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A feasibility study of implementing target costing system in porcelain sanitary-ware industry (Case Study: Chini Kord Company, Kermanshah)

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ABSTRACT

Due to importance of costs, profitability, and survival in the competitive market, producing company managers work around the clock to reduce the prices and increase the profits. Target costing is a strategic approach to cost management aiming at promoting competitive potentials of the companies. This research is a grounded-case study studying feasibility of running target costing system in Chini Kord Company, Kermanshah branch which produces hygienic porcelain ware. Through stratified random sampling and Morgan Table, out of an 800 statistical population, a 260 sample size was chosen. To validate the questionnaire, Likert Scale and to analyze the data, inferential and descriptive statistical tools such as mean, variance, standard deviation, T-test, one-way ANOVA, single sample T, and SPSS software were used. The results indicated that running target costing in market-driven level, product-level, component level and net profit margin level was feasible, and all the questions were valid. Moreover, it was proved there is no significant difference between managers, experts, and workers' opinions on target costing feasibility and all consented on its implementation.

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1. Introduction

One of the most important characteristics of each company is survival. To do so, at least for a short period, it must have a special competitive advantage. There are different approaches to materialize this objective such as leading the prices and having variety in products. To survive, each company has to produce better, faster, cheaper and newer products. Improving product efficacy demands costs and better performance. In early stages of product design, an efficient and practical designing must take both costs and performance into account. Adapting such an approach focuses not only on noticeable features of the product, but also on reducing the related costs. Target costing is an approach aiming at setting designing objectives and reducing the costs.

1.1. Target costing definitions

There are different definitions for target costing all aiming at reducing the costs, among which Sakurai (1989), Cooper (1997), Kato (1993), and Harvath (1997) could be named. All of them put emphasis on cost planning, reducing the costs during product life cycle, and determining target price and profit prior to target cost accounting. To administer target costing, they all consent that professional administrative teams are needed. The most comprehensive definition, however, is provided by Cooper and Slagmulder (1997) in which target costing is defined as a systematic approach that determines a special product life cycle costs. Here the product costs are considered not as designing process output, but as its input. The common point in all definitions is that the product must both satisfy the customers and be produced according to target cost procedure.

Compared to traditional cost-managing standards, target costing provides a more active and preventive approach in determining price and costs. In traditional cost accounting, the costs are estimated based on designing, then a sum is added as profit, and finally the sale price is set. But in target costing, to obtain marginal cost, first the sale price is set based on market and customers demand, then the profit is subtracted from the sale price. Because of its futuristic approach, target costing is different from traditional cost managing processes. Unlike traditional cost management techniques aiming at reducing the costs after the product is produced, here the objective is determining the costs of a new product before it is produced (Khosh Tinat & Ashraf Jamei, 2002). The first stage in target costing is market-driven costing which deals with analyzing market conditions. This stage tries to set the possible target costs of future products, namely, the price at which the new products are to be produced in a way that they are sold at target sale price and desired profit level. Here, the focus is on market demands. After determining the allowed sale price, the costs are divided on designing, supplying and materials processes. In the second stage, product-level costing, the focus is on designing. Based on the current costs, the marginal costs of the new product are predicted, and it is tried to determine target costs. After the target costs are set, through value engineering techniques, the difference between current costs and target costs must be removed. Component-level stage, the third stage, the determined product-level costs are divided to each component costs. As to materials or components supplied by other companies or manufacturers, the producers must make sure that the desired profit is met and at the same time be able to provide the materials at the set price. Net profit margin is defined based on the expected profit, historical results, competitive analysis, and computerized simulations. To make sure the future products are sold, net profit margin in target costing obtains the least expected profit (Hejazi & Albadvi, 2005). A good example of target costing research is, "The Necessity of Target Costing in Household Appliances Production Industry" by Salimi Maava (2006), in which she analyzed target costing technique, described its implementation basics and procedures, and analyzed target costing in household production industry. This industry was capable to meet the market demand, was able to survive the competitive market, had the potential to design new products, and based on target costing, was able to change the production process.

In "Effective Factors in Target Costing Technique and Value Engineering in Iranian Car Manufacturing Industry", Zarei (2001) indicated that production management units were not able to provide an acceptable organizational structure to support target costing although in car manufacturing units it is vital to manage the profit, satisfy the customers, design new products, and have good ties with component producers. Cooper and Slagmulder (1997) in "Factors Affecting the Target Costing" took market-driven costing, product-level costing, and component-level costing into account. They found five basic factors affecting successful target costing. Competitiveness and customer nature affected market driven costing, product strategy and its features affected product-level costing, and finally component-based strategy affected component-level costing. Their results indicated companies with higher net profit margin use target costing more widely than companies with lower net profit margin.

In another study, “The Impact of Target Costing on Cost, Quality, and Development Time of New Products”, Everaert et.al (2000) compared the long-term and short-term benefits of target costing. Simultaneously, in each period, the effects of target costing on the new product, its quality and development period were studied. It was found that in the short run, target costing was cost-effective. Besides, the product quality improves in the long run. They also found that target costing implementation reduced the product development time.

