

Understanding The Effect Of Top Management Support And Information Technology On The Success Of Activity-Based Costing Implementation In The Jordanian Manufacturing Companies

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Abstract: Activity-based costing (ABC) system is a widely accepted costing system that arguably provides more precise, relevant and quick information for managers in a competitive business world. This study examines the direct impact of top management support and information technology on ABC implementation. Based on a recent studies, the study attempts to deal with the issue in manufacturing companies concerning the low ABC rate. A quantitative approach design was applied using a questionnaire to fulfill the research objectives. A sample of 378 accountants from Jordanian manufacturing companies participated in this study. This research has both theoretical and practical contributions to the field of ABC by elaborating the direct effects of the key crucial factors in the ABC implementation success in the manufacturing sector, especially in Jordan and other developing countries.

Keywords: Top Management Support, Information Technology, ABC implementation, Manufacturing Companies.

INTRODUCTION

In the competitive manufacturing environment nowadays, reliable costing data and the possibility of cost reduction have become critical for companies to formulate competitive pricing strategies (Khalid, 2005). To realize this aim, companies have enhanced their management techniques, and adopted the activity-based costing system. There have been a lot of interests in the ABC system as it was shown to generate more reliable costing information for managers in competitive business world (Aldukhil, 2012; Reynolds, 2013; Kongchan, 2013). Towards the end of the 1980s, academic researchers and corporate leaders started to focus on activity-based costing (ABC) system as a tool to handle the shortcomings of traditional cost accounting (TCA) systems (Reynolds, 2013). ABC is now believed to be an alternative of traditional costing systems that have been accused to be failed to achieve the technological changes requirements in industrial practices (Aldukhil, 2012; Reynolds, 2013; Kongchan, 2013). Traditional cost accounting system is not able to address the needs of users of such methods in terms of offering detailed and timely information. However, regardless of the advantages of ABC, the implementation of ABC remains low compared to those of traditional cost accounting systems (Ali et al., 2023).

Several studies and reports have done to test the factors that determine and contribute to the success of ABC implementation. Moreover, these studies reported that organizational antecedents can affect ABC implementation like top management support and information technology (Al-Omiri & Drury, 2007). In addition, they reported that the influence of the implementation of ABC system on organizational performance for manufacturing firms can play a key role in providing accurate information for managerial operating decisions that help the firms in enhancing the profitability and competition in manufacturing firms (Ali et al., 2023).

The research carried out on ABC implementation was primarily focused on western countries, but it is still very low in Asian countries, especially in the context of Jordan (Omar, 2009; Fei and Isa, 2010; Charaf and Bescos, 2013). The problem is that developing countries also have started to adopt ABC, and this can cause difficulty in the implementation phase (Omar, 2009; Reynolds, 2013). Past research outlined that the lack of awareness and knowledge about ABC is a reason for the low percent of ABC diffusion in Jordan (Omar, 2009). It is unclear whether firms in Jordan can successfully implement ABC. Given this situation, this research seeks to identify the core factors that will determine the successful implementation of ABC in firms (Ali et al., 2023).

Likely, various studies have reported that top management support and information technology factors are significant for an effective ABC implementation (Al-Refa'ee, 2012; Nassar, 2011). The significance of this study emerges from the important aspects of implementing activity-based costing systems within the Jordanian manufacturing sector. This helps to improve the operational performance of those firms, the constant development of operational processes, the design and broad range of products, and caring for the consumer (Ali et al., 2023). Activity-based costing system is a scientific instrument and a crucial integrated method that satisfies the majority of the demands of modern management; this is in accordance with the tendencies of the manufacturing sector, especially in coping with the business environment. In order to cope with the business environment, it is

crucial to adopt modern methods and advanced technologies in manufacturing and to use scientific standards for measuring the overall performance of these organizations. This will aid to control and develop the operational processes to enhance control, to make strategic policies, and to take decisions that allow the management to effectively carry out its role (Khalid, 2005).

