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ACTIVITY-BASED COSTING FOR COMPETITION AGAINST GENERIC PRODUCTS: THE CASE OF AN HERBICIDE PRODUCT COMPANY

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Abstract

Activity-based costing (ABC) enables management to use activity cost information to formulate more effective strategy against competitors. Based on the case of herbicide product company, this paper examines how DCPM, a subsidiary of a multinational company, uses activity cost information to revise its pricing strategy to compete with the generic herbicide products, as the patent protection of its main herbicide product is coming to an end. The management of DCPM faces serious challenges of not only having to sustain its market share but also to achieve the profit target expected by its parent company. Using the activity cost information, DCPM is able to set competitive prices for different combinations of product and services to cater for customers with differing product/ service price-sensitiveness. In the long term, however, the company would have to improve the overall cost efficiency in its product manufacturing and logistics services, as well as to educate users more extensively on the importance of quality and safety standards for herbicide products to sustain its market share.

Keywords: Activity-based costing; competitive strategy; generic product; market competition; value-added services.

Introduction

The proliferation of information and communication technology applications in businesses and the trade liberalization movement have significantly intensified market competition. In their efforts to gain competitive advantage and sustain their market share, more and more businesses are customizing their products and services to meet the varying requirements of customers. As a consequence, product varieties proliferate and complexities in manufacturing processes similarly increase. As the complexities of business operations rise, the relevance of the

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traditional costing system for effective cost management is increasingly being questioned and criticized (Cooper and Kaplan, 1988a, Innes and Mitchell, 1991). According to Cooper and Kaplan (1988b), the traditional approach to product costing distorts product costs and leads to inappropriate and unprofitable strategy. In view of the limitations of the traditional costing approach, new costing techniques are being introduced to provide management with more accurate and relevant cost information for better decision making. Activity-based costing (ABC) is a new costing technique that analyses and assigns costs by activities. Through activity analysis, the ABC approach could provide management with a better understanding of resource consumption in the process of producing goods and services. Under the ABC approach, overhead costs are more accurately allocated to products and services. The more accurate cost information of products and services would facilitate more effective cost management and appropriate strategic decision making. With the increasing tough competitive pressures on prices, Lere and Saraph (1995) opine that purchasing officers should understand ABC and how their suppliers arrived at their unit price before selecting their suppliers. According to them, the ABC data could aid purchasing officers to develop cost reduction strategies for the raw materials purchased. The relevance of ABC is often highlighted in the literature, but the benefits of adoption of ABC can only best be proven by evaluating its application in a real-life organization.

Based on the case of an herbicide product company in Malaysia, this study examines how the adoption of ABC could improve understanding of the company's management regarding its resource consumption and how that knowledge could assist the management to revise the company's pricing strategy to meet the severe price competition from generic herbicide products.[1] The availability of cheap generic herbicide products is threatening the survival of the company which has been selling the more expensive patent-protected brand name products. As the patent protection of its main herbicide product in a major market segment would cease at the end of 2008, market price competition for this main herbicide product is expected to become very acute. The case material is based on the real-life experiences of one of the authors. The name of the company and some cost details, however, are disguised and simplified to ensure anonymity and confidentiality.

Traditional Costing and Activity-Based Costing

The traditional cost accounting approach, which began as part of the scientific management movement at the beginning of the last century, continues to work fairly well for firms that use simple manufacturing processes and offer very small product range in a relatively stable environment with little or no market competition. As market competition intensifies as experienced in the new millennium, more and more business enterprises are customizing their products or services and this new strategy often involves expanding the range of their product offerings and

increasing the flexibility (and complexity) of their production processes through the use of advanced manufacturing technology. Under the new production environment, the production overhead costs constitute an increasing proportion of total production costs and the traditional costing system of allocating overhead costs using volume-related measures is becoming increasingly less reliable and less relevant for decision making. The traditional costing system often leads to under-pricing of complex and low-volume products and over-pricing of simple and high-volume products (Banker, Datar, Kekre and Mukhopadhyay, 1990). Cross-subsidization of products is a typical consequence of the over simplification in the overhead cost allocation process (Johnson and Kaplan, 1987).

