International Journal of Engineering Inventions
e-ISSN: 2278-7461, p-ISSN: 2319-6491
Volume 2, Issue 2 (January 2013) PP: 10-20

The Credibility and Plausibility of the Modified Usage of the Activity Based Costing on Strategic Performance of the Egyptian Companies

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Abstract:- Companies are now operating in an intensive competitive environment to make significant process improvements in areas such as quality, productivity, and innovation. This is because the customer expects more product choices, but at lower prices, with higher quality and faster delivery. It is also evident that companies nowadays need more accurate, timely, and reliable financial and operational information to permit managers to make effective strategic and tactical decisions about pricing, product line development, process improvements, product mix, investment decisions, etc. This study investigates whether adopting some management accounting systems altogether can contribute to facing such challenges. Therefore, the study tests the impact of applying activity-based costing system (ABC) upon organizational performance of the Egyptian companies in the manufacturing and service sector. Research questions tries to reveal the ambiguity concerning whether the organization will be in a better position by applying ABC system. Information will be collected through questionnaire responses from a random sample of manufacturing companies and service business units located in Egypt. The results of the study indicate that organizations` performance is positively affected by applying ABC.

Keywords:- activity-based costing, process improvement, operational information.

I. INTRODUCTION

By looking at the business environment nowadays, it is noticed that companies struggle with numerous challenges including determining best strategies and objectives, coping with limited resources, determining how best to economically obtain additional resources, how to optimally allocate these scarce resources, and ultimately how to measure success. Moreover, companies need to consider the relationship between various inputs, objectives, and the associated improvement outcomes in their business process. In addition, there is shortage of the information required by the organization in the different business stages to conduct its various functions and to enable it to take the right decisions in stead of basing its decisions upon misleading information that weakens the organization and undermines its performance in the long run. That indicates to the importance of adopting the new management initiatives which help in providing such information and solving such problem. The study works to encourage the Egyptian companies working in the manufacturing and service sector apply the new management systems like the ABC system through highlighting the anticipated benefits from such application. Applying the ABC system is expected to make different types of information as well as information in different business areas available to the organization which is expected to provide rich information to the organization, guide, and facilitate decision making in this organization. That is expected to help companies manage and continuously improve their business processes which help it survive today and flourish in the future.

1/1 Research objectives and questions:

The main objective of the study is to investigate the impact of applying the ABC system on company performance. There are some sub objectives such as filling the gab of the information required by the organization, achieving process improvement, enhancing the organization performance and support its strategy, finding a way to improve company performance, and finally giving more attention to the tools which may affect strategy of the firm in an attempt to improve the firm's strategy and as a result improving future performance. The main assumption of this research may be summarized in this question: **"Do the companies which apply the ABC system enjoy more efficiency and better performance than those that do not apply such system?"**

1/2 Research Methodology:

The researcher used the survey method to collect the required data necessary to know the impact of the two concerned management systems upon the performance of the organization and business efficiency. Information was collected through questionnaire responses (five likert scale questions) from a random sample of

manufacturing business units located in Egypt as well as the service sector. The population of the study is the banks and the food industrial companies located in Egypt. The questionnaire instrument was delivered to the financial, cost, or management accounting department of each targeted entity. The respondents were the managers or the directors of these departments, their assistants, and some distinctive employees who understand the tested management accounting initiatives. An interview was held with managers and directors of these departments asking for their participation in the study and explaining to them the nature and the objective of the study. Firstly, the researcher carried out pilot study with (N=38) including both food industrial companies and banks. Random sample size calculated was 138. The number of questionnaire instruments sent to banks was 69 and the number of the received questionnaires was 47 with a response rate of 68%. The number of the questionnaire instruments sent to food industrial companies was 69 and the number of the received questionnaires was 51 with a response rate of 74%. The questions used were multiple choice questions, questions which are answered with yes or no, and the five likert scale questions. Respondents were contacted by telephone calls before delivering the questionnaire instrument to them. Also, they were contacted by the telephone after delivering the questionnaire instrument to make sure that they completed it. Food industries were selected as a representative of the manufacturing sector and banks were selected as a representative of the service sector.
Both descriptive statistics such as frequencies, percentages, means, standard deviation, and coefficient of variation, and analytical statistical techniques were used to analyze research data. T-test is also used to measure the significant differences between Banks and food industrial firms adopting ABC system and to what extent such systems affect performance in these firms. Spearman's rho Correlation matrix is used to assess the significant relationships among the ABC system . Finally, bath analysis was used to explain the relationships among the multiple variables as well as examining the structure of interrelationships expressed in a series of equations.

