Feasibility Study of Activity Based on Costing in Production of Leca

Ghasemali Sabouri
Shafagh University,Mazandaran State, Iran

Key words

Activity based costing, management information system, accountancy, production technology, quality control

Abstract

In recent years, accountancy is defined as an information system. Information is one of the characteristics of the accountancy in communication age. Managers are the most applicants of management information system in accountancy, and they have little knowledge about the role of such a system in Iranian organizations, deprives them from a firm information relationship among managers and the accountancy of productive and industrial organizations. To solve this problem, required information of managers and engineers should be responded through a cost accounting system because of existing production technology, competition of international markets, necessity in decrease of costs and establishing quality control systems in production of Leca (Light Expanded Clay Aggregate).This article is studied on efficiency of activity based on costing because overload costs are considerable proportional to direct wage and material in Leca production.

Introduction

Deficiency of Information systems in Iran⸴ organizations do not help to managers' decision making. The financial accountancy is dominant in Iran while the management accountancy presents a lot of information to inside users including managers. Inadequacy knowledge of managers about the role of accountancy information systems, and tax-centered accountancy in Iran resulted to inappropriate establishment of information systems. Mismanagement of knowledge and information is a bitter fruit of ignorance for the role of accountancy information systems and creating a firm relationship among managers and the accountancy of productive and industrial organizations. The reports of accountants are mainly about accountancy information systems, and should be provided by cooperation of technical managers and engineers in productive and industrial organizations including the rate of consumption of raw materials to make products.

When information system does not work properly, a relationship will not exist. Then, why do not managers and accountants understand each other? Expressing research: the changes in conditions of economic institutions and organizations, and the effect of the factors like competition intensification, the importance of activities and CRM, through combination of quality and profit have transformed the role of costing systems. Activity based on costing systems is as a result of efforts of management accountants to provide new required information. This system presents useful information about the function of organization business in addition to proper measurement of cost price. The activity based on costing is fruitful in business improvement when financial and non-financial information applied together.

A cost accounting system should respond to technical managers and engineers needed information, who interfere in decision making according to production technology and any

changes in decision making if required, competition of international markets, necessity in decrease of costs and establishing quality control systems and costing to perform them, programming for budgetary profit to enter Iran's companies to international markets and finally economic conditions.

The most important needs are as follow:

-To figure out the cost price of products and proposing suitable price

-Costing of production methods

-Costing of performing quality control systems

-Profit programming

The Important Problem

It is important for managers to access related information in decision making and systems in producing such information. If systems of cost accounting can provide information needed for technical managers and engineers, accurate decisions will comprise great profits in productive and industrial organizations. Now economic society is entering to a new phase. Economic decision makers should consider three basic points, which are their duties (norm 44 of constitution).At first, how do they achieve results of technological innovations in different fields as a means for country's development. Second, how do they adapt themselves to various market demands either domestic or international, and finally, how they adapt to international economic activities.

To answer the above points, if they control cost price then cost price of product will decrease and consequently productivity and profitability will increase in industry. Heavy investments in industry by public and private sectors, especially in mother industries, requires information to compete with foreign companies in international markets, saving costs and other economic management and even political issues, clarify the importance of methods causing improvement of output and information systems of cost accounting. Managers and engineers will be familiar with accountancy information system through establishment of these systems on activity based on costing and as a result, an information interrelation will be existed among managers and accountants.

Aim and reason of selected subject

The researcher tries to study the necessary conditions for applying the system of activity based on costing in target society, because the lack of enough knowledge to use this system in Leca company and lack of a suitable pattern to design it, on one side and changing attitude of many managers to emphasize on quality control of products, decrease the costs, competition and customers' satisfaction on the other side.

The research hypotheses of main hypothesis:

The conditions are provided to use the system of activity based on costing in Leca industry.

Lateral hypotheses:

First hypothesis: the managers are aware of principles and advantages of activity based on costing.

Second hypothesis: it is possible to evaluate necessary information for rating cost in Leca industry.

Third hypothesis: it is possible to recognize cost pools and cost derives in Leca industry.

The research domain:

Local domain: the subject of activity is related to Leca industry, so the statistical society in terms of location is Leca Company.

Time domain: there is no special time domain for the research.

Subject domain:

Activity based cost in cost accounting system of leca industry is studied in this research.

The research method

The research is in the form of library and free method. The information is collected through library method and using publications and articles. So the research variables are known and necessary information collected by using questionnaire distribution among statistical sample.

