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Journal homepage:

<http://scientific-journal.sustech.edu/>

The Impact of Target Costing System on Enhancing Company's Performance (Case of Sinar Sugar Company)

Fatima Amir Hamad Hamid and Fatehaerrhaman El Hassan Mansour
and Mustafa albushari

*College of Science & Humanities
Al-Riyad- - Kindom of Saudi Arabia
College of Business Administration ommalqura university Makka Almokrma-
Kindom of Saudi Arabia
College of business studis – sudan university of science & technology*

المستخلص:

هدفت هذه الدراسة الى معرفة أثر استخدام اسلوب التكلفة المستهدفة على تحسين الأداء باستخدام طريقة دراسة الحالة لشركة سودانية واحدة (مصنع سكر سنار) ، النتائج أظهرت ان الشركة لا تستخدم أسلوب التكلفة المستهدفة، كما ان نتائج تحليل بيانات الشركة أثبتت ان استخدام اسلوب التكلفة المستهدفة أدى الي تخفيض تكاليف الانتاج وتحقيق التكلفة المستهدفة التي تمكن الشركة من تحقيق أرباحها المستهدفة لمنتجات الشركة الحالية. كما أظهرت النتائج ان اسلوب التكلفة المستهدفة يوفر معلومات مفيدة للرقابة على التكاليف وتخفيضها للمنتجات الجديدة قبل انتاجها، وهذا بدوره يؤثر ايجاباً على أداء الشركة ككل.

ABSTRACT:

The aim of this study is to examine the impact of the application of Target Costing technique on performance improvement through using the case study method for one Sudanese manufacturing company (Sinar Sugar Company). The study results indicated that Sinar Sugar Company does not use the Target Costing technique. However, the analysis of company's archive data using the Target Costing technique may help the company to reduce its production costs and achieve the target costs, thus enabling it to attain the desired profits for the existing products. In addition, the adoption of this

technique will provide useful information for controlling and reducing costs for the new products before they produced, which will affect positively the overall company performance.

Keywords: Target costing, Cost plus techniques, Cost Reduction, performance enhancement

Introduction:

Nowadays, intensive competition, automation, technology and computerization have shifted costs. Companies of all sizes have an incentive for cost reduction to enhance performance in new business environment. Traditional techniques (cost-plus techniques) which assumed cost is given to determine selling price (not competitive with the market) were no longer able to identify good opportunities for cost reduction. In contrast, Target Costing (TC) determines product cost early in the process of planning and product design. This will let company to manage cost early which will give good opportunities for cost reduction and performance enhancement.

This study is organized as follow: The first section presents the study's introduction which includes statement of the problem, question, objectives, and importance. Second section reviews the literature and previous studies regarding TC. Section three presents methodology and case study. Section four presents findings, limitations, recommendations and future studies.

Statement of the problem :

This study tries to link new costing techniques to performance enhancement and increase the level of adoption of this technique by Sudanese industrial sector. The concepts of costing techniques such as TC are relatively recent at Sudanese manufacturing environment. Many Sudanese manufacturing companies do not show enough attention to TC technique; they are unwilling to venture in modern services for reasons related to inability to control markets and pricing decisions and costs. Whilst, competitive environment affects cost accounting by updating costing techniques (e.g., TC), through which they become possible to reduce costs and enhance performance. The following question may shed some light upon the existing problem:

Does application of target costing enhance performance in Sinar Sugar Company?

Importance of the Study:

The importance of this study stems from the importance of TC as a new costing technique which identifies good opportunities for cost reductions which is important for manufacturing sector to keep cost down, enhance performance in new business environment.

Objectives of the Study:

The main objective of this study is to examine the impact of application Target costing (TC) technique on enhancing performance for Sinar Sugar Company.