II. BACKGROUND

Although some believe that ABC was invented in the 1980s, ABC was in fact described decades before by academics and practitioners. It is true however that ABC was more seriously applied in the 1980s when the conditions were more suitable (e. g., increased proliferation of product and customer service diversity, greater support overhead costs, and off-line analytical application non-mainframe ABC/M software) (Cokins, 1999). El-Kelety (2006) reported that the concepts on which ABC is based are not new in the history of cost accounting and management. It was also reported that for the theory, the ideas on activity costing can be traced back for several decades , Elgibaly, (2011). With regard to the evolution of the concept named ABC, Daly (2002) reported that Activity-based costing was named and became a formal discipline in 1986 as a result of a project initiated by the Consortium for Advanced Manufacturing International (CAM-I, pronounced with a long "I") which put together a distinguished project team to improve cost accounting techniques. That team included, among others, Robert Kaplan from Harvard, Robin Cooper, now at the Claremont Graduate School, and James Brimson as Project Director. Each of these persons became prolific writers on ABC subjects in the following years. With regard to the release of the ABC system at this time, Kaplan and Cooper, the proponents of the concept, stated that the reason behind the delay in emerging ABC system until mid-1980s was that; for many decades prior to 1980, the errors made by traditional systems were small and companies had relatively narrow product lines. So the distortions from producing high- and low- volume products and standard and customized products in the same facility didn't occur. Also many processes were labor intense and the costs of direct labor were well measured and assigned with traditional costing systems. As organizations automated their processes, greatly reducing or even eliminating direct labor and introduced more variety into their product lines, they required much higher levels of batch and product- sustaining activities. Thus as the cost of batch and product sustaining costs increased, relative to the cost of unit- level activities, errors from traditional costing systems increased. Furthermore as competition become more vigorous and more global, the costs of poor decisions-based on distorted information-became much higher and the need for a more developed system increased as a result. All of this contributed to importance of launching the ABC system in its current form.

a. OBJECTIVES AND BENEFITS OF ABC ADOPTION

Cook et al., (2000) stated that the goal of ABC is to measure and then price out all the resources used for activities that generate the production of goods and services for customers. Further, Cokins (2003) stated that initially the goal of ABC was strictly more accurate product costing and as ABC moved into the early 1990s, some companies began leveraging the activity cost data for more operational purposes. Therefore, the main objective of the ABC system adoption process is for cost accounting purposes. However, there were other mentioned objectives, e.g. Edward Back et al., (2000) stated that the aim of an ABC system is to provide complete traceability of actual costs within a process for better corporate cost management. Beaulieu& Ding

(2007) stated that some of the objectives of ABC are product costing, process analysis, performance management, profitability assessment, and value-based management.

III. BENEFITS OF ABC IMPLEMENTATION

First of all, there are some traditional benefits of the ABC system which are related to costing and pricing. Raz and Elnathan (1999) stated that the benefits to the organization from using the ABC include support for cost estimation of new projects or ongoing projects, control of project execution in terms of cost and work accomplished, and performance evaluation of project manager and project team members responsible for the various activities. Cooper &Kaplan (1991) as in Roztocki (2001) stated that in many cases the ABC implementation has contributed substantially to a more efficient use of overhead resources, and therefore, has lead to an impressive cost savings. By reviewing the related literature, it is noticed that ABC system is not only used in cost related purposes. ABC provides a more accurate method of costing of products and services, allows for a better and more comprehensive understanding of overhead and what causes them to occur, makes costly and non-value adding activities more visible, so allowing managers to focus on these areas to reduce or eliminate them, supports other management techniques such as continuous improvement, scorecards and performance management, which means that ABC is rapidly transforming from a cost management tool to a strategic weapon (CIMA, 2008). It is found also that companies embrace ABC to better understand their real product costs and facilitates performing true customer profitability or conducting customer accounting accurately and it plays a role in developing pricing strategies, understanding make-or-buy decisions, and identifying and measuring process improvement initiatives (Kugel, 2008). The ABC system can also improve the decision making process in the organization. Al-Rifai (2004) stated that ABC has helped many manufacturing and services organizations improve their competitiveness by enabling them to make better decisions based on an improved understanding of their product cost behavior because it can provide relevant and accurate indirect cost information that assists in making customer, product, and process improvement decisions. It is also found that the real value of the ABC system stems from its ability to provide the organization with the required information, e.g. Yennie (1999) stated that ABC gained its fame from its ability to recognize the causal relationship between resources, activities, and cost objects, which make the accuracy and usefulness of the cost information produced by ABC significantly better than that produced by traditional systems. Granof et al., (2000) stated that ABC provides information about what the organization's constituents are getting from their money. It also provides significant managerial information that may be useful in assessing the organization's efficiency in delivering its various services. Eventually, it is noticed that many organizations find that ABC data can contribute to increasing visibility of costs, providing immediate decision-making support, and enabling predictive planning (Cokins, 2003). It is also concluded that the basic role of the ABC system is calculating costs appropriately. However, there is another important role the ABC system can do which is a role of a managerial nature which, in turn, resulted in the emergence of the concept named activity based management (ABM).