Unlike the traditional costing approach which assumes that products consume resources and hence, costs are volume related, the activity-based costing (ABC) approach attributes resource consumption to activities carried out in the production process. ABC focuses on activity costs and allocates overhead costs based on activity cost drivers. According to Cooper (1989), activities could be segregated into a hierarchy of activities, beginning with "unit-level activities", "batch-level activities", "product-level activities" and "plant/facility-level activities". Unit-level activities are activities performed each time a unit is produced and unit-level activity costs typically include direct material and direct labour costs. Batch-level activities are those performed each time a batch of goods is produced such as batch ordering of purchases, machine set-up for each production run and batch inspection. Product-level activities are activities needed to support production of each different type of product, such as designing each product specifications, product modifications or enhancements. Plant or facility-level activities are activities to sustain the existence of a plant or facility, such as plant maintenance. The need to distinguish the different activity-level costs is critical for more accurate cost allocations and to avoid misinterpretation of the product or service cost in making any pricing or strategic management decisions. The detailed segregations of activities and their costs under ABC are the necessary cost system refinements to yield more accurate tracing of costs to specific products, supply channels and customers to facilitate implementation of more effective price differentiation among products, customers and markets.

The benefits of using the ABC approach are acknowledged in managing logistics cost (Pohlen and Londe, 1994). In their study, Pohlen and Londe found that ABC had provided leading logistics organizations with more accurate system for costing activities and measuring performance, and the level of ABC sophistication tended to vary with the proportion of indirect costs and the diversity of products, services, customers or supply channels. In the banking sector, Max (2004) reported that the ABC system could enable the financial services organizations to benefit from activity-based pricing especially for business-to-business services, and the incorporation of the ABC information into the performance management

scorecards and processes aided identification of opportunities for performance improvement. The superior performance of ABC over traditional costing is also reported by Cardinaels, Roodhooft and Warlop (2004). Based on an experimental study, they found that optimal pricing decisions led to accounting losses under volume-based costing but not under ABC, and market agents with biased cost information underutilized informative feedback. Even when competitor information feedback was less informative, ABC was also more superior to the biased traditional costing because ABC enabled decision-makers to filter out less relevant competitor prices from the decision process. Morgan (1993) tested the efficacy of using the activity-based costing approach based on the case of a pharmaceutical product company and he concluded that ABC enhanced the resource allocation and product mix decisions in that company. Using the case material of a wood products company, Berniker and McNabb (2005) found that even the traditional simple Pareto Analysis, which had long been used for managing production and inventory systems, was inadequate for effective cost management and pricing policies when the proliferation of product varieties and complexity of the manufacturing processes were increasing. By combining ABC with Pareto analysis, Berniker and McNabb found that products and processes could be disaggregated and product costs could be more accurately determined for planning and control.

The Herbicide Product Company

DCP (M) Sdn Bhd (DCPM) was established in 1973 and is a subsidiary of a multinational company which sells herbicide, fungicide and pesticide products and services to the agriculture sector. DCPM is principally involved in selling crop protection products and it is committed to a high level of product safety, health and environment protection starting from the initial stage of research and development to the stage of product distribution and its ultimate disposal. The company works closely with the various agriculture-related government agencies and was recognized for its various efforts such as its bottle recycling project in promoting health and environmental safety.

The Industry and Market Competition

Agrochemicals, which are dominated by herbicides, are widely used, especially in the plantation sector in Malaysia. In 2004, plantation sector used RM462.64 million[2] of herbicide products per year. Metrix, a major herbicide product of DCPM, captured 19% of the sales of herbicide products to the plantation sector and 14.1% of the total sales of herbicide products in Malaysia. DCPM is one of the top suppliers of herbicide products in Malaysia. The growth rate of herbicide usage was originally estimated at 2%, but it is expected to be higher as the perceived long-term price trend of crude palm oil is positive.

