCM as a response to increasing environmental uncertainty. In addition, Dekker & Smidt (2003), in a study of Dutch firms, found that the TC application was positively correlated with environmental uncertainty. In contrast, the study conducted by Ax *et al.* (2008) of Swedish engineering industries revealed a negative effect of environmental uncertainty on TC application. Moreover, in the survey conducted by Kocsoy *et al.* (2008) on Turkish companies, respondents were asked to examine the degree of importance to which the information about price, sales, volume, customer demands and expectations

was the basic component of market-oriented TC in the market analysis. They found that understanding and revealing the evident and secret needs of the customers was the most important factor of the TC process and it needed to be continuously analyzed during the process.

2. Cultural factors:

The influencing factors of culture including managers' attitudes, beliefs, values, and society norms on TC application have been examined in related literature. Many studies, as reported by Joshi (2001), found an impact of these factors on certain management accounting practices. However, Joshi (2001) compared the effects of other culture dimensions (e.g. power distance, uncertainty avoidance, individualism, and masculinity) between Indian and Australian contexts. He found that a large power distance associated with individualism factors had a great impact on management practices in both countries. Interestingly, Joshi (2001) found that the conservative attitudes of Indian management and lack of training and expertise were seen to be the main factors explaining the low adoption rate of TC.

3. Competitive environment and strategy:

The company's choice of management accounting techniques undoubtedly depends on both the degree of competitive pressure in the industry in which the company operates and the strategy that the company pursues to achieve sustainable competitive advantages. However, Hibbets *et al.* (2003) examined the relationship of TC adoption with the competitive environment and strategy of nine US and three German TC firms. The results showed the product differentiators were more likely to adopt TC than firms with other choices of competitive strategies such as cost leadership and confrontational strategies. In contrast, the study of Rattray *et al.* (2007) indicates that companies' performance applying TC appears to be worthwhile, but discovered that there was no statistically significant relationship between TC and company's strategy. They claim that TC companies pursuing a confrontational strategy may perform better than those pursuing other strategies.

Organizational Factors

1. Organization size:

The studies of Chenhall & Langfield-Smith (1998) and Joshi (2001) among others argue that the organization size is an important factor in influencing the adoption of modern management accounting techniques. They report that the application level of these techniques such as more complex methods as TC is shown to be higher in large size companies compared with medium and small

companies. This clearly indicates that large size companies have adequate resources to support the implementation of such techniques and these new techniques would be suitable for their complex operations. Moreover, large-size companies have a relatively greater access to experiments in management innovations (Joshi, 2001). He found that a company's size was a major influence in adopting TC within Indian companies. In contrast, Rattray *et al.* (2007), in case of New Zealand companies, found find no statistically significant relationship between company's size and the application of TC. Juhmani (2010) similarly found that there was no statistically significant relationship between the adoption of TC and Bahraini manufacturing firms. In addition, Smith *et al.* (2008) found that the TC technique was not significantly correlated with technological innovations and both measures of organization size (number of employees and sales turnover).

2. Management support:

TC, as one of the many management accounting initiatives, must be driven by top management (Swenson *et al.,* 2005). Therefore, Huh *et al.* (2008) found that the most important factor for the successful implementation of TC among Japanese companies was top management support, linkage to profit planning, and a cross-functional team. According to Tanaka *et al*., (1993), management considerations should be taken into account before setting up the TC. This includes the definition of TC scope (e.g. planning and design costs; manufacturing costs; selling expenses; customer's costs), the choice of full/partial of variable costs that must be made, the decision made on how the target cost is to be set, the expectation of the production volume, period, speed and cost reduction rate, and the basis of the TC. Hence, top management decision to support all these considerations consistent with strategic targets is a top-down commitment towards TC setting.

3. Organizational capabilities:

Previous studies describe organizational capabilities as a combination of organizational knowledge and resources established within the organization for achieving organizational objectives. According to Huh *et al.* (2008), organizational capabilities include the dynamic capabilities by which the managers integrate, build, and reconfigure various competencies as competitive advantage. They classified the organizational capabilities into three dynamic capabilities; local capabilities, architectural capabilities, and process capabilities, based on the model proposed by Kusunoki *et al*. (1995). However, in their study examining the relationship between these capabilities as success factors and the performance of TC, they found that the architectural capabilities, such as management support, linkage of profit planning, and cross-functional

team, were the most important factors for successful implementation of TC. They had a positive relationship with the three major elements: efficiency, marketability, and cost reduction. They also found that the next important factor for the success of TC was the process capabilities, whereas the impact of local capabilities was found to be relatively weak on TC performance. These results are supported by results found by Kato (1993), Swenson *et al.* (2005), and Kocsoy *et al.* (2008).