IV. ABC AND COMPANY STRATEGIC PERFORMANCE

In this section there will be an attempt to find an answer to the question: Does the ABC system adoption improves the organization's performance? Or do the ABC adopting companies outperform the non-adopters? First of all, it was stated previously that companies can use ABM to identify and eliminate activities that add costs but not value to the product. Non-value added costs are costs of activities that a company could eliminate without reducing product quality, performance, or value. ABC helps measure the costs of non-value added activities. Therefore, the Application of ABC would lead to classifying value-added and non-value-added activities; and it eventually provides ways to eliminate the non value-added activities (Gunasekaran and Sarhadi, 1998). Further, ABC has also a role in continuous improvement. ABC can be widely used to assess continuous improvement and to monitor process performance (CIMA, 2001). Ittner et al., (2001) also examined the association between activity-based costing and manufacturing performance and indicated that extensive ABC use is associated with higher quality levels and greater improvements in cycle time and quality and is indirectly associated with manufacturing cost reductions through quality and cycle time improvements. This indicates to the wide impact of the ABC system upon the organization performance. Another indicator of the role of the ABC system in improving the organizational performance is those several benefits reported in the previous studies, e.g. Khaisaeng (1998) stated some benefits of ABC such as improving operational effectiveness through; prioritization of improvement efforts, identification of value added versus non value added work, process redesign, performance measurement, work flow realignment, increased incentive of employee. It was also stated that ABC improves objective information and provide support for strategic decisions such as pricing strategies, product line management, production versus purchase, product rationalization, and own or lease decision. By looking to the stated benefits, it can be inferred that ABC can positively affect organizational performance and strategy. It is apparent also that the value of ABC stems from

its provision of the accurate information which be used in taking the right decisions and which, in turn, will lead to improving performance. The organization should also be able to make the best use of that information in making the right decision so that ABC can be found to be helpful and beneficial at that time. On the other hand, with regard to whether the ABC system has an influence on the company's strategy, it is found that the role of the ABC system extends to affect the organization strategically. Maher (2005) stated also that many experts think that ABC offers strategic opportunities to companies and ABC plays an important role in companies` strategies and long range plans develop a competitive cost advantage. In addition, It is found also that the ABC systems can support the company's strategic decision making or guide taking the strategic decision of the organization. Albert (1998) contended that ABC helps the organization avoid buying a machine too expensive for the work and also to avoid squandering expensive machines on work not priced to support it. CIMA (2001) reported several advantages to the adoption of ABM stating that ABM supports business excellence by providing information to facilitate long-term strategic decisions about such things as product mix and sourcing. Therefore, it is concluded that the strategic value of an ABC/M system stems from its ability to provide useful insights into decision-making processes because it is not only supplies financial data, but it can be helpful in improving the organization performance in the long run as well as pursuing its strategy.