Theoretical literature of research

The system of activity based cost (ABC)

ABC system is one of the product costing systems. This system is used along with costing of work order or phase to provide exact information about costs and finally management economic decisions making. One of important characteristic of ABC is distinguishing it from traditional systems, attention to new production phenomena and technology effects which are used in services and products. Emerging automatic electronic machines and generally production technology have strongly changed the structure of product costs. When organization uses Hi tech, the costs will increase considerably but direct work costs will strongly decrease. In addition, if stock management such as in time system is used, maintenance costs of stock will heavily step down and even consumption cost of direct material will decline. Therefore, overload cost indicates strikingly increase versus direct worker's share.

Administrative Mechanism of ABC System

In traditional costing systems through making cost centers, all productive costs divided by the number of made products to determine cost price. In this system, there is no direct relation between necessary activities for producing services and products and their uses from company's financial sources. Therefore, cost price of product does not reflect activities and values of sources used directly. ABC system removes this defect through direct correlation of organizational costs with operating activities costs. From scientific point of view, ABC specifies causal relations between making costs and activities for producing service and product, which has economic value for the company. This system considers different main factors as a base for cost sharing instead of using one factor (mainly direct wage or working hours of machine). Cost centers determine rates of every single activity and these rates are obtained for products in basis of sources used for production or service.

Cost centers in Leca Company are as follow:

Leca aggregate production line 1, 2

2-Leca Block production line of 1, 2

3-public cost centers

The activities in Leca production lines are categorized as follow:

1-preparation unit

2-dust removal unit

3-dry kiln

4-kiln,s platform

5-transition unit

The above activities are related to production line that some supportive activities are as follow:

1-Riddle and fascicle

2-Trunery unit

3-Repair shop of motorized machinery

4-Labaratory…

Because activity based on costing is suitable in companies with much overload costs that these costs are not evenly assignable to different products according to their production. With regard to high costs in supportive units, performing ABC system is one of the desirable choices. In this paper, research methods and statistical society and measurement tools will be explained. The analogical method is used in theoretical research that by theoretical collection ABC system is used in Leca Company.

As we have already talked about managers and engineers knowledge on accountancy system,then to collect the information, a multi- choice questionnaire with 20 questions prepared and delivered to them. The answers and information received by this way is a base for statistical analysis on replication of rate needed to present accountancy system and shows necessity of conditions to use ABC system. The results of library work include expressing characteristics of ABC system, presenting necessary steps to perform the systems and suggesting information environment based on ABC as a field to use information analysis in new environment.
Variables and limitations.

To prove Ohm hypothesis, accountancy system replication to required information of managers, is considered. So after gathering information if they are important from managers, view and not presented by accountancy systems, the hypothesis will not be accepted. So does lack of replication to information needs arise from disability of present accountancy systems? Are these systems performed properly to test outputs effects on managers, decision making. In other side do managers always demand information from accountancy unit for decision making? The answer is a limitation which affects on research results.

There are three reasons for lack of information relation between accountants and managers and engineers in organizations:

- The traditional system of cost accounting can not present related information to technical managers.
- The traditional system of cost accounting is not established and performed properly in order to have a suitable output.
- Managers and engineers do not feel a need to accountancy reports for different reasons.

As seen, there is no information connector between accountants and managers in existing of every situation mentioned before. Regarding the first reason, the subject is testable through questions and questionnaire and collected information and the research introduces an alternative. Second and third reasons are considered research limitations which impact on dispatched answers, so we ignore them. In this research we assumed that accountancy systems are performed properly and managers need to accountancy information in decision making, therefore we test the effects of other independent variables.

Information collection method

In every research the most important part is information collection in order to analyze and conclude, as we did the same way because materials and ideas are closer to reality in anonymous questionnaire. Then questionnaires based on Likert degree spectrum, familiar with accountancy system and also the type of information relations between accountancy system and managers and engineers have been studied. For statistical covering, 60 questionnaires were distributed among managers, engineers and supervisors of different departments.

Statistical method of deductive analysis

The analysis of deductive statistics always requires sampling and selecting a small group which is related to a large group. The aim of deductive analysis is to deduce results about societies according to observations in samples.

The questions of research questionnaire based on five degrees of Likert's spectrum from very low to very high to specify the tendency from fully disagree to fully agree and
very high. Their scores are as follow:

Very low=1

low=2

medium=3

High=4

very high=5

Based on given coefficients, the mean of answers is 3. This number is compared to mean of answers for every question and sum of questions and through it hypotheses are accepted or rejected.