Related Literature Review & Previous Studies:

Development of Target Costing:

Target costing (TC) is a technique which developed in the early 1970s in Japan's manufacturing industry as consumer demand for more diversified products and shorter

product life cycles made the development and planning stages of new products more important. At the same time increased automation and decreased labour costs made standard costing less important as the main method of cost management within manufacturing companies (IMA, 1994).

TC is primarily implemented in Japan and in countries with those same cultural characteristics (South Korea, Taiwan), and also in Germany, whereas in the other European countries, particularly Mediterranean countries, only a small group of companies (Ciambotti) have adopted it (Carenzo & Turolla, 2010, p.464).

TC is a strategic cost management concept for reducing cost over the entire life cycle of a product (Peter, et al., 1998). It reduces the cost of the product with the help of cross-functional teams (management, design, R&D, marketing, and accounting) (Sakurai, 1989). In addition, it has been argued that the major part of product cost (around 80%) is estimated to occur at the design stage which exhibited that major and significant cost reduction opportunities are available only at this stage (Cengiz & Ersoy, 2010).

The most important objective of TC is to reduce costs in the process of planning and product design, followed by emphasizing on quality and to achieve timely delivery of products (Al-Awawdeh & Al-Sharairi, 2012, p.127). Institute of Management Accountants (IMA) stated that the fundamental objective of TC is to enable management to manage the business to be profitable in a very competitive market place. In effect, TC is a proactive cost planning, cost management, and cost reduction practice whereby costs are planned and managed out of a product and business early in the design and development cycle, rather than during the latter stages of product development and production (IMA, 1994 p.5).

Target Costing technique & Cost-plus technique:

TC differs from the traditional (cost plus techniques) for determining selling, cost, and profit. The cost-plus technique assumes cost is a given. Next, a required profit margin (also, a given) is added to the cost to determine the price at which the company will offer the product. Thus, the targeted selling price is the cost, plus a profit margin (or Markup). However, markets will accept or reject the selling price. Product cost is not pro-actively managed using the conventional or cost-plus techniques (Albright & Lam, 2006, p.161). TC overcomes this deficiency of the cost-plus techniques by taking a product's expected market price less its expected profit margin to obtain the product's allowable cost. A product's market price is frequently determined using market research and analysis. The results of this analysis facilitate understanding the functionality and quality that customers desire in a product, and the price they are willing to pay for these features (Kee & Matherly, 2013, p.269). Cooper and Kaplan describe TC as a simple syllogism (Chen & Chung, 2002, p.3):

1. Let the market place determine the selling price of the future product.
2. Subtract from this price the profit margin the company wants to achieve.
3. This yields the target cost at which the product must be manufactured.

The Target Costing Process:

TC defines as one of the cost management tools in a competitive environment because it targets three main competitive elements which are: price, quality, and cost, as well as creativity (Al-Awawdeh, Al-Sharairi, 2012). It first identifies the price customers are

willing to pay for products of a specified quality and function. After deducting the required profit margin from the target selling price, the target (or allowable) cost is derived. By including engineering, suppliers, and financial specialists in the planning process, a company looks for ways to remove inefficiency to achieve target cost. Once achieved, managers continue to identify ways to make improvements in quality or to reduce costs (Albright & Lam, 2006, p.160).

TC begins with the question: "What should a product's cost be?" In theory, this question can be answered by the well-known equation: Sales Price – Target Profit = Target Cost. In practice, Sakurai (1989) determines three methods for establishing target costs (Feil, et al., 2004, p.14):

a. **Top-down method:** a target cost is derived from sales and target profits. No input on the target cost comes from lower management.

b. **Bottom-up method:** accepts the cost estimated by engineers based on their current skills or experience and the availability of production facilities.

c. **Combined method:** top management sets the target profits, but engineers are consulted in the process of determining the target costs.

The target costs represent the maximum cost for the future product, given the required functionalities and the time-to-market objective. It is set early in the new product development process to motivate design engineers to achieve cost reductions that will capture product profitability for newly launched products (Everaert et al., 2006, p.258). Target cost is based on the product's functionality and performance, not on the proposed design solution. The cost of the product is considered to be an important strategic factor that should be decided by management, not the designers (Pennanen, et al., 2011, p.60).