The increasing market price competition has led to a declining average product selling price and gross profit margin for DCPM. The selling price of DCPM's major herbicide product, Metrix, has to drop to narrow the price differential between the price charged by generic product suppliers and Metrix's price. Market feedback suggests that the price of Metrix has to be reduced from RM68 per kg in 2006 to RM40 per kg in 2008 for it to stay competitive. With the declining selling price, the mark-up for Metrix is expected to decline from a positive of 58.66% as reported in 2006 to perhaps a loss in 2008, if the current strategy continues. The significant increase in competition in the herbicide market is largely due to threats from cheap generic pesticide and herbicide products. Many other multinationals were similarly affected. One multinational company lost about 50% of the market share of its main herbicide product to generic herbicide product suppliers after the patent of it herbicide product ended. The management of DCPM feared the same would happen to the company. The daunting task for the management of DCPM was to formulate a new strategy that could eliminate or mitigate the threats from those cheap generic substitutes to sustain its current market share, as well as to enable the company to earn the targeted minimum 30% mark-up as required by its parent company. It is the policy of DCPM's parent company that products that could not yield the minimum 30% mark-up would be withdrawn from the range of products currently being offered by DCPM in Malaysia.

The key competitor of DCPM is PKB, which is a top generic herbicide product supplier, and PKB has benefited significantly from the activities by the multinationals to promote herbicide product usage to farmers and planters in Malaysia. PKB has adopted the low-cost strategy that prices its products substantially lower than those charged by the multinationals. PKB could afford to sell its products at lower prices because it could source the cheap generic herbicide products from China and it incurs much lower operating costs by using low quality packaging, minimizing its marketing efforts, and most important of all, carrying no research and development activity. In 2004, it was able to capture 9.6% of the market share and earned a gross margin of between 10% and 15%. When DCPM's patent protection of its herbicide product in the ornament plant segment ended in 2003, PKB immediately registered one of its herbicide products for the ornament plant segment. Since then, DPCM's sales of herbicide product to the ornament plant segment have been seriously affected.

The Herbicide Product, Metrix

Metrix is a well-known patent-protected herbicide product and was first introduced to Malaysia in 1983. Metrix contributed 70% of DCPM's sales and 50% of its gross profit in 2004. Metrix was given patent protection in both the ornament plant segment and the plantation crop segment. Its 20-year patent protection in

the ornament plant segment came to an end in 2003 and that in the plantation crop segment would cease at the end of 2008. It is widely acknowledged among planters that Metrix is safe for both mature and immature oil palm trees. As a consequence, DCPM has been able to sustain Metrix as the best herbicide product for broad leaf plant control.

When DCPM's patent protection in the ornament plant segment expired in 2003, PKB made available generic herbicide products at very low prices to buyers from the ornament plant segment and these generic herbicide products, which are sold at prices substantially lower than the selling price of Metrix, are gaining market share in the ornament plant segment. The management of DCPM was most concerned about DCPM's market share of herbicide products in the plantation crop segment as the patent protection for Metrix in that segment would cease at the end of 2008. The management was worried that the threat from the generic herbicide products as experienced in the ornament plant segment would similarly surface in the plantation crop segment after 2008. In fact, owners of some small plantation holdings had already started substituting Metrix with the cheaper generic herbicide products even before the end of Metrix's patent protection. DCPM was unable to take legal action against suppliers of generic herbicide products to the small plantation holdings because the small-holders were reluctant to confess to having used the illegal generic herbicide products as a substitute for the patent-protected herbicide product. In addition, the enforcement by the Pesticide Board of Malaysia to ensure no infringement of rights of patented products is not very effective. In order for Metrix to stay competitive after 2008, the management of DCPM had to narrow the price differential between Metrix's price and that of the generic herbicide. The average selling price of Metrix had to be reduced from the current RM68 per kg to RM40 or lower per kg after 2008.

Traditional Costing of the Herbicide Product, Metrix

Metrix is imported in 25-kg drums and re-packaged into 50 gm, 100 gm and 250 gm packs. The 250 gm packs are most popular and constitute about 85% of total Metrix sales. The 50gm packs and 100gm packs contribute about 5% and 10% of total Metrix sales, respectively.