Basic Methods in Target Costing

Tanaka *et al*. (1993) identified three basic methods for setting up TC, which are: subtraction method, addition method, and integrated method. Based on the subtraction method, the critical factor in establishing TC is the price charged by competing companies. Hence, the TC can be determined by using the following formula:

Target Costing = Selling Price – Required Profit

In the addition method, the focus will be on the internal factors and capabilities of the company including the level of technology, the production plant and machinery, the delivery time, the production volume, and the company's strategy as a whole. Tanaka *et al*. (1993) also identified three ways of using additional method to establish a TC based on similar products, design properties, and new ideas. On the other hand, the integrated method combines the above two methods (the subtraction method which is based on the market approach, and the addition method which is based on the existing technology and capabilities). It therefore involves a reconciliation of the two methods and stimulates discussion and ideas of the team involved in the negotiation process based on the results of the subtraction and addition methods.

However, the subtraction method is the common method in use. It works backwards from the market price to identify the TC and simultaneously it may be impossible to be achieved by using the company's existing technology. Kocsoy *et al.* (2008) examined three methods of new product price determination of Turkish companies which include: cost plus method, market-oriented pricing - "the price which the customers are willing to pay and/or the price that will provide achieving the market share", and competition-oriented pricing method - "the price set to be equal to or less than that of the competitors". Both, the second and the third methods, are the components of market-driven target price step stated by Crow (1999), as cited by Ibusuki & Kaminski (2007). Kocsoy *et al.* (2008) found

that the least used method (2.74 – 3.7 per cent) was the competition-oriented pricing method whereas the majority of the companies used the cost plus method and market-oriented pricing method, (3.46 – 44.4 per cent) and (3.52 – 51.8 per cent) respectively. This may imply that the Turkish companies may have misunderstood the market factors that must be considered in determining the product's sale price.

The Steps of Target Costing Setting

Based on Crow (1999), as cited by Ibusuki & Kaminski (2007), the steps of adopting TC involves: re-orienting thinking toward market-driven pricing and prioritizing customer attitudes, establishing a market-driven target-price based on market factors, determining the TC when the target-price is established, balancing TC with product requirements and specifications, establishing a TC process and a team-based organization, generating ideas and analyzing multiple alternatives for cost reduction process, establishing and using tools and methodologies to reduce costs, and measuring results by tracking the current estimated costs against the TC. Empirically, in the companies studied by Cooper & Slagmulder (1999) including Isuzu Motors Ltd., Komatsu Limited, Nissan Motor Corporation, Olympus optical Company Ltd., Toyota Motor Corporation, Sony Corporation, and Topcon Corporation, TC was found to be a highly disciplined process. The process used at these firms was divided into three sections: (see Figure 1)

1. *Market-Driven Costing:* at this section, market analysis plays a vital role in determining the allowable costs used to transmit the competitive cost pressures that the company faces to the product designers.
2. *Product-Level Target Costing:* this section focuses the designers' creativity on achieving products target cost that would be decomposed to the products components, and transmitted to the suppliers to find a way to design and produce the company's externally sourced components.
3. *Components-Level Target Costing:* this section helps discipline and focus suppliers' creativity on the beneficial ways for the buyer.

However, Kocsoy *et al.* (2008) found that most of Turkish companies applying TC practice did long-term product and profit planning in consequence with market research, and this is a major factor for the successful application of TC among these companies. In addition, Ellram (2006) provides an in-depth description of the steps of TC practice 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

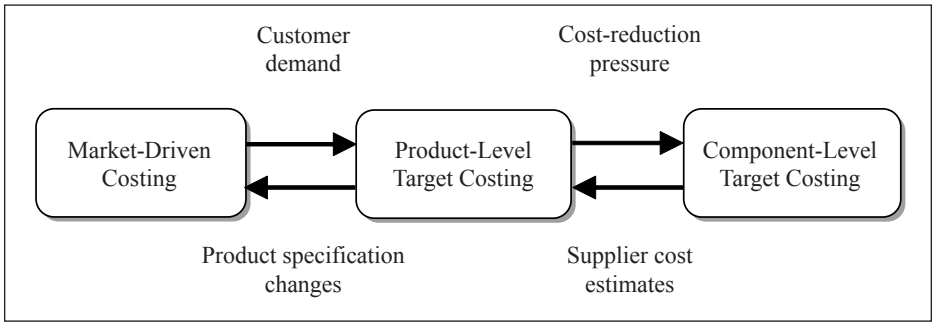

Figure (1): Three Main Elements of the Target Costing Process
Source: Cooper & Slagmulder (1999)

