

CONTRIBUTIONS TO IMPROVING THE USE OF ABC IN EGYPTIAN COMPANIES BY IMPLEMENTING KAIZEN COSTING CONCEPT

PETRU STEFEA¹, KARIM ABBAS²

¹*Faculty of Economics and Business Administration (FEAA),
West University of Timisoara (UVT), Romania,
email: petru.stefea@feaa.uvt.ro*

²*Faculty of Management, Department of Accounting,
Modern University for Technology and Information (MTI), Cairo, Egypt
e-mail: karim_mamduh2000@yahoo.com*

Abstract: *The present study aims to analyze the contribution extent of Activity Based Costing (ABC) system in achieving the objectives of Continuous Improvement (Kaizen Costing) concept. The researcher conducted a field study. The population of the study is some Egyptian manufacturing firms. The number of received questionnaires was 385. The results revealed that there is a successful contribution from outputs of ABC system in achieving the objectives of Continuous Improvement (Kaizen Costing) concept during application process inside the firms.*

Keywords: *Activity Based Costing, Continuous Improvement, Performance, Egyptian firms, Kaizen.*

INTRODUCTION

Mistrust the managerial accounting system for accuracy and transparency leads to applying Activity Based Costing (ABC) system [9]. The Activity Based Costing (ABC) system provides qualitative, quantitative and economical information for the organizations especially those organizations which care about the continuous improvement and program the satisfying the customers needs. But the information provided by the ABC system can not be considered the only type of information needed by the managers. They desire to get information about the quality, process time and the costs of activities. Also, the ABC system provides the activity costs from these required information and supports the accurate decision making, profitability analysis and it is considered an excellence method in cost calculations [5,6,10, 12,13].

The first use of the Activity Based Costing (ABC) system concentrated on cost allocation dimension which aimed at increasing the efficiency of the measurement to reach determination a more accurate cost of the products. Soon afterwards, the use of the ABC system was modified for reducing the costs dimension which contributes in reducing the costs. Wherefore, in the light of previous views, there is a great necessity to determine the relationship among the ABC system and the other modern accounting concepts. Dutch, medium-sized manufacturing firms are more likely to adopt and use ABC at moderate levels of product diversity than at high levels of product diversity. Also, the product diversity, on average, is positively related to both ABC adoption and ABC use [17,19].

The current method of cost calculation used in Romanian and Egyptian business entities, which causes a historical cost, used to settle post factual production costs and which allocates indirect costs according to some subjectively chosen basis, can not provide the management with the possibility of satisfying the need for information as well as the fact that in today's changing technological conditions the calculated cost of production is not a real cost. Thus, it is required to adopt some methods of management accounting and

cost calculation to enable a more rigorous allocation of indirect costs and to be operational in order to meet the information needs of management in decision making [1, 7,14].

The objective of the present study is to analyze the contribution extent of Activity Based Costing (ABC) system in achieving the objectives of Continuous Improvement (Kaizen Costing) concept inside some Egyptian manufacturing firms.

Review of literature

The continuous improvement (kaizen) means sustainable improvements which apply to all the factors related to the conversion process from inputs to outputs [16]. This improvement includes the buildings, supplies, materials, methods of work, performance and behaviors of the workers. This means that every individual whether in the top management or in the workshop is responsible for the quality, time, efficiency and effectiveness of the production process. According to the concept of this system, the labor force must be very skillful in dealing with the various machines and the role of the worker is not limited to manufacturing only but also extends to cover both the inspection and controlling the quality of the products and performing maintenance processes and preparing the machines to operate. This matter leads to decrease the percentage of direct labor in the advanced manufacturing environment [4]. So, the study will cover some important points related to the concept and objectives of the continuous improvement and its relationship with the Activity Based Costing (ABC) system.

Khan (2011) indicated that Kaizen encompasses many of the components of Japanese businesses that have been seen as a part of their success. Quality circles, automation, suggestion systems, just-in-time delivery, Kanban and 5S are all included within the Kaizen system of running a business. Kaizen involves setting standards and then continually improving those standards. To support the higher standards Kaizen also involves providing the training, materials and supervision that is needed for employees to achieve the higher standards and maintain their ability to meet those standards on an ongoing basis. The results achieved by Kaizen are: Setup time reduction 70 –90%, Productivity improvement 20–60%, Process time reduction 40–80%, Inventory reduction 30–70%, Walking distance reduction 40–90%. There are several types of kaizen activities, ranging from those that focus on developing solutions to problems on the factory floor, to implementing a predetermined plan for change, to streamlining the flow of paperwork.