V. RESEARCH VARIABLES AND RESEARCH FUNCTION

The study involves two main dependent variables; business efficiency and performance improvement of the organization. It involves one independent variable; the ABC system. The research function is: Y = F (X) Where X = f (x1, x2) Y = business efficiency and performance improvement (the dependent variables) X = ABC

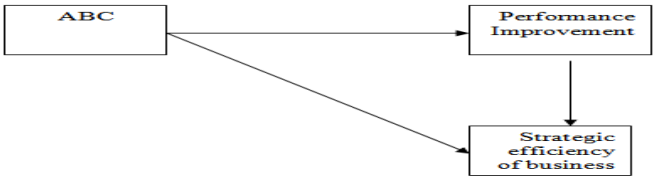

Figure (1): the impact of applying ABC upon organizational performance and business efficiency.

7. Field study 7/1 sample size: First of all, a pilot study with (N=38) including both food industrial companies and banks was done. It can be shown that the total sample size is determined by the following formula

$$n = \left(\frac{z_{\alpha/2} S}{d_i} \right)^2$$

Where that:

n	otal Sample size
$z_{\alpha/2}$	tandardized value leaving an area of α/2 to right
S	he estimated standard deviation from pilot study
d_i	The maximum error term ($s/\sqrt{n}$ $z\alpha/2$)

Table (1): Descriptive statistics for dimensions according to pilot study

TRATUM	Mean	SD	SE
ANK	7857	60241	13146
dustrial Companies	8431	71193	17267
TOTAL	8114	64511	10465

$$n = \left[\frac{1.96 \times 0.60}{0.10} \right]^2 = 138$$

Table (2): The sample Size respondents for both industrial companies and bank

STRATUM	No. of sent questioners	No. of received questioners	% respondents	% non-respondents
BANK	69	47	68	32
Industrial Companies	69	51	74	26

7/2 Descriptive statistics:

The researcher has carried out descriptive statistics including; frequencies, percentages, means, standard deviation, and coefficient of variation for all characteristics of the sample, independent and dependent variables. These descriptive statistics are based on ordinal likert scale and are used in this research as following:

ıterval	irection
.00-1.79	'ends to Strongly disagree
.80-2.59	'ends to disagree
.60-3.39	'ends to neutral
.40-4.19	'ends to agree
.20-5.00	'ends to Strongly agree

7/2/1 Descriptive statistics for demographic variables:

Table (3): Sampling distribution Members according to the sector:

No	Sector	F req.	%	Rank
1	Banks	47	48	2
2	Manufacturing	51	52	1
Total		98	100	

According to Table (3), it can be concluded that banks represent (48%), while the manufacturing companies represent (52%)

7/2/2 Descriptive statistics for independent and dependent variables:

7/2/2/1 Activity-based costing:

Table (4): Descriptive statistics for Activity-based costing

NO.	statements	MEAN	SD	CV	RANK
1	the organization analyses its activities	4.0816	.97042	23.78	2
2	the organization identifies its activities	4.1429	.82487	19.91	1
3	the organization identifies cost drivers of the different activities	3.8163	1.04878	27.48	4
4	the organization measures what the activities consume of its resources	3.7857	1.8647	28.70	6
5	the organization prepares reports on its activity centers	3.9184	1.00179	25.57	3
6	ıe activities are assigned to the products on the basis of the need of those products to the consumed resources in doing the activities	3.7755	1.08913	28.85	7
7	oducts are assigned with the costs according to their consumption of the activities	3.7449	1.06791	28.52	5
TOTAL		3.8950	0.79541	20.42	--

According to Descriptive statistics in table (4), it can be concluded that: - The most three homogeneous variables are: the organization identifies its activities, the organization analyses its activities, and the organization prepares reports on its activity centers with coefficient of variations (19.91%), (23.78), and (25.57) respectively.

- On the other hand the most three heterogeneous variables are: products are assigned with the costs according to their consumption of the activities, the organization measures what the activities consume of its resources, the activities are assigned to the products on the basis of the need of those products to the consumed resources in doing the activities, with coefficient of variations (28.25%), (28.70%), and (28.85%) respectively.
- While the value of total weighted mean for the activity-based costing is (3.8950), with coefficient of variation (20.42%), therefore we have positive direction with regard to the Activity-based costing.