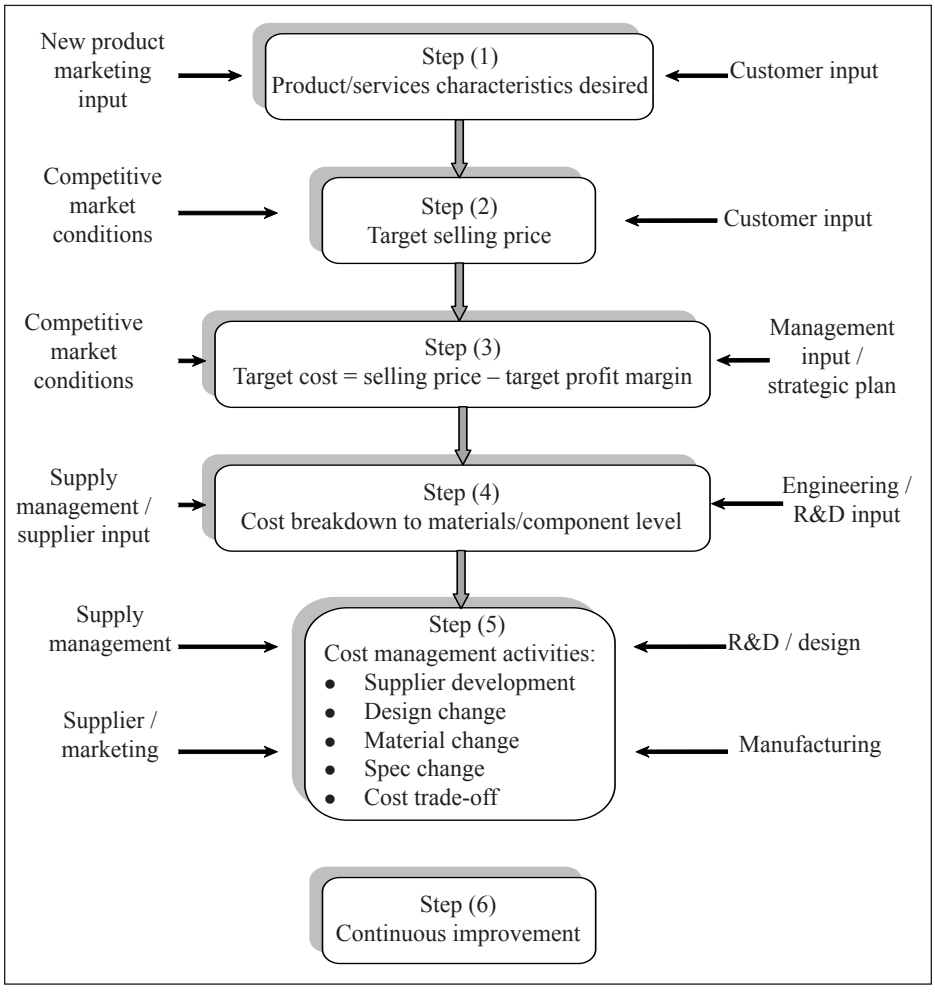

Figure (2): Target Costing Process
Source: Ellram (2006)

the TC practice, especially at steps (1), (4), and (5), which contrast with Japanese focus as they pay much attention on the management accounting system in setting TC (Monden & Hamada, 1991; Cooper & Slagmulder, 1997).

Issues and Challenges in Target Costing Application

As mentioned in the literature reviewed, TC is considered a systematic technique based on the market research and customer expectation analysis. This is to ensure the product's quality, functionality, and timeliness incorporated into the product's cost and this should be carefully determined during the early stage of product life cycles. However, numerous issues and challenges may undoubtedly appear in adopting TC practice. A summary is provided below, based on a review of relevant literature reviewed .