Chandrasekaran et al. (2008) applied Kaizen technique to solve the ‘part mismatch problem’ in automobile assembly production line. Step-by-step Kaizen procedure has been followed to solve the problem by data collection, root cause analysis, selection of the best solution method, corrective action and documentation. The various benefits that have been observed after implementing Kaizen include elimination of major functional problem, reduction in quality rejections, elimination of rework processes and a considerable cost saving.

Singh and Singh (2009) stated that Kaizen is a widely accepted philosophy in manufacturing industries, more research work is required in this field. They recommended that Kaizen philosophy can also be applied to different areas like business, service, commerce, etc. Success stories revealed that it requires team efforts involving every employee in the organization to fully implement the system. So more research is required which could improve the awareness aspects, as these factors are highly important for the success of the Kaizen philosophy in most of the manufacturing industries across the globe.

Sani and Allahverdizadeh (2012) pointed out that there were precedents in the West in terms of learning curves (which projected the extent to which direct labour costs could be reduced through learning undertaken in a repetitive activity) and experience curves (which traced how all costs could be reduced as a task was undertaken more and more times). There is certainly some elements of this in kaizen, but the latter is even more

encompassing than experience curves in so far as it does not just depend upon experience to identify improvements, but encourages the use of intelligent and shared thought and action through work-teams to search for improvements.

Concept and objectives of continuous improvement(kaizen):

a) The continuous improvement (kaizen) represent a continuous and gradual change process. It concentrates on the performance or carrying out the existing tasks in a more effective method and working continuously to achieve some improvements even if they were simple [15].

b) The continuous improvement (kaizen) means those procedures and modern systems coming from the comprehensive controlling of quality which aim at providing the service and the continuous assistance to solve the performance problems and providing the procedures which prevents the future repetition of these problems [3].

c) The continuous improvement (kaizen) is represented in these efforts which are activated , gradually, to achieve some improvements in the processes performance or in designing the products or both of them so as to achieve the competitive advantages [2]. This definition shows that there are two types of the continuous improvement:

1- Continuous improvement (kaizen) of processes:

This means a trend for searching about the reasons of losses and the profusion of operational activities and working for avoiding these losses. Therefore, the processes of allocating the required time to prepare the machines, reduces the costs and improves flexibility and quality.

2- Continuous improvement (kaizen) of products:

This means a trend for the good design of products to guarantee satisfying the customer's requirements and easiness and quickness of the manufacturing processes [21].

Hence, According to the previous studies, the continuous improvement (kaizen) may be defined as: a research and development process which has no end for the sake of obtaining a higher level of performance for all the company's processes.

d) Kaizen is a system that involves every employee- from upper management to the cleaning crew. Everyone is encouraged to come up with small improvement suggestions on a regular basis. This is not a once a month or once a year activity. It is continuous. Kaizen is based on making changes anywhere where improvements can be made. Western philosophy may be summarized as, "if it is not broke, do not fix it." The Kaizen philosophy is to "do it better, make it better, and improve it even if it is not broken, because if we do not, we can not compete with those who do" [11].

The relationship between Activity Based Costing (ABC) system and continuous improvement (kaizen) concept:

The relationship between the Activity Based Costing (ABC) system and the continuous improvement (kaizen) concept may be clarified through mentioning the following stages [3]:

1. The detailed determination for activities of the beginning stage of achieving the added value for the product unit until the final stage which is related to the transfer of the product unit to the consumer.
2. Determining the aspects of gaining the customer satisfaction. The costs of these aspects represent one of the cost factors which must be loaded on the product unit cost and attempt to get rid of non added value activities.
3. Restricting and getting rid of the profusion and losses which are discovered in the processes activities. This matter is considered a developmental objective for the expenditure aspects.

4. Setup the indicators of efficiency and the limits of permissible losses in the various aspects of operating and analyzing the deviations at the level of the activities consumption unit (Inputs) and not on the operational outputs level.