Under the DCPM's existing costing system, the costs related to Metrix were accounted for under the following accounting cost headings:

- Purchasing costs (direct costs)
- Repackaging costs (direct costs)
- Overhead costs (indirect costs)
    - Product Delivery Costs
    - Selling and commission costs

- Research and Development costs
- General administration costs

Based on the total RM5,572,100 direct and indirect product-related costs incurred and the 130,000kg of Metrix sold during the most recent year, the average cost and the average selling price per kg of Metrix for the year was determined, as illustrated in Table 1. The product unit cost was computed by simply dividing the total production costs by the units sold, and the selling price was computed by a mark-up on costs.

Table 1: Traditional Costing Approach for Cost and Price Determination of Herbicide Product, Metrix

		Total (RM)	Per Kg (RM)
Purchase cost (130,000 kg): (including material cost, import duty and freight charges)		1,973,400	15.18
Repackaging cost (130,000 kg): (including container/box, labour, spoon, bar coding, label and seal/aluminum bag)		2,078,700	15.99
Overhead costs:			
Selling and commission costs	850,000		
Product delivery costs	90,000		
Research and development costs	220,000		
Administration costs	360,000		
		1,520,000	11.69
Total costs		5,572,100	42.86
Add: mark-up (58.66%)		3,268,594	25.14
Sales/Selling price		8,840,694	68.00

The selling price of RM68 per kg of Metrix would not be sustainable when the herbicide product would lose its patent-protection in the plantation crop segment at the end of 2008. After 2008, the target selling price for the herbicide product has to be at RM40 per kg or below in order not to price itself out of the market. Based on the cost of RM42.86 per kg as determined by using the traditional costing approach (refer to Table 1), DCPM would not only unable to meet the minimum 30% mark-up, it would also be making a loss of RM2.86 per kg sold, if Metrix were to be sold at RM40 per kg. The management of DCPM had to revise its pricing strategy for Metrix after 2008, so that Metrix could be sold at the targeted selling price of RM40 per kg and yet would yield the minimum 30% mark-up as specified by its parent company. The minimum 30% mark-up is crucial for DCPM because the failure to yield the minimum mark-up would result in Metrix being withdrawn from the product range currently being offered by DCPM

in Malaysia. Since Metrix has been the major profit contributor to DCPM, any decision by its parent company to stop selling Metrix in Malaysia would certainly jeopardize the survival of DCPM in Malaysia.

Competitive Strategy: Innovative Initiatives and Value-Added Services

The management of DCPM has evaluated several alternative strategies to mitigate the threats from the cheap generic herbicide products. Based on the three types of strategy proposed by Porter (1980), the management of DCPM has decided to adopt the focus strategy to serve its niche market, the plantation crop sector. While evaluating the other two strategies, the management realized that the cost leadership strategy was inappropriate because DCPM could never be the lowest cost supplier in Malaysia due to the high cost of its purchases and the group's commitment to high product quality and safety standards. Its competitors, on the other hand, are not only able to source cheap generic products from low-cost producing countries, they are operating at much lower costs due to no research and development expenditure, low quality packaging and minimum product advertising and promotional activities. Similarly, the management of DCPM reckoned that the product differentiation strategy would fail because most herbicide product users in Malaysia are very price-sensitive, and it was reported that even some of the knowledgeable users were sourcing cheaper substitutes to improve their profitability. The focus (with the differentiation element) strategy would allow DCPM to leverage on its reputation of high product quality and safety standards to serve customers who are quality and safety conscious and find DCPM's prices affordable. These customers are from a niche market segment, such as the plantation crop segment. DCPM could customize its offerings of product and professional value-added services in accordance to the needs of this group of customers. Generic herbicide product suppliers are not capable to provide the types of expert/professional value-added services as those offered by DCPM.

Several initiatives have been introduced by the DCPM management to enhance its competitiveness and some of the initiatives are as follows:

i. Pre- and Post-Sales Services

   DCPM offers pre- and post-sales services to its customers. Product promotion is generally a part of the pre-sales activity. DCPM's sales agents are sent to estates and smallholdings to promote its herbicide products. During their visits, the sales agents would brief and educate workers on the importance of health safety. The pre-sale service includes the workers being shown the correct procedure of mixing, applying and spraying Metrix to maximize spray coverage

for effective crop protection, as well as on how to protect themselves from the possible harmful effects of herbicides.