7/2/2/2 Measuring performance of the organization:

Table (5): Descriptive statistics for measuring performance of the organization

No	statements	Mean	SD	CV	RANK
1	the organization adopts new management systems	4.0714	.95518	23.64	3
2	the organization applies modern production systems	3.9898	.86745	21.74	1
3	the communication process is done in an effective way inside the organization	3.8265	.95276	24.90	5
4	the degree of centralization decreases in side the organization	3.3469	1.18498	35.41	11
5	the degree of work specialization increases in the organization	3.7959	.94115	24.79	3
6	the quality of the introduced products increases in the organization	3.8776	.99758	25.73	6
7	the quality of the processes increases in the organization	3.9694	.89043	22.43	2
8	customer satisfaction increases in the organization	3.8265	1.03571	27.07	7
9	employee satisfaction increases in the organization	3.3265	1.16456	35.01	10
10	productivity of the organization increases	3.8571	1.07454	27.86	8
11	the waste of the organization resources decreases	3.5816	1.21777	34.00	9
TOTAL		3.7699	.76676	20.34	

According to Descriptive statistics in table (5), it can be concluded that:

- the most three homogeneous variables are: the organization applies modern production systems, the quality of the processes increases in the organization, and the degree of work specialization increases in the organization with coefficient of variation (21.74%), (22.43%), and (23.64%) respectively.
- On the other hand, the most three heterogeneous variables are: the waste of the organization resources decreases, employee satisfaction increases in the organization, and the degree of centralization decreases in side the organization, with coefficient of variation (34.00%), (35.01%), and (35.41%) respectively.
- While the value of total weighted mean for measuring the performance of the organization is (3.7699), with coefficient of variation (20.34%), therefore we have positive direction to the performance of the organization.

7/2/2/3 Measuring business efficiency:

Table (6): Descriptive statistics for measuring business efficiency

No	statements	MEAN	SD	CV	RANK
1	production in the organization exceeds costs of the used resources e.g. financial, natural, and human	4.0714	.99742	24.5	3
2	quality of the products increases while using the same resources	3.6224	1.14437	31.95	5
3	the resources of the organization are used for achieving the best production	4.0612	.96127	23.67	2
4	production capacity of the organization increase	4.0102	.87926	21.93	1
5	the total revenues exceeds what is paid to the suppliers to complete the production process or the creditors	3.9184	.99144	25.30	4
TOTAL		3.9367	.80596	20.47	

According to Descriptive statistics in table (6), it can be concluded that:

- The most three homogeneous variables are: production capacity of the organization increase, the resources of the organization are used for achieving the best production, and production in the organization exceeds costs of the used resources e.g. financial, natural, and human with coefficient of variation (21.93%), (23.67%), and (24.5%) respectively.
- On the other hand the most two heterogeneous variables are: the total revenues exceed what is paid to the suppliers to complete the production process or the creditors, and quality of the products increases while using the same resources with coefficient of variation (25.30%) and (31.95%) respectively.
- While the value of total weighted mean for measuring the performance of the organization is (3.9367), with coefficient of variation (20.47%), therefore we have positive direction to the business efficiency.

7/2/2/4 Testing research assumption:

"Do the companies which apply the ABC system enjoy more efficiency and better performance than those that do not apply such system?"

This question can be divided to some individual questions as:

(a) what activities is your ABC application directed toward?

Table (7): Descriptive statistics for determining the activities the ABC is directed toward

No	Description	Freq.	%	RANK
1	Manufacturing	61	62.2	1
2	Administration	36	36.7	4
3	Marketing	42	42.9	2
4	Distribution	21	21.4	6
5	Services	38	38.8	3
6	Research & Development	33	33.7	5

From table (7) it is concluded that:

Manufacturing and marketing are the most activities that ABC system is directed toward, while research & development and distribution are the least ones.

(b) For which purpose(s) are you using ABC?

Table (8): Descriptive statistics for determining the purpose of using the ABC system

No	Description	Freq.	%	RANK
1	external reporting	32	32.7	6
2	replace existing cost information system	13	13.3	8
3	product costing	57	58.2	2
4	as an off-line analytic tool	5	5.1	9
5	cost reduction	64	65.3	1
6	outsourcing decisions	14	14.3	4
7	pricing decisions	44	44.9	5
8	performance measurement	54	55.1	3
9	Budgeting	48	49	4

From table (8) it is concluded that:

The ABC system is mostly used for cost reduction and for identifying product cost, while it is rarely used for replacing exist cost information system and as an analytical tool.

(c) What benefits the firm can obtain from ABC?

Table (9): Descriptive statistics for identifying the benefits firm can obtain from adopting the ABC system.