At first the hypothesis is presented in two hypotheses H_0 and H_1 to analyze data that H_0 is in disagreement with proposed hypothesis and H_1 is agreeing with it. Then hypotheses H_0, H_1 by using average of given coefficients to answers ($\dfrac{1+2+3+4+5}{5}$) formulated as follow:

If answers mean of Likert spectrum is less than 3, hypothesis H_0 is proved and as a result H_1 is rejected and contrary to this hypothesis is also true.

To analyze hypothesis, answers should be computed. To compute mean, at first for questions in a column have been determined coefficients 1 to 5 respectively that the number of answers to every question are written in frequency column (f) and finally coefficients of every question x multiply to number of answers f and product is written in column fx and then the mean is computed using this formula:

$$\mu = \frac{\Sigma fx}{fx}$$

Hypotheses analysis

First hypothesis: Leca company managers are aware about principles and advantages of activity based on costing.

The questions number 2, 10, 12, 13, 15, 17, 18 are planned out in proportion to the above hypothesis. Therefore to prove or reject hypothesis, obtained information of these questions is used. The feedbacks of respondents are as follow:

Reviewing first hypothesis shows that it can be presented for statistical analysis in the form of hypotheses H_0, H1 as follow:

Hypothesis H_0: the managers are not aware about principles and advantages of activity based cost.

Hypothesis H_1: managers are aware of principles and advantages of activity based on costing.

The mean of five choices questions is 3. Then hypotheses H_0 ,H_1 can be formulated as :

$$H_0 : \mu \leq 3$$
$$H_1 : \mu \succ 3$$

T-Test (1)

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
VAR00007	490	3.3061	.97419	.04401

One-Sample Test

	Test Value = 3					
				Mean	95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Difference	Lower	Upper
VAR00007	6.956	489	.000	.30612	.2197	.3926

Because the mean of hypothesis analysis (according to software, report is 3.306) is statistically more than mean of answers in Likert spectrum, so hypothesis H_0 is rejected and hypothesis H_1 is accepted. Therefore, allegedly, the managers of Leca Company are aware of principles and advantages of activity based on costing.

Second hypothesis:
It is possible to evaluate necessary information for costing in Leca Company.
The questions 3, 8, 9,11,19,20 planned in proportion to the above hypothesis, so to prove or reject hypothesis, obtained information of these questions is used.
Reviewing second hypothesis shows that it can be presented for statistical analysis in the form of hypothesis H_0, H1 as:
Hypothesis H_0: it is not possible to evaluate necessary information for costing in Leca Company.
Hypothesis H_1: it is possible to evaluate necessary information for costing in Leca Company. The mean of answers of five choices questions is 3. So hypotheses H_0 ,H_1 can be tabulated (next page) and formulated:

$$H_0 : \mu \leq 3$$
$$H_1 : \mu \succ 3$$

T-Test(2)

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
VAR00007	420	3.7857	.63830	.03115

One-Sample Test

	Test Value = 3					
				Mean	95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Difference	Lower	Upper
VAR00007	25.227	419	.000	.78571	.7245	.8469

Test (2) - because the mean of hypothesis analysis (3.785) is more than the mean of answers in Likert spectrum. So hypothesis H_0 is rejected and hypothesis H_1 is accepted. Therefore, it is possible to evaluate necessary information for costing in Leca Company.

4-4- third hypothesis

It is possible to recognize cost pools and cost derives in Leca Company.

The questions number 5, 16, 7, 14 and 16 are planned in proportion to the above hypothesis. So to prove or reject this hypothesis, obtained information of these questions is used.

Reviewing second hypothesis shows that it can be presented for statistical analysis in the form of hypothesis H_0, H1 as follow:

Hypothesis H_0: it is not possible to recognize cost pools and cost derives in Leca Company.

Hypothesis H_1: it is possible to recognize cost pools and cost derives in Leca Company.

The mean of five choices questions is 3. So hypotheses H_0, H_1 can be formulated as next page and table 3-4:

$$H_0 : \mu \leq 3$$
$$H_1 : \mu \succ 3$$

T-Test (3)

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
VAR00007	280	3.1429	.99152	.05925

One-Sample Test

	Test Value = 3					
				Mean	95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Difference	Lower	Upper
VAR00007	2.411	279	.017	.14286	.0262	.2595

Because the mean of hypothesis analysis (according to software, report is 3.143) is statistically more than mean of questions in Likert spectrum (3), so hypothesis H_0 is rejected and hypothesis H_1 is accepted. Therefore, it is possible to recognize cost pools and cost derives in Leca Company.