The post-sales service includes disseminating DCPM's research findings and providing weed-resistance management and technical advice or services to its customers.

ii. Bottle Recycling Service

The bottle recycling project was started as an effort by DCPM to establish good relationships with its customers, in particular, the plantation companies. Plantation companies had experienced difficulties in adhering to the recommendation by the Malaysian Pesticide Board to bury herbicide-contaminated bottles after usage because of the shortage of land in the estates for that purpose. In order to aid the plantation companies, DCPM started the bottle recycling project by collecting the contaminated bottles from the estates and recycled them into industrial useable items. The net cost of the recycling is borne by DCPM. Local generic products suppliers do not offer such recycling service.

iii. Protective Clothing

As part of DCPM's promotional activity, a tyvek apron protective clothing is given free for each purchase of Metrix product. The protective clothing given free by DCPM would help its customers, who are required by the National Council for Occupational Safety and Health to provide protective clothing to their employees, to save costs on protective clothing.

iv. Discount for Bulk Pack

Major customers, such as the large plantation companies, are offered discounts on purchase of bulk packs from DCPM. Customers' purchase of bulk packs would save the re-packaging costs for DCPM. Hence, the discount offer on bulk packs would benefit both DCPM and the customers.

v. Customer Database

DCPM had started establishing a customer database for tracking its customers' buying pattern in 2003. By 2005, the database contained information on 90% of the plantation agencies and 50% of small to medium-sized plantation holdings in Malaysia. The establishment of the customer database is aimed at enhancing efficiency of the logistic and inventory management of DCPM by improving the company's accuracy of forecasting its customers' demand for products and services.

Activity-Based Costing (ABC) Approach to Costing of Product and Value-Added Services

In view of the serious competition from the generic herbicide products, the management of DCPM realizes that the current approach to product cost determination is ineffective for pricing decisions. If the inaccurate cost information is continued being relied upon for pricing, Metrix would be withdrawn from the Malaysian market, and when that happens, it would be the demise of the company. The traditional overhead cost allocation based on quantity (kg) sold is over-simplistic as it fails to identify the costs of the various activities associated with the provision of the different types of value-added services demanded by the customers. Allocating overhead costs based on units (kg) sold would lead to cross-subsidization of products. Moreover, the efforts or services required of the sales personnel vary with products. The management of DCPM decides to adopt the activity-based costing approach to analyze and manage activity costs. Only by having detailed understanding of costs of its various activities and services relating to the selling and administrating of its products would the management be able to effectively control those costs and negotiate appropriate prices with customers.

The major activities related to the sales of Metrix were first identified in a systematic manner. The total overhead costs totaling RM1.52 million, which were categorized earlier under the four account headings, were re-assigned to the seven main activities identified, as shown in Table 2. The cost driver for each activity was determined and the cost driver rate for each activity was computed for the purposes of subsequent allocation of overhead costs to the product and its related services. Figure 1 illustrates the two-stage cost assignment process from the traditional account headings to main activities identified and then, to product and services.

The pricing strategy was revised based on the needs and price-sensitivities of customers. Instead of the current approach of selling a lump-sum package which included the product plus all the value-added services offered by DCPM, the product and service costs are now segregated for competitive pricing purpose. Customers are given the option to select from the different combinations of product and services, the combination that is most suited to their needs, and the selling price of the package would be determined based on the activity cost information related to the combination of product and services selected by the customer.

Table 2: Activity Cost Pools and Cost Drivers

Activities / Overheads	Customer Order Handling	Education & Research	Warehousing	Traveling & Transportation	Product Promotion	Recycling	Administration & Support	Total
Selling & Commissions	442,918 (52.11%)	48,960 (5.76%)		53,330 (6.27%)	97,915 (11.52%)	48,958 (5.76%)	157,919 (18.58%)	850,000
Product Delivery		18,000 (20%)	24,300 (27%)	27,000 (30%)		9,000 (10%)	11,700 (13%)	90,000
R&D		220,000 (100%)						220,000
Administration							360,000 (100%)	360,000
Total	442,918	286,960	24,300	80,550	97,750	58,300	528,900	1,520,000
Cost Drivers	Duration time spent by Sales Agents (Time spent on product promotional visit is doubled that of either technical advisory visit or visit for bottle recycling.)	Number of product promotion briefings and technical advisory briefings	Per Kg	Number of deliveries	Number of promotional briefings	Per bottle recycled	20% to both recycling service and technical advisory (after sale) service, and 40% to product promotional briefings (pre-sale) service	