THEORETICAL REVIEW

Top Management Support

Recent related studies demonstrate that top management support plays a vital role on ABC implementation success (Brown et al., 2004; Taba, 2005; Sartorius et al., 2007; Fei and Isa, 2010; Akinyomi, 2013; Dubihlela and Rundora, 2014). It was found that top management support is the important factor that could lead to the successful implementation of ABC. Intakhan (2014) and Mohammed and Drury (2007) mentioned out that higher levels of top management support will lead to higher levels of ABC implementation success. Jarrar et al. (2007), and Saad Al-Dhubaibi and Haniff (2013) pointed out that top management support was a significant determinant of ABC implementation success. To be effectively implemented, managerial practices must have the full support of the top-level executives. Top management must also allocate the necessary funds to maintain these processes. They should ensure that the staff members are aware of the goals and advantages of the implemented procedures, and enforce any measures needed to tackle the problems that hinder the implementation of these procedures.

Information Technology

A number of studies have offered an empirical evidence of a significant effect of information technology on ABC implementation success (Agbejule, 2006; Rahmouni and Charaf, 2010; Xiao *et al.*, 2011; Kongchan, 2013). Information technology often has an effective relation with ABC implementation success. Askarany *et al.* (2007) and Reynolds (2013) pointed out that information technology was a significant determinant of ABC implementation success. These findings suggest that information technology is a driving force for the ABC implementation success. Briefly, the findings of this hypothesis are in agreement with the prior studies indicating that information technology plays an essential function in determining and shaping ABC.

ABC Implementation Success

ABC-related literature, there is no specific agreed definition of a successful ABC implementation and past studies examined ABC success measures differently (Aldukhil, 2012; Kongchan, 2013). Success of ABC means different things to different people (Zhang, 2010; Aldukhil, 2012), it's measured differently across firms (Aldukhil, 2012), and this study's definition of ABC success is derived from Byrne *et al.* (2009) vision on ABC success. The present study follows the vision of Byrne *et al.* (2009) on ABC success as it's considered to be the most powerful basis toward the ABC success measurement in ABC research; therefore, the present study followed this vision. The variables that will be used in the current research as indicators for this success are technical characteristics, organizational process impact, and perceived usefulness in improving job performance (McGowan, 1998).

HYPOTHESIS DEVELOPMENT

Based on the recent literature, an integrated model based on contingency theory was developed to examine the phenomenon under study as presented in Figure 1. The most widely practical model is the contingency theory and this theory has been widely applied in management accounting-ABC context (Kongchan, 2013; Aldukhil, 2012; Al-Omiri and Drury, 2007). Depending on the conceptual model of the study that presented in Figure 1 hypotheses are developed and tested practically. In the present study, the independent variables are top management support and information technology, and the success of ABC implementation is the dependent variable.

Top Management Support and ABC Implementation Success

Several studies cited top management support as the most important component of successful ABC implementation (Anderson and Young, 1999; Agbejule, 2006; Jarrar et al., 2007; Kaplan and Anderson, 2007; Majid and Sulaiman, 2008; Sartorius et al., 2007; Fei and Isa, 2010; Kongchan, 2013). Top management support was identified as the full and public endorsement of new idea by one or more senior corporate leaders, like the chief executive/financial officers (Major and Hopper, 2005; Brown et al., 2004). Investigating the role of top management support, Saad Al-Dhubaibi and Haniff (2013) observed that the top management took the decision to pursue an innovation based on the available resources (money, time and skills), the organization's mission and the possible strategies, the top management has the power to offer incentives and implement policy changes to encourage/discourage individuals and groups to/from implementing a certain idea. Thus, this factor is a crucial factor to influence the implementation of ABC. This led to the following hypothesis:

H1: There is a statistically significant relationship between top management support and ABC implementation success.

Information Technology and ABC Implementation Success

Information technology has significant effects on the outline of a costing system. Information technology is the capability of information systems to affect the implementation of ABC (Krumwiede, 1998). Several ABC researchers have concluded that information technology is important in ABC diffusion. Rahmouni and Charaf (2010) argued that a higher level of information technology is required for ABC implementation, as ABC relies on detailed historical data when compared to the traditional costing method. Cagwin and Bouwman (2002) argued that the problem of identifying an accurate cost driver in the ABC diffusion stages can be efficiently solved using information technology. This led to the following hypothesis:

H2: There is a statistically significant relationship between information technology and ABC implementation success.