The Principles of Target Costing :

The CIM-1 Target Cost Group established six key principles for TC are (Cengiz & Ersoy, 2010, p.3133):

a. *Price-led Costing:* As market prices are the determinants of product and profit plans, the TC process needs an active market analysis.

b. *Focus on Customers:* product feature and functions during product development take place to meet customer expectations, and customers are willing to pay for them which will at the end enhance company's goals.

c. *Focus on Design:* TC encourages all participating functions of the company to examine designs which enable to manage costs before they are incurred.

d. *Cross-functional Involvement:* cost management activities during TC process requires product and process teams with members representing design and manufacturing engineering, production, sales and marketing, materials procurement, cost accounting, service and support.

e. *Life-cycle Orientation:* TC considers all the costs of owning a product over its entire life.

f. *Value-chain Involvement:* All members of the value chain such as suppliers, dealers, distributors, and service providers are involved in the TC process to execute an extended enterprise to create customer value and minimize costs.

Advantages of Target Costing :

The use of TC technique provides many advantages which are:

a. *Cost Reduction and Control*: it reduces costs before they are locked in by managing costs from the design stage to maximize the potential for cost reduction. Helms and Baxter noted that TC reduces costs by involving suppliers and manufacturers as contributors to the design process, there by focusing the entire chain towards the overarching goal of eliminating costly waste, excess, and unevenness. The supply chain partners can also consider costs of reclamation and disposal of products after their useful life in a total, closed-loop life cycle costing model (Helms, et al., 2005, p.49). Ellram Shank & Fisher, (2010) conducted a case study at Montclair Paper Mill and stated that the implementation of TC enabled the companies to have significant cost reduction opportunities (Cengiz & Ersoy, 2010, p.3139). TC is highly beneficial, because it works to actively control costs before or during product development ((Feil, et al., 2004, p.14).

b. *Cost improvement*: by integrating with other tools such as JIT and TQC (total quality control) and promote their use (CIMA Discussion Paper, (2005, pp.5-6).

c. *Profit planning and Profit improvement*: TC, as a backwards approach for determining costs, is not solely about a cost management and also a system of profit planning that ensures that new products and services meet market determined prices and financial returns (IMA, 1994 p.5). Al-Thahabi and Al-Ghabba used TC to indicate that cost management techniques oriented to the market as they are used in presenting the product stage from the product life cycle in order to enhance profitability and productivity (Al-Awawdeh & Al-Sharairi, 2012, p.124). TC ensures profitability in the short and long run, because products that show up as low-margin or unprofitable during new development can be quickly dropped (Everaert et al., 2006, p.237).

a. *Encourage a focus on the customer*: by stimulating behaviour which is customer-focused and encourages all functions within the company to respond to market demand and competitive trends rather than internal performance indicators. In addition the marketing department is free to make product decisions without the costs being a given (CIMA, 2005, pp.5-6).

Disadvantages of Target Costing :

Some studies criticize TC such as Kato et al. (1995), after studying two Japanese firms that use TC, assert that it can produce “longer development times, employee burnout, market confusion, and organizational conflict. In addition, Davila and Wouters (2004) suggest that TC is inappropriate for firms in high-technology industries because it: focuses attention away from revenue drivers; too time-consuming; too linear and bureaucratic and too detailed (Kee & Matherly, 2006)

Previous Studies:

many previous studies on the concept of TC exhibit that TC has positive benefits on performance enhancement. The common finding that the product design and development stage offers significant opportunities for cost reduction because from 70% to 80% of product cost remains unchanged after the design stage, for example:

Study of (Ellram, 2006):

It conducted six case studies to explore how the TC process is used in the United States. The results found that the TC process has benefits for cost management which represent is one of the goals to be balanced when developing a product that is attractive to the customer, utilizing the best ideas that the producing organization and supplier have to offer within the constrains of profitability objectives.