The primary departments involved in TC setting:

While the main departments mentioned in the literature in adopting TC include planning, design and manufacturing departments, the involvement of supply management, R&D activities and suppliers' involvement has been given little attention. Ellram (2006) found that these departments were frequently involved much earlier in the TC process in US companies as they play a vital role in the continuous improvement step. This is a contrast with the prior studies in the Japanese context where the focus was on the accounting department's involvement. In this regard, Kocsoy et al. (2008) argue that the market analysis including suppliers as the most important members of TC teams is a basic issue in the TC process. Inadequate information provided by them may lead to product failure in the market. As a consequence, they found that the low participation rate (2.91 – 29.6 per cent) of suppliers was a constraint for the success of TC practices within the Turkish companies. Additionally, Ju *et al.* (2009) assert that the suppliers satisfaction may cause a potential risk and companies should be aware of the risk. Therefore, the coordination of cross-functional teams composed with other relevant participants and value chain departments in the company is very important. It provides a better understanding of customers' expectations and overall strategic objectives for all departments and all value chain members.

Determining the target profit:

In establishing TC, target profit must be determined following market research, and based on the organization's strategy after the determination of selling price. However, this process should be linked with the long-term strategy of product and profit planning. In essence, Kocsoy *et al.* (2008) consider this process as a

fundamental basis for both the achievement of profitability and the success of TC application. Empirically, they found that the most commonly used method in determining the target profit was the return on sales (ROS-37%), and this is a suitable application toward a successful TC technique. The main issue is the use of cost-based profit margin method which is completely contrary to the understanding of TC. Kocsoy *et al.* (2008) criticize calculating profit margin as a percentage of estimated cost of products. They state that the companies using this method do not have sufficient perception in terms of strategic profit management which is one of the TC components.

Compute allowable cost:

The calculation of allowable cost begins once the target selling price is already established. This can by calculation, simply by subtracting the target profit margin from the target selling price. However, according to Cooper & Slagmulder (1999), when the target profit is set, the company must understand two critical issues. First, the allowable cost must reflect the competitive position of the company because it is based on the long-term profit objectives. This means that the allowable cost is not a measure of the company against its competitors, but instead, target profit must be set and reflect the capabilities of the most efficient competitors. The second issue is that the allowable cost does not take into consideration the cost reduction capabilities of the designers or suppliers because there is no guarantee that this cost can be achieved. Once the allowable cost is unachievable, higher cost must be established in TC process. Here, the issues of product cost, quality, and functionality must be taken into account. Therefore, these issues need to be balanced in adjusting the allowable costs in order to determine TC. As Ax *et al*., (2008) mentioned, this process requires careful attention to the voice of customers. They suggest that Quality Functional Deployment (QFD) tool can be used to make a trade-off between these conflicting issues; product cost, quality, and functionality.

Cost estimation:

As a main issue of the TC application, cost estimation must be made seriously at pre-production stages, especially at the design stages. This facilitates the production process to be in line with these costs to avoid the gap between cost estimation and TC. The main issue here is the cost components particularly involved in the cost estimation process for new products. As Kocsoy et al. (2008) reported in the Turkish case, 63% of companies used pre-production costs, 100% used production costs, 77.8% used marketing and distribution costs, 59.3% used service and support costs, and 63% used recycling costs in the cost estimation process. They found that the inclusion of marketing and distribution

costs including R&D in cost estimation was an active factor for successful TC application. Therefore, the allocation of adequate resources for R&D activities and market research to estimate product costs constitutes a positive way for the success of TC.

Closing the gap between cost estimates and TC:

This is the most critical process in setting up the TC.. One issue that may be controversial in this process is that the choice of a systematic tool and methodology to reduce estimated costs in order to be equal to TC. It is sometimes impossible to easily find a way to develop products that meet customers' requirements at the target cost. However, literature indicates that after setting the selling price, target profit, and TC, certain techniques can be used to tradeoff between cost estimates and TC. These include Value Engineering (VE), Quality Function Deployment (QFD) and Design for Manufacture and Assembly (DFMA) (Cooper & Slamulder, 1997). In addition, the strategies of decreasing the target profit or increasing the selling price can be used with the aim of closing the gap between cost estimates and TC. In this case, Kocsoy *et al.* (2008) reported that decreasing the profit margin strategy might be appropriate to increase the market share of products, but increasing the target selling price should be the last strategy and should be evaluated with TC implementation objectives. Based on their findings, most Turkish companies give priority to decreasing the profit margin (3.37-48.1%) strategy and increasing the selling price (3.12-37%) strategy. As a result, they found that half of the companies' strategy of increasing the selling price affects the implication of TC negatively, whereas the application of decreasing target cost strategy is exceptionally good.