In the light of the previous stages mentioned above, it turns out that there are difference and discrepancy between the Activity Based Costing (ABC) system and the continuous improvement concept. The difference is representing in the ABC system is considered as a strategic approach which cares about the resulting effects from measuring the costs the long term. It aims at to try to eliminate the activities which do not add value to the firm, whereas the continuous improvement is considered as an operational approach which aims at to try to reduce the costs in the short term. As for the discrepancy, is representing in ABC system a large number of cost drivers which is inconsistent with the objective of reducing the costs which is the main objective of the continuous development. But, this discrepancy may be overcome through the use of more common cost drivers which are produced directly from the production unit itself. This matter leads to reducing the number of these drivers and consequently reducing the costs which is fitting with the continuous improvement [3].

Consequently, the researcher concludes that Activity Based Costing (ABC) system is considered as an assisting factor for the continuous improvement process because it provides the managerial staff with detailed information about the activities inside the firm. This is in addition to specifying the added value activities and non added value activities; also the cost drivers illustrate the consumption extent of each activity from the firm resources. This matter leads to providing a good indicator for measuring the performance of the activity and easiness of carrying out a comparison among the number of the actual and the planned cost drivers at the level of each activity. Fig.1 shows the assistance extent of Activity Based Costing (ABC) system in achieving the objectives of continuous improvement concept inside an Egyptian manufacturing firm.

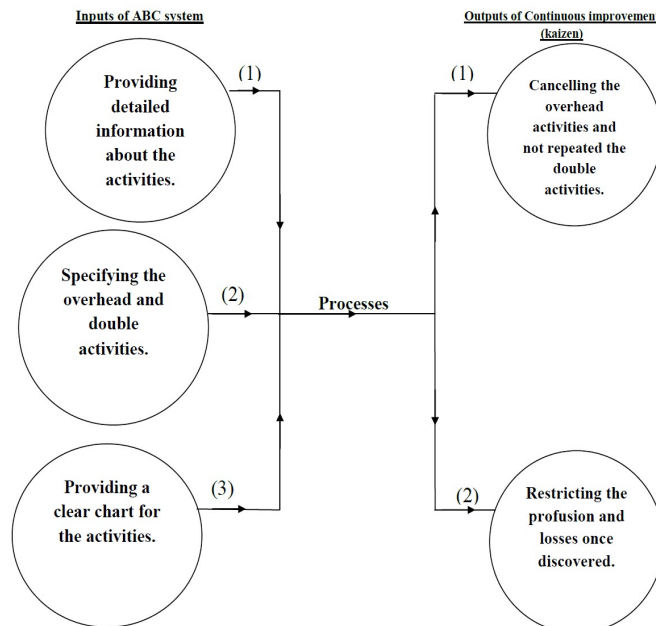


Figure1: Schematic form of assistance extent of Activity Based Costing (ABC) system in achieving the objectives of Continuous Improvement (kaizen) concept inside an Egyptian manufacturing firm.

The Study Hypothesis

The present study aims to test the following hypothesis:

There is a significant correlation between outputs of Activity Based Costing (ABC) system and the success extent of the application Continuous Improvement (Kaizen Costing) concept inside Egyptian manufacturing.

MATERIALS AND METHODS

Data

The researcher used the questionnaire instrument in addition to the test approach to confirm the correctness of collected views. The number of sent questionnaire instruments was 441 (For 27 manufacturing firms in the first half of 2014) and the number of received questionnaires was 385 with a response percentage of 87.30%.

Methods of data analysis

A Statistical Package for the Social Sciences (SPSS) was used for applying reliability, descriptive and inferential statistics.

RESULTS AND DISCUSSION

Statistical Analysis

1. Reliability statistics:

a) Internal consistency reliability:

Internal consistency reliability indicator was used to assess the consistency of results across items within the test. The results of the present study revealed that there is a correlation coefficient among the dimensions of questionnaire which is significant at levels of 1 and 5%.

b) The Cronbach-Alpha Coefficient:

Cronbach's Alpha Coefficient was as a statistical indicator. It is generally used as a measure of internal consistency or reliability of a psychometric instrument. The results of study pointed out that Cronbach's Alpha Coefficient of questionnaire was 88.37.