Study of (Amel, 2011):

It examines the role of TC on reducing production costs on Sudanese-Arab Oil Company. The results showed that the application of TC reducing production costs; and improving performance by focusing on value-added activities and eliminating non-value added activities and then supported target profit.

Study of (Pennanen, et al., 2011):

The purpose of this study is to describe design steering, a methodology for managing design process to achieve target cost and purposed value for the customer. The design steering concept steers the complex design process by knowledge management and rapid cost feedback loops, especially in the very early stages of design. The study found that design steering has helped mutual understanding between the designers and management enabling to achieve the target cost. The study implied that more transparency on goals, processes and information models of clients, project managers and designers are needed in order to support the commitment process of the participants.

Study of (Ibusuki & Kaminiski, 2012):

It explains the relationship between TC and Competitive Advantage of Jordanian Private Universities. It indicated that successful TC and value engineering method in the management costs lead to reduce product cost, and achieve quality and specifications that suit customer needs, and strategies of the company.

Study of (Rattray et al, 2007):

It examines TC practices in New Zealand. A mail questionnaire survey was sent to New Zealand manufacturers, with a response rate of (39%). The study found that about 39% of respondents use TC; TC is being applied to existing products; the manufacturing department is highly involved in TC; the involvement of suppliers in TC is relatively low; considerable adjustments are made to the calculated allowable costs, especially in order to assist sales of future products and to ensure the achievement of target costs; and higher achievement of target costs is associated with higher firm performance.

Shedding light on the above debate, this study is going on this direction by investigating the impact of using TC (TC) as cost reduction technique on enhancing performance in one Sudanese manufacturing company (Sinar Sugar Company). The motivation to conduct this study comes from review of previous studies in Sudan which revealed that the use of modern cost reduction techniques specifically, TC is not widespread among Sudanese companies. Moreover, despite the benefits of TC and its positive effect on performance enhancement, no attempt has been made to examine the relationship between the use of (TC) as modern cost reduction technique and

performance enhancement. Therefore, this study aimed at filling such gaps.

3. Methodology of the Study:

The study population is defined as one manufacturing company- Sinar Sugar Company. The study uses a case study approach because it involved questions of understanding and exploratory depth. The use of new cost reduction methods is not widespread among Sudanese companies. Thus, the case study method is becoming more preferable in current study because of the limit implementation of the phenomena of interest. Archive data for 12 months period is used to apply(TC) technique to see whether or not the using of this new technique enhances performance.

3.1 Profile of Case study (Sinar Sugar Company)

Sinar Sugar Company was established in 1976. The main activity of the company is Sugar production which is produced in several continuous production processes. The company's activity divided into cost centers (production cost centers & production service cost centers and service cost centers). The company used a costing system for the purposes of calculated cost of products (Sugarcane, Sugar, Joint and by products); budget, variance analysis, and preparing financial statements.

3.2 Application of Target costing (TC) in Case study (Sinar Sugar Company)

The application of TC in Sinar Sugar Company involves the following basic steps:

a. Determine the actual cost per unit (Sugar)

Sugar- Cost per unit (tone) = (Total cost for Sugar cane + total costs for manufacturing Sugar)/ Sugar units produced

Table1: cost per unit (Sugar)

Particular	Amount
Direct costs	50482000
Overhead cost	62112852.47
Total costs (a)	112594852.5
Units produced- tones(b)	76708
Cost per unit – tone(a/b)	1468

Source: Researchser, company archive data, 2012.

b. Determine target cost which is calculated as follow:

Market driven selling price – Desired profit Margin = Target Cost

Market driven selling price = 2200, Desired profit Margin = 35% of selling price

Target costs = 2200 – 770= 1430 SDG

c. Determine the cost gap between actual costs and target costs:

Cost gap per unit = actual cost per unit – target cost per unit= 1468- 1430 = 38 SDG

Total cost gap = 76708 ×38= 2914904 SDG

Cost gap ratio = Cost gap / total actual cost per unit= 2914904/ 112594852.5= 0.03 = 3%.

d. Cost reduction process:

After the target cost is determined by subtracting the target profit from the target price, functional cost analysis is used to containment the cost gaps and to achieve the target cost. Functional cost analysis is a group activity typically involving employees from different departments (such as marketing, design, engineering, production, purchasing, and accounting) and is aimed at proposing alternatives for reducing overall product cost. This team-oriented approach requires that the employees of different departments bring together their knowledge and experience in the organization to contribute to the cost reduction process. The following table 2 portrays the cost reduction process report which involved actual costs, target costs, cost gap (actual cost-target cost) and the way to containment the cost gap (negotiations between the employees team to determine the reduced cost elements amounts). The analysis results showed that the use of TC helps Company to containment the cost gap (38) and achieve the target costs (1430) which attain the desired profit (35%). This result answers the study question that TC technique enhances performance by reducing production costs elements. These results agree with some findings of some previous studies that TC enables company to have significant cost reduction and performance enhancement opportunities, for example, Shank & Fisher; Al-Thahabi & Al-Ghabban; Amel.

Table 2: Cost reduction report

Particular for 76708	Cost per unit	Target costs	Gap	The way for reducing cost
Agricultural processes	58.66	52.15	26.5	Increasing herbicide with a high quality herbicide (100000) which will reduce the cost of manual agricultural processes by 500000.
Fertilizer scattering	121.23	114.72	26.5	Decrease the Fertilizer quantity from 4 for acre to 3.5 which will reduce the cost from 9300000 to 8800000
Herbicide spraying	58.66	59.97	-1.31	Purchasing a high quality herbicide (100000)
Harvest	0144.7	8135.5	39.1	Decrease the season days from 163 to 158 and this will reduce the cost of harvest, sugarcane preparation and grinding, juice processing and concentration and sugar packaging from 11100000 to 10400000. the reduced amounts represent the cost labour cost, fuel, oil, spare parts, greases, and others..
Sugarcane preparation	21.77	17.86	3.91	
Sugarcane grinding	32.65	530.0	12.6	
Juice processing	523.9	420.0	3.9	
Juice concentration & crystallization	18.7	7.21	501.	

Juice shaking	21.77	617.8	3.91
Sugar packaging	13.06	611.7	1.30
Total			38

4. Findings, Limitations, and Recommendations:

Findings:

Sinar Sugar Company does not apply modern cost reduction technique (TC). The use of TC helps the company to reduce production costs and achieve the target costs which attain the desired profit and enhance performance for company's existing products. In addition, it provides company with useful information for controlling and reducing costs for the new products before they produced, and this will affect positively the over all company performance.

Limitations of the Study :

The study was limited to just one modern cost management technique, which is TC technique and measure its impact on enhancing the company performance at the discretion of financial manager, cost accountant, head of accounting department and the costs data in one Sudanese manufacturing company as a case study. The study included only one Sudanese manufacturing company and did not include other Sudanese manufacturing companies. This was mainly because of unavailability, attainability, creditability of required information with regard to financial aspects.

Recommendations:

1. Activate the role of TC more by developing specialized administrative units in TC aspects and entrusted with a broader and more comprehensive duties and functions than the accounting departments; and train employees in courses to enhance their skills and experience in dimensions of this technique to meet the work requirements in the new environment.
2. Integrating TC technique with other modern costing techniques such ABC, TQM, JIT for more cost reduction and performance enhancement opportunities.

Recommendations for future research:

1. Using a large survey to examine motives, benefits, and difficulties associated with implementation of TC by Sudanese companies.
2. The integration of TC with ABC in evaluating manufacturing units' performance.

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