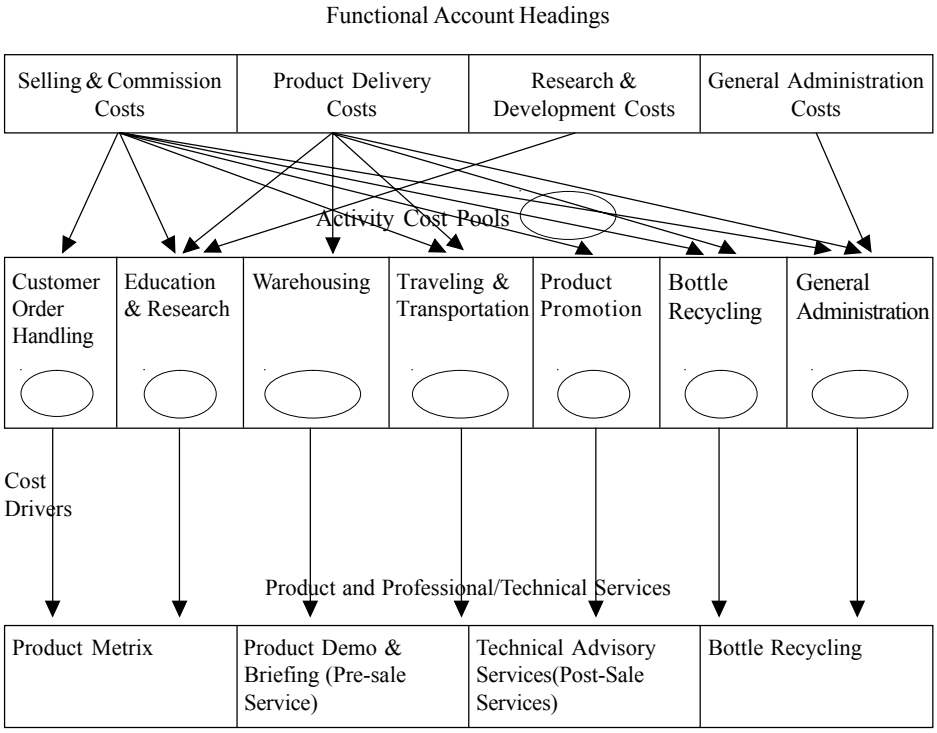

Figure 1: Two Stage Allocation of Overhead Costs

As shown in Table 3, a customer who requires only the basic herbicide product and no other professional services would only pay RM40 per kg of Metrix. This option meets the needs of the very price-sensitive customers such as the small holders, and it is designed to compete directly with the cheap generic herbicide

Table 3: Direct Cost and Selling Price of the Herbicide Product, Metrix (After 2008)

	RM
Purchase cost: (including material cost, import duty and freight charges)	15.18
Repackaging cost (with spoon removed)[3]: (including container/box, labour, bar coding, label and seal/aluminum bag)	15.42
Warehousing cost	0.18
Total product cost per kg (without services)	30.78
Add: mark-up (30%)	9.22
Selling price per kg without value-added services (targeted)	40.00

products. By selling Metrix at the targeted RM40 per kg, DCPM is also able to generate the minimum 30% mark-up as required by its parent company. For the other customers who may require one or more of the three types of value-added services offered by DCPM, the selling price of the combination of product and services would be determined by adding the product basic costs to the costs of activities needed in rendering the services required, as illustrated in Table 4.