Descriptive statistics:

Table 1 shows mean and Standard Deviation (S.D.) values of survey dimensions (Outputs) for applying ABC system inside Egyptian manufacturing firms.

Table 1
Mean and Standard Deviation (S.D.) values of some effective dimensions (Outputs) for applying ABC system inside Egyptian manufacturing firms

No.	Dimension (Output)	Mean	Std. Deviation (S.D.)
1	ABC system is supporting for providing detailed information about the manufacturing activities.	3.946	0.681
2	ABC system is supporting for specifying the overhead and double activities.	2.631	1.212
3	ABC system is supporting for providing a clear chart for the activities.	3.631	1.177

Descriptive statistics analysis showed that mean and S.D. values were (3.946, 2.631 and 3.631) and (0.681, 1.212 and 1.177) for first, second and third dimensions of ABC system , respectively.

Therefore, the outputs of ABC system may be arranged , in descending order, according to effect severity in the system as follows: First , third and second.

Also, the analysis stated that the agreement percentage was 72.57% for the outputs of Activity Based Costing (ABC) system inside Egyptian manufacturing firms. The rest of percentage (27.43%) represents effect of other random factors.

Table 2 shows mean and Standard Deviation (S.D.) values of survey dimensions (Objectives) for applying Continuous Improvement (Kaizen Costing) concept inside Egyptian manufacturing firms.

Table 2

Mean and Standard Deviation (S.D.) values of two effective dimensions (Objectives) for applying Continuous Improvement (Kaizen Costing) concept inside Egyptian manufacturing firms

No.	Dimension (Objective)	Mean	Std. Deviation (S.D.)
1	Continuous Improvement (Kaizen Costing) is cancelling the overhead activities and not repeats the double activities.	3.790	0.760
2	Continuous Improvement (Kaizen Costing) is restricting the profusion and losses once discovered.	2.834	1.172

Descriptive statistics analysis indicated that mean and S.D. values were (3.790 and 2.834) and (0.760 and 1.172) for first and second dimensions of Continuous Improvement (Kaizen Costing) concept, respectively.

Therefore, the two objectives of Kaizen Costing concept may be arranged ,in descending order, according to effect severity in the concept as follows: First objective followed by second objective.

The analysis also revealed that the agreement percentage was 73.28 % for the objectives of Continuous Improvement (Kaizen Costing) concept inside manufacturing firms. The rest of percentage (26.72%) represents effect of other random factors.

5.1.3. Inferential statistics:

The researcher used Pearson Correlation Test as inferential statistics analysis to detect correlation significance among outputs of ABC system and objectives of Kaizen Costing concept in achieving a successful contribution during application inside Egyptian manufacturing firms.

Table 3

Output Pearson Correlation Test.

Correlations

		ABC	KAIZEN
Pearson Correlation	ABC	1.000	.938**
	KAIZEN	.938**	1.000
Sig. (2-tailed)	ABC	.	.000
	KAIZEN	.000	.
N	ABC	385	385
	KAIZEN	385	385

** . Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows there is a significant correlation among outputs of Activity Based Costing (ABC) system and objectives of Continuous Improvement (Kaizen Costing) concept during application inside Egyptian manufacturing firms (At significance level of 1%).

Thus, the results indicated that there was a successful contribution from outputs of Activity Based Costing (ABC) system in achieving the objectives of Continuous Improvement (Kaizen Costing) concept during the application inside Egyptian manufacturing firms.

CONCLUSION

ABC system is considered as an assisting factor for the continuous improvement process because ABC system provides detailed information about activities inside the firm in addition to the activities as activities of added value and activities of non added value and try to get rid of last type of activities and utilize their resources in other activities which add value.

For achieving the purpose of upgrading the performance efficiency of cost accounting systems in some Egyptian manufacturing firms, the researcher conducted a field study and he concluded that there is a successful contribution from outputs of ABC system in achieving the objectives of Continuous Improvement (Kaizen Costing) concept during application process inside the firms.

There is a significant difference among outputs of Activity Based Costing (ABC) system and objectives of Continuous Improvement (Kaizen Costing) concept during application inside Egyptian Manufacturing firms at significance level of 1%.

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