Ohm hypothesis:

There are necessary conditions to use activity based on costing in Leca Company.

According to analysis, results and lateral hypotheses (1 to 3), it is possible to use ABC system in Leca Company. The questions are related to the above hypotheses. Therefore, the researcher uses obtained information of these questions to prove or reject the mentioned hypothesis. Reviewing Ohm hypothesis shows that it can be presented for statistical analysis in the form of hypothesis H_0, H1 as follow:

Hypothesis H_0: there are not necessary conditions to use ABC system in Leca Company.

Hypothesis H_1: there are necessary conditions to use ABC system in leca company.

$$H_0 : \mu \leq 3$$

$$H_1 : \mu \succ 3$$

T-Test (4)

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
VAR00007	140	3.2143	.55988	.04732

One-Sample Test

	Test Value = 3					
				Mean	95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Difference	Lower	Upper
VAR00007	4.529	139	.000	.21429	.1207	.3078

Conclusion

According to Tables 4-4, the amount of mean (3.214) proves hypothesis H_1. Because this amount is lesser than answers in Likert spectrum, then Hypothesis H_0 is rejected. Therefore, there are necessary conditions to use ABC system in Leca Company.

References

Ahadi, Seyed yusef , affectivity assessment of accounting data systems' outlets on decision-making of managers, M.S. Dissertation . Management faculty of Tehran University, 1996.

Islami Dehkordi , Khosro, cost accounting assessment of traditional absorption in response to data needs of technical managers and engineers, M.S. dissertation , Shahid Beheshti University , 1998

Sagheb, Mahdi, systems analysis (university brochure) Shahib Beheshti University, faculty of office science.

Saghafi, Ali , strategic management of modern ideas in Management accounting, collection of auditor articles, no.6, audit organization press, first edition.

Hafeznia, Mohammad Reza, Introduction on research method in humanity science.

Kheiri, Yaghub, cost of pipes and profile manufactured in producer companies, M.S. Dissertation, Islamic Azad University, 1997

DavudAbadi, Majid, study the efficiency of Accounting system in cost Aluminum Profile manufactured in Markazi Province , M.S. Dissertation , Islamic Azad University , 1998.

Zakeri, Batul , structured data system analysis and design method, industrial management organization press, first vol, second edition .1993

Jadic and mure, management accounting , second volume, translator, dr. Hossein Abdeh Tabrizi, Pishbord press, first edition

Sajadinejad, Hassan; Akbari, Fazlolah, accounting idioms dictionary, first vol, audit organization press, first edition

Shabahang, Reza , management accounting

Alivar, Aziz, cost accounting by activity, auditor, first year, No 4,5.

Arab Mazar Yazdi, Mohammad, revision necessity of accounting data systems in accounting training, accounting studies journal, third year, NO 9.

Arabi, Mahmud, cost accounting by activity, auditor, 14th year, No 136.

Farzin Far, Aliakbar, Study the Accounting System of cost Steel Manufactured and comparing it with budget, M.S.Dissertation. Islamic Azad University, 1996.

Ghorbani, Abdollah, study the problems of cost of goods manufactured in industrial and Investment Company of Sepanta, M.S.dissertation , Islamic Azad University, 2000.

Matz, Adolph; Milton F. Usry, cost accounting , first vol, translator, Aziz Alivar ; Dr.Reza Shabahang, audit organization press.

Matz, Adolph; Milton F. Usry, cost accounting , third vol, translator, Aziz Alipour ; Dr.Reza Shabahang, audit organization press.

Mesi Muroati Bel, translator Said Afkhami" cost accounting by activity" a different subject with historical cost accounting system , auditor, NO 115.

Mokremi, Yadollah, [lecture], Look to Revenue of Accounting Data in Iran's industries.

Mirzai, GolamReza, cost accounting based on affective tool in control and planning, accountant, 13th year, No 130

Namazi, Mohammad, study "cost accounting by activity" system in management accounting and its behavioral notations, accounting and audit studies, 7th year, No 26,27. Audit organization press, sixth edition

Deakin Edward & Maher Michael w. "Cost Accounting," IRWIN,3, rd.

Hilton Ronald W. «Management Accounting» Mc Graw Hill, 1994

Horngren Charles T. &Foster George, «Cost Accounting»- Prentice- Hall- 7th ed. 1990

S.w Anderson data in new Production development Accounting Horizons Vol 12 no 3, 1998