Table 4: Activity-based Costing and Pricing of Product with Value-added Service

i). Product and Bottle Recycling Service:	RM
Product cost per kg	30.79
Plus: Sales agent's visit	xxxx
Transportation	xxxx
Recycling	xxxx
Administration	xxxx
Total costs	xxxx
Add: 30% mark-up	xxxx
Selling price	xxxx
The additional service costs added would be based on the cost driver rates derived from Table 2.	
2. Product and Product Briefing, Demo & Promotion: (Pre-Sale Services)	RM
Product cost per kg	30.79
Plus: Sales agent's visit	xxxx
Transportation	xxxx
Product promotion	xxxx
Education & research	xxxx
Administration	xxxx
Total costs	xxxx
Add: 30% mark-up	xxxx
Selling price	xxxx
The additional service costs added would be based on the cost driver rates derived from Table 2.	
3. Product and Technical Advisory Service: (Post-Sale Services)	RM
Product cost per kg	30.79
Plus: Sales agent's visit	xxxx
Transportation	xxxx
Education & research	xxxx
Administration	xxxx
Total costs	xxxx
Add: 30% mark-up	xxxx
Selling price	xxxx
The additional service costs added would be based on the cost driver rates derived from Table 2.	

The ABC approach to allocating costs based on activities would also enable management to direct its attention to activities that add little or no value. The management could then re-examine and reorganize the activities to eliminate the non-value-added elements to improve the overall cost efficiency without adversely affecting the quality of service. This is critical for DCPM to achieve the target price of RM40 per kg for it to sustain its market share of herbicide products after 2008. The activity cost analysis allows DCPM to customize the combination of product and services according to the needs and price-sensitivities of customers. In the short run, the ABC approach to costing of product and services, and the re-packaging of product and services to meet the needs of customers with different price-sensitivities could be immediately implemented by DCPM. In the long term, DCPM and its sister companies involved in the manufacturing and logistics of the herbicide product would have to re-engineer to further improve their manufacturing and service efficiency. The companies within the group would have to enhance their sales forecasting, supply chain management and research and development efforts. DPCM would also have to work closely with the various regulatory agencies to promote extensively greater awareness and appreciation of environment and health safety to herbicide product users, especially among the plantation companies, and to provide quality service to its core customers in the most efficient manner.

Conclusion

Based on the case of an herbicide product company, this study illustrates the inadequacy of the traditional volume-based cost allocation approach for formulation of appropriate pricing strategy to meet challenges of the increasingly competitive market and it also shows how the adoption of the ABC approach to cost allocation could improve understanding of the management regarding resource consumption for the various activities undertaken within the company and subsequently used the ABC information to revise the company's pricing strategy to eliminate or mitigate the serious threats from the cheap generic herbicide products. Despite the downward revision of the selling price of its basic herbicide product, the price charged by DCPM is expected to be still higher than that of generic herbicide products because Metrix is an established brand name product when compared to the generic products, most of which often do not even have a brand name. The management of DCPM is aware of that and has decided to focus more of its sales efforts on the larger plantation companies which are likely to be more concerned about product quality, health and environment safety, and also could afford to pay more for the established brand name herbicide.

The process of introducing the ABC approach is expected to be tedious and difficult due to more resources being needed to implement the accounting system change, as well as the anticipated human resistance to change. The budgeting process may also have to be revised to allocate costs based on activity cost drivers rather than the traditional volume-based approach. Despite the anticipated implementation difficulties, the increasing market competition from generic products is seriously threatening DCPM's survival and the company is left with very little choice, but to revise its pricing strategy based on the new costing approach.

The relevance of many new management accounting techniques is often elaborated and justified conceptually in the literature. The current study uses a case study approach to illustrate the benefits of adopting ABC in a real-life organization. In the future, more empirical or case studies are needed to investigate the environment that triggers the adoption of a new management accounting technique or practice and the benefits consequential to such an adoption.

Notes

1 Generic herbicide products are sold once the patent protection afforded to the original brand name manufacturer or developer of the herbicide product has expired. Once the patent protection expires, generic products can be manufactured using the same active ingredients as the original formulation for the brand name herbicide. The availability of generic products often leads to substantial reduction in prices for both the brand name product and the generic products.

2 Exchange rate: USD 1 ≅ RM3.50

3 During the collection of bottles for recycling, DCPM found that users of Metrix pour the herbicide into big pre-mix container and did not use the measuring spoon provided in the package. Hence, the spoon was deemed unnecessary and removed.

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