However, the tradeoff between estimated costs and TC during the product planning and design stage may lead to the question of which technique is the most beneficial to achieve the cost reduction goal while still meeting the customers' requirements. Dekker & Smidt (2003) suggest that, in the cost reduction process, it is necessary to ensure the products' characteristics including high quality, functionality, and timeliness. As a consequence, Rattray *et al.* (2007) found a reasonable challenge for the companies in New Zealand in making adjustments to the calculated allowable costs in designing product to meet the TC objective. However, Kocsoy *et al.* (2008) found the common methods used by Turkish companies that used TC were listed according to the degree of their applications: "constant improvement (Kaizen)" (4.48 – 100%), "total quality management" (4.33 – 92.5%), "VE" and "value analyzing" (4.00 – 59.2%), "on time production" (3.96 – 70.3%), "action/operation based costing" (3.92 – 62.9%) and "simultaneous engineering" (3.23 – 44.4%).

Other researchers have taken into consideration the efforts of cross-functional teams in this process. According to Swenson *et al.* (2005), cross-functional teams are essential in cost decreasing activities. They should involve relevant outside participants such as suppliers, dealers, distributers, and recyclers. For example, Kocsoy *et al.* (2008) suggest that the use of such teams is the most important factor in TC application in Turkey. On the other hand, Kocsoy *et al.* (2008) also found that the cost decreasing activities involved in Turkish companies according to the application level are: "trying to supply cheaper materials and parts without compromising quality" (4.52 – 88.9%), "examining and redesigning pre and post-production phases" (4.52 – 96.3%), "concentrating on product design" (4.15 – 77.7%), "extracting the features and functions the increase the product cost" (1.96 – 3.7%) and "using low-quality materials and parts" (1.08 – 0%). These efforts indicate that the majority of the Turkish companies surveyed tend to use techniques according to TC objectives in terms of reducing products costs. But here other challenges also may arise in respect of the technique choice.

Decomposing the TC:

Decomposing the TC aims to allocate target costs to product components and functions as well. The literature identified several approaches for this purpose, such as function-oriented method and components-allocation method (Feil *et al.*, 2004; Ax *et al.*, 2008; Filomena *et al.,* 2009). Once the TC is set, the choice of a particular method to break down TC in a hierarchical way is crucial. Ellram (2006) points out that the TC within US companies is apportioned according to materials bill followed by internal cost centers such as marketing, manufacturing, general and administrative, logistics and distribution and purchases price. In addition, Ellram (2006) and Ax *et al.* (2008) argue that the use of functional-oriented method is generally preferred than products components-allocation method, where the multidisciplinary teams should be involved in the TC allocation.

Target Costing in Malaysian Context

Under increasing competition in the global market, Malaysian manufacturers should respond to this competitive pressure so as to ensure their competitive edge and sustainability. Their products should be differentiated as being of higher quality and lower price, and having used a shorter delivery time to create value. In doing so, establishment of several effective management accounting techniques such as Just-In-Time (JIT), Activity-Based Costing (ABC), Lean Production System, Total Quality Management (TQM), Supply Chain Management (SCM), Balanced Scorecard (BSC), and Target Costing

(TC) is crucially important. Omar *et al.* (2002) examined the implementation of lean production system by local automotive components suppliers in Malaysia. The system examined includes the following elements: JIT, TQM, Continuous Improvement (Kaizen), Quality Control Circles, Preventive and Periodical Maintenance, Statistical Process Control, Group Working, Single-Status, Flexible Working and Kanban System. They found a lower degree of success in implementing JIT, TQM, Statistical Process Control, and Flexible Working. In contrast, the practices of Continuous Improvement (Kaizen), Group Working, Preventive and periodical Maintenance, and Single-Status facilities were found highly successful. As the Continuous Improvement (Kaizen) system is related to TC in meeting customers' expectations, they commented that this process enables companies to achieve their strategic objective through improving products quality and reducing process variation.