No	Description	Freq.	%	RANK
1	improved cost information	46	46.9	4
2	cost control	63	64.3	1
3	Improved performance measurements	59	60.2	2
4	better product pricing	43	43.9	5
5	eliminate unnecessary or redundant work	50	51	3

From table (9) it is concluded that:

The ABC system mostly benefit the companies in cost control and improving performance measurements, while it provide little benefits in improving cost information and in product pricing.

(d) ABC as an effective costing system what rules may be played in the following areas?

Table (10): Descriptive statistics for determining the information about the activities that the ABC system can provide them in an efficient way

No	Description	Freq.	%	RANK
1	Marketing	41	41.8	3
2	Distribution	27	27.8	6
3	customer services	31	31.6	5
4	Manufacturing	58	59.2	1

5	Planning	56	57.1	2
6	Design	16	16.3	7
7	Budgeting	37	37.8	4

From table (10) it is concluded that:

ABC system efficiently provides information about manufacturing and planning, while it provides little information about distribution and design.

Table (11): Descriptive statistics for the impact of ABC on organizational performance

No	Statements	Mean	SD	CV	RANK
1	overall, ABC has had a positive impact on the firm	4.1939	0.72735	17.34	1
2	the advantages of ABC outweigh the disadvantages of ABC	3.8571	.83728	21.71	6
3	ABC information provide too much detail for management decisions	4.0714	.76320	18.75	2
4	ABC provide more useful tool for evaluating performance	4.0204	.77299	19.23	3
5	ABC has been closely tied to the competitive strategies of the business unit	3.8866	.74828	19.25	4
6	ABC adoption assists in the provision of more accessible and timely information	4.0102	.81853	20.41	5
TOTAL		3.9357	.80596	20.47	

According to Descriptive statistics in table (11), it can be concluded that:

- The most three homogeneous variables are: overall, ABC has had a positive impact on the firm, ABC information provide too much detail for management decisions, and ABC provide more useful tool for evaluating performance, with coefficient of variation (17.34%), (18.75%), and (19.23%) respectively.
- On the other hand the most three heterogeneous variables are: ABC has been closely tied to the competitive strategies of the business unit, ABC adoption assists in the provision of more accessible and timely information, and the advantages of ABC outweigh the disadvantages of ABC, with coefficient of variation (19.25%), (20.41%), and (21.471%) respectively.
- While the value of total weighted mean for measuring the performance of the organization is (3.9357), with coefficient of variation (20.47%). Therefore, we have positive direction with regard to the impact of ABC on the performance of the organization.

7/2/2/5 Structural equation modeling (SEM):

In the following part using the estimated structural equation model testing the research question which is concerned with the impact of integrating ABC on the organization performance and efficiency will be presented :

Figure (2): estimated structural equation model of the impact of the integration upon performance and efficiency

Table (13): Regression weights according to Maximum Likelihood Estimates

path			Estimate	S.E.	C.R.	P
Performance improvement	<---	ABC	.275	0.077	3.551	***
Business efficiency	<---	Performance improvement	.677	0.087	7.802	***

Significant at level less than (0.001)

1- There is significant positive linear relationship between the ABC and the performance improvement at significant level less than (0.001). This validates the research question with regression model: Performance improvement= .275 ABC

2-There is significant positive linear relationship between the performance improvement and business efficiency at significant level less than (0.001). This validates the sixth research question with regression model: Business efficiency= .677performance improvement Measuring the Goodness of Fit of the (SEM) model:

Table (14): The Goodness of Fit Indices in the SEM

hi-Square	118
egree of Freedom	
vel of Significance	290
rasimony goodness of fit index(PGFI)	099
oot Mean Square Residual (RMR)	013
oodness of Fit Index (GFI)	994
djusted Goodness of Fit Index (AGFI)	943
ormed Fit Index (NFI)	992
elative Fit Index (RFI)	954
cremental Fit Index (IFI)	999
ucker Lewis Index (TLI)	995
omparative Fit Index (CFI)	999
oot Mean Square Residual Approximation (RMSEA)	053
: performance improvement=0.427 business efficiency=0.572	

From table (14), the researcher noticed the following:

All the goodness of fit tests of the model showed significant result, i.e., probability level > .05, which concludes that, the observed level equal the theoretical level. Also, the majority of indicators are at acceptable limits, especially GFI, NFI, RFI, IFI.TLI, and CFI which all are within considerable range close to one. The fit measures indicate the goodness of fit of the final structural model and its ability to measure the impact of adopting ABC upon the performance of the organization and the business efficiency.