In “The Influence of Time-to-Market and Target Costing in the New Product Development Success”, Afonso & Nunes (2008) examined the relationship between companies’ activities in new product development and its development costs. The findings showed target costing and reducing new product introduction time provided considerable advantages for the costumers. Taking the usage and quality into account, these companies could reduce the product costs and it development period, and thus gain a larger share in the market.

The main objective of this paper is to study target costing feasibility in Chini Kord Company in Kermanshah, Iran. Since implementing the target costing system influences the growth, progress, and international presence of the company, this papers seeks secondary objectives such as feasibility study of Chini Kord market-driven costing, component-level costing, product-level costing, reducing expected profit margin from predicted sale price, and the presence of a significant difference among managers, experts, and workers’ views on the feasibility of target costing. The secondary objectives could be written as follow:

A feasibility study of market-driven costing in Chini Kord Company which produces hygienic porcelain.

A feasibility study of component-level costing in Chini Kord Company.

A feasibility study of product-level costing in Chini Kord Company.

A feasibility study of reducing expected profit margin from expected sale price in Chini Kord Company.

To see if there is a significant difference among managers, experts, and workers’ views on the feasibility of target costing.

2. Materials and methods

The statistical population in this study is Chini Kord Company employees. So all personnel are included from education department, production organization, engineering, quality management control, to warehouse, casting, glazing, sale, materials, and crushing. Chini Kord in Kermanshah is one of the company’s branches producing porcelain sanitary ware. Being established in 1994 and having 750 employees, the company is the largest one in the region. Its nominal capacity was 450/000 pieces of sanitary ware, but within a year it increased to 800/000 pieces. In 2000, it was ranked among 27 top companies in Iran, and in 2001 it was chosen as the standard unit. The company’s products are granted Iranian Standard Certificate, ISO 2001, 2000, and European Quality Standard. The company meets 15% of the domestic market needs and exports 30% of its products. The questionnaire has been filled out by financial officers, accounting managers, experts, managers, board of directors, inspectors, and workers. Because of the nature of statistical population, this survey research uses grounded research method and stratified random sampling (Morgan Table). Inferential and descriptive statistics were used to analyze the data. Descriptive statistics analyses include mean, frequency tables, variance, standard deviation, percent and ratio. To test the hypothesis, in referential statistics, T-test and one-sample T-test were used. To compare the three groups, one-way ANOVA and SPSS software, version 13 were used. And finally, to estimate the sample size, Morgan Table was used (Naderi & Seif Noraghi, 2001, 608) and (Kerjcie et al, 1970, 30). Out of 800 personnel (statistical population), based on Morgan Table, 260 were chosen as the sample size. As seen from table A, the company has 163 managers and 200 experts; 0.20 and 0.25 respectively. The sample size included 0.20 of managers, 0.25 of experts, and 0.55 of workers, making up 260 employees in total.

A: Statistical population table.

Groups	Size	Percent
Managers	163	20
Experts	200	25
Workers	434	55
Total	800	100

B: Sample size table.

Groups	Size	Percent
Managers	53	20
Experts	65	25
Workers	141	55
Total	260	100

To test the validity of the questionnaire, Cronbach's alfa was used. To do so, the primary sample was distributed among 50 members of the statistical population and the results were tested through SPSS software and Cronbach's alfa. As the validity proved to be higher than 0.75, and Cronbach's alfa was higher than 0.70, so the questionnaire was considered to be valid.

2.1. Statistical and descriptive data

In data description level, the population under study is described and a picture of the present situation is presented. To estimate the sample size, Morgan Table was used (Krejcie & Morgan, 1970), and out of 800 employees, 260 were chosen as the sample size.

Based on the stratified random sampling from the sample size, 97.7% of the populations are men, and 2.3% are women. 18% aged less than 30, 0.70 aged 30 to 40, 6.5% aged between 40 to 50, and 0/8% aged more than 50. 60/8% had diploma, 13.7% had AA or AS, 25.4% had bachelor, and 0/8% had master's degree. Taking work experience into account, 27.7% had less than five year experience, 62.7% had 5 to 10, 7.7% had 10 to 15, and 1.9% had over 15 year experience. 0.25 of the sample sizes were experts, 20.4% were managers, and 54.2% were workers.

To gather data, there are different tools, such as questionnaire, interview, and clinical study, but due to human factors, time limit, and delay in research process in case of interview, questionnaire was the preferred choice. Because no standard questionnaire was available, a researcher-made one was used. It was revised and improved through the suggestions of the experts and advisors. Likert 5 point scale (from Not at all to Very much) was used. To convert the data quantitatively, each question was assigned a point from 1 to 5.