However, Nishimure (2002) suggests a model for "Asian management accounting practices" in which management accounting is classified into four development stages. These stages are: "drifting" management accounting, "traditional" management accounting, "mathematical" management accounting, and "integrated" management accounting. Based on this model, the preliminary study of Omar *et al.* (2002) found that management accounting applications in Malaysian companies still appeared to be concentrated at stage one and two with minimal examples of stage four. Similarly, the empirical study of Mahfar & Omar (2004), also in Malaysian companies (41.1% manufacturing companies and 58.9% non-manufacturing companies); found that the utilization of stage 1 and 2 of management accounting techniques was still dominantly applied in among Malaysian companies. Particularly, the results showed that the TC technique was ranked 20 out of 28 in terms of importance, and appeared among management accounting techniques that had mean scores of less than 2.00 out of 3.99. This implies the minimal or non-utilization of TC techniques within the selected companies as an advanced management accounting technique. The authors suggest that the utilization of such technique is very important to stress value creation, and this would be achieved if the qualified management accountants increased their efforts in promoting this technique in their organization.

In addition, Smith *et al.* (2008) in a study of the diffusion of technological and management accounting innovation in the Klang Valley industrial area of Malaysia noted that the production cost structures of Malaysian manufacturing companies were quite different from those of US and Europe with more labour-oriented production focus. They found that the low level of adoption of modern management accounting innovations was apparent in TC, JIT, ABC, ABM and BSC, with only the TQM as the exception in this regard. In addition, budgeting, ratio analysis and standard costing were the traditional measures

used by Malaysian companies, and these findings confirm the findings of Omar *et al.* (2002) and Mahfar & Omar (2004). More interestingly, Smith *et al.* (2008) found that the TC technique was not significantly correlated with technological innovations and the two measures of organization size (number of employees and sales turnover). Their results also provide evidence to suggest that the motivations for adopting TC were to save time and to meet customer requirements, whereas non-adoption of TC could be attributed to the fact that it is cost inefficient and time consuming. The results, therefore, support the expectation that the adoption of TC as a new management accounting technique is low and the major techniques used are the traditional management accounting techniques. On the other hand, their results give some support to the studies of Chenhall & Langfield-Smith (1998) and Joshi (2001) in Australian and Indian contexts respectively. Their results provide convincing evidence of greater usage of traditional management accounting techniques rather than newly developed ones, where the adoption rate of newly developed techniques is either low or slow. Their evidence suggests that the heavy reliance on the traditional techniques resulted from the extra benefits derived from these techniques.

Discussion and Conclusion

The review of the literature related to TC application in different countries shows a significant variation in practice. Case studies conducted outside of Japan have revealed that different steps are followed and various participants are involved in implementing TC. The characteristics of an environment where a company operates, high competitive pressure, short product life cycles, and complex manufacturing processes are major motivations for TC adoption. In this regard, Feil *et al.* (2004) suggest that TC, like many other management accounting practices, is environment-specific in nature. This, however, leads to misconceptions about TC practice as most of the studies have dealt with only one concept of TC, especially Japanese TC. Therefore, the success of TC adoption depends on credible information gathered from the marketplace. Supply chain management plays a major role to link TC goals with customers' desires and market demands through the interactive involvement of suppliers in TC practices.

Most of the influential factors of TC practices reviewed in the literature have been found to be related to intensity of competition, company size, environmental uncertainty and culture factors. Certain considerations must be taken into account, and supportive procedures and initiatives should be in place to overcome the impeding factors of the success of TC application. In general, the literature has not provided an extensive review of all influential factors, but,

in fact shown that there are other factors, such as an inactive communication system between cross-functional teams, information asymmetry, and other organizational factors that may affect the successful application of TC.

On the other hand, it was noted that TC can be used in many types of industries, but it is more suitable for industries that have frequent or new models of products and multi products such as automobile industries and other assembly manufacturing industries rather than in those with few products models and single products. Kocsoy *et al.* (2008) assert that the TC application is more suited to Turkish manufacturing companies than those operating in financial and services sectors where approximately 63 per cent of the participating companies have assembly-oriented manufacturing. Similarly, Dekker & Smidt (2003) argue that the electronic, textile and precision equipment industries have been seen to use high level of the TC technique in Dutch firms. This is similar to the study of Tani *et al*. (1994) which confirms that the assembling industries are considered the most possible industries for the use of TC.

One of the limitations of this paper is that there is an ignorance of the impact of organizational factors on TC application. Hence, future research is needed to include a critical discussion on the organizational factors influencing TC application. A comparison study is highly recommended to address these factors. Other limitations include the lack of studies directly involving TC application, influential factors, issues and challenges pertaining to TC practices in Malaysian companies. Consequently, there is a need for such studies to be undertaken to research into the specific factors and challenges faced in the implementation of the TC technique.

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