- The exogenous variables were accepted. ABC explain about 42.7% from total variation of dependent variable; performance improvement and the rest percent is due to either the random error in the regression model or other independent Variables excluded from regression model.
- The exogenous variables were accepted. ABC explain 57.2% from total variation of dependent variable; business efficiency and the rest percent is due to either the random error in the regression model or other Independent Variables excluded from regression model.

Table (15): Standardized Total Effects

constructs	ABC	Performance improvement
Performance improvement	.285	.000
Business efficiency	.184	.644

From table (15), the researcher noticed the following:

- The most important exogenous observed variable totally affecting performance improvement is ABC.
- The most important exogenous observed variables totally affecting business efficiency is performance improvement.

Table (16): Standardized direct Effects

constructs	ABC	Performance improvement
Performance improvement	.275	.000
Business efficiency	.000	.644

From table (16), the researcher noticed the following:

- The most important exogenous observed variable directly affecting performance improvement is ABC.
- The most important exogenous observed variable directly affecting on business efficiency is performance improvement.
- It is noticed that ABC has no direct effect on business efficiency.

Table (17): Standardized indirect Effects

constructs	BSC	ABC	Performance improvement
Performance improvement	.000	.000	.000
Business efficiency	.329	.184	.000

From table (17), the researcher noticed the following:

- None of the exogenous variables has an indirect effect on performance improvement.
- The most important exogenous observed variables indirectly affecting business efficiency is ABC.

7/2/2/6 Testing the difference between the banks and the food industrial firms:

Table (18): group statistics

No	Dimension	sector	N	Mean	Std. Deviation	Std. ror Mean
1	Activity-based costing	banks	47	3.6991	.72000	.10502
		Indust. Foods	51	4.0756	.82529	.11556
6	Business efficiency	Banks	47	3.7466	.69827	.10185
		Indust. Foods	51	3.7914	.83127	.11640
7	Performance of the organization	Banks	47	3.8170	.70134	.10230
		Indust. Foods	51	4.0471	.88416	.12381
8	the impact of applying the ABC system upon the performance of the organization	Banks	46	3.9203	.60117	.08864
		Indust. Foods	51	4.0817	.61858	.08662

7/2/2/7 Independent samples test

Table (19): t-test to measure the significant differences between banks and food industrial firms in terms of their adoption to ABC system

No	Dimension	t-test for equality of means	
		t	Sig.(2-tailed)
1	ctivity-based costing	-2.398	.018
6	Business efficiency	-.288	.774
7	Performance of the organization	-1.419	.159
8	e impact of applying e ABC system upon e performance of the organization	-1.300	.197

According to t-test in table (19), it can be concluded that:

There are significant differences between banks and food industrial firms in relation to their application to the Activity-based costing for the direction of food industrial firms.

VI. RESEARCH FINDINGS AND CONCLUSIONS

First of all, the researcher tested the efficiency of the ABC system approach and whether it positively affects the performance of the organization. With regard to the value of the ABC system, it was found that manufacturing and marketing are the most activities that the ABC system is directed toward, while research & development and distribution are the least ones. The ABC system is mostly used for cost reduction and for identifying product cost, while it is rarely used for replacing exist cost information system and as an analytical tool. The ABC system provided more benefits to the companies in cost control and improving performance measurements, while it provide little benefits in improving cost information and in product pricing. ABC system efficiently provides information about manufacturing and planning, while it provides little information about distribution and design. Finally, the research results indicated that the ABC system has a positive impact upon the performance of the organization. With regard to the relationship between the research

independent and dependent variables, it was found that there is significant positive linear relationship between the ABC and the performance improvement. In addition, It was found also that there is significant positive linear relationship between the performance improvement and business efficiency. It is noticed also that ABC has no direct effect on business efficiency. With regard to the direction of the relationship between the research variables, it was found that most important exogenous observed variable totally affecting performance improvement is ABC, and the most important exogenous observed variables totally affecting business efficiency is performance improvement. Finally, it is recommended further extension to the topic of research of the current study, may be with addititional variables expressing the level of improvement and efficiency(also with another sorts of industries or ownership).

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