2.2. Data analysis

To find any relationships or differences between the variables, inferential statistics was used. To reach the desired objectives, five special questions were posed:

- Q1. Is running market-driven costing system feasible in Chini Kord Company? 10 items
- Q2. Is running component-level costing system feasible in Chini Kord Company? 6 items
- Q3. Is running product-level costing system feasible in Chini Kord Company? 11 items
- Q4. Is predicting net profit margin costing system feasible in Chini Kord Company? 4 items
- Q5. Is there a significant difference between managers, experts, and workers' opinions on feasibility of target costing?

3. Results and discussion

Based on the special research questions and statistical population, the descriptive statistics and T-test results are given in tables 1, 2, and 3, respectively.

Table 1
Descriptive Statistics results for special questions 1-4.

Special Questions	Size	Mean	SD	Mean SD
1	259	4.0212	0.30455	0.01892
2	259	3.5929	0.45988	0.02909
3	248	4.0403	0.25708	0.01632
4	253	3.8587	0.44437	0.02794

Table2
Inter and intra-group descriptive statistics for special question 5.

Description	Square root	Degree of freedom	Mean square	Fisher test statistics	Significance
Inter-group	0.093	2	0.047	1.013	0.364
Intra-group	11.763	256	0.046		
Total	11.856	258			

As to question 5, table 2 indicates that significance level with degree of freedom 2 in level 0.05 equals 0.364; so hypothesis H0 (there is no significant difference between managers, experts, and workers' opinions on feasibility of target costing) is valid and hypothesis H1 (there is a significant difference between managers, experts, and workers' opinions on feasibility of target costing) is rejected. Therefore, it is concluded that there is no significant difference between managers, experts, and workers' opinions on feasibility of target costing.

Table 3

T-test results for special questions.

Special questions	T size	Degree of freedom	Significance level	T mean difference	Test results
Q. 1	53.984	258	0.000	1.02124	Since significance level with degree of freedom 258 in level 0.05 equals 0.000, H0 is rejected and H1 is valid; from population point of view, running market-driven costing system is feasible in Chini Kord Company
Q. 2	20.354	249	0.000	0.59200	Since significance level with degree of freedom 249 in level 0.05 equals 0.000, H0 is rejected and H1 is valid; from population point of view, running target costing system is feasible in Chini Kord Company
Q. 3	63.728	247	0.000	1.04032	Since significance level with degree of freedom 247 in level 0.05 equals 0.000, H0 is rejected and H1 is valid; from population point of view, running product-level costing system is feasible in Chini Kord Company
Q4	30.737	252	0.000	0.85870	Since significance level with degree of freedom 252 in level 0.05 equals 0.000, H0 is rejected and H1 is valid; from population point of view it is possible to predict expected net profit margin from sale price

4. Conclusion and suggestions

The results indicated that running target costing in market-driven level, product-level, component level and net profit margin level was feasible. Besides, there was no significant difference between managers, experts, and workers' opinions on target costing feasibility and all consented on its implementation. Therefore, it is recommended that the traditional costing methods be replaced by target costing. It is also recommended that, in higher levels such as interviews, target costing feasibility be administered in Chini Kord affiliated companies. It is important to do similar research in other companies like Nazgol and Siman Gharb companies at all target costing levels. This paper dealt with target costing feasibility from managers, experts, and workers' point of view, so it is suggested similar but more specialized research be done in this company or similar ones. Since all research questions were valid, it was recommended to run market-driven costing in similar producing companies, and implement net profit margin sale in Chin Kord affiliated companies. Because target costing both reduces the costs and makes product cost calculations more accurate, based on financial and accounting analyses, companies are asked to replace traditional costing systems with target costing and provide for target costing feasibility. Furthermore, component costing (materials) and product costing (development, redesigning, variety, and complexity) must be administered in Chini Kord Company. Finally, as a separate study, other researchers can run target costing feasibility from suppliers, distributors, service providers, and costumers' point of view. In a research by Cooper and Slugmolder (1997), the results indicated that target costing can be administered in three levels:

- Market driven costing
- Product-level costing
- Component-level costing

It was also proved that five basic factors influenced a successful target costing. Competitiveness and customer nature affected market-driven costing; product strategy and its features influenced product-level costing; and component-based strategy affected component-level costing. Cooper's findings which are in line with this paper indicate that companies with higher profit margin use target costing more extensively. Everaert et al (2000) in "The Impact of Target Costing on Cost, Quality, and Development Time of New Products" found that in the short-run, target costing is less costly and that the product quality improves in the long run which comply with this paper finding. Hegz (2002) also found target costing a promising and vibrant tool for textile industry. Salimi Maava (2005) analyzed target costing technique and provided a detailed discussion of their implementation process. Based on the test and hypothesis analyses, she found that if a company wants to be lucrative, senior executives support and team work, demand based production, adaptability in the competitive market, and target costing implementation are needed.

Yet another supporting evidence comes from Zarei (2001) who in his master's thesis found that car manufacturing managers must be able to create an appropriate organizational structure to help implement target costing. Therefore, target costing implementation is quite feasible in ChiniKord Company.

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