RESEARCH MODEL

The contingency theory is a common tool in management accounting that allows for a better prediction of the impact of adopting, designing and implementing novel management accounting frameworks, like the management control system (MCS), budgeting systems and the accounting information system (AIS). ABC, a new costing tool first proposed towards the end of the 1980s, promised to generate more reliable costing data compared with traditional costing systems and ended up revolutionizing those systems on a global scale. With the end of the past century, the contingency theory became the common platform to measure the effects of any variable on ABC implementation. This has benefited managerial accounting techniques tremendously as it enabled them to be modified to better suit the circumstances of a corporation at all times (Donaldson, 2006). A large number of studies have, over the years, employed the contingency theory as a theoretical framework to investigate the causality of contingency factors and the way they influence managerial accounting practices (Abdel-Kader and Luther, 2008).

The present study adopts the contingency theory theoretical framework. The literature provided the contingent variables and relevant statistical tests were conducted to determine whether they have an effect on the success and ultimately the full implementation of ABC systems. This research assumed that the ABC success implementation in Jordanian manufacturing companies is affected by top management support and information technology. So, the framework of this study is relevant to the previous studies which applied contingency framework for control system and management accounting.

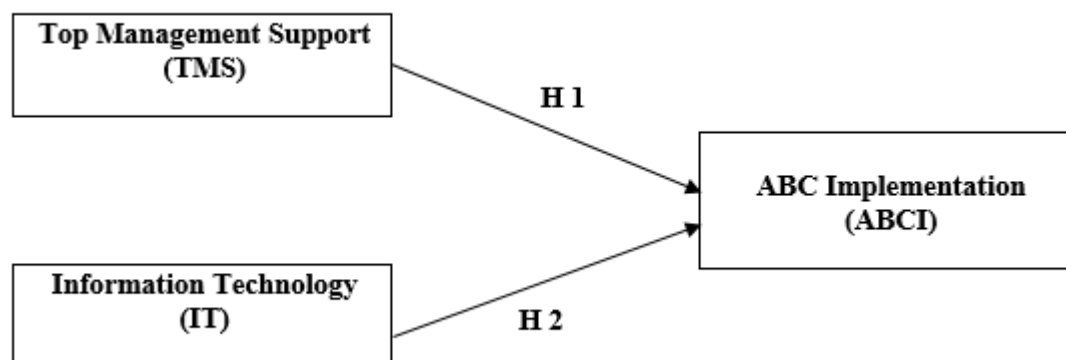


FIGURE 1 ABC FACTORS IN ABC IMPLEMENTATION

RESEARCH METHODOLOGY

The general purpose of this study is to investigate the effect of top management support and information technology on the ABC implementation success of Jordanian manufacturing companies. In this study, quantitative data collection method and survey approach were selected to gather data on factors affecting ABC implementation success by accountants in Jordanian manufacturing companies. The required data was gathered by a cross-sectional questionnaire by concentrating on a specific phenomenon in short time, such collecting data method has been widely employed to examine the factors that determine ABC implementation success. Taba (2005) found that the questionnaire was the most used method of collecting data when the investigation was at individual analysis level.

The impact of top management support and information technology on the ABC implementation success of Jordanian manufacturing companies was investigated in the present study by questionnaires distributed to 378 accountants were selected to be respondents in the study. The study questionnaire is organized in three sections. Sections one aims to gather data related to background information of respondents and his/ her companies. Section two focused on the top management support and information technology factors

affecting the ABC implementation. Section three contained questions related to some aspects of the use of the ABC system in companies. The research variables were assessed by gathering the responses of the respondents by using a five-point Likert scale from 1="strongly disagree" to "5=strongly agree. Those items were developed based from the relevant prior studies.

MEASUREMENT MODEL

This section concentrates on assessing the theoretical model and proposed relationships between model constructs by a means structural equation modeling (SEM). This study uses a two-stage approach to SEM that merges the measurement model and the structural model. In the first, the measurement model should be assessed to ensure construct reliability and validity, and then the structural model is established to assess the study hypotheses.

Table 1: Results of Cronbach's alpha and Convergent Validity

Latent Variables	Items	Factor loading	Average Variance Extracted (AVE)	Composite Reliability (CR)	Internal Reliability Cronbach's alpha
Top Management Support (TMS)	TMS1	0.594	0.676	0.890	0.880
	TMS2	0.933			
	TMS3	0.963			
	TMS4	0.743			
Information Technology (IT)	IT1	0.654	0.528	0.869	0.85
	IT2	0.769			
	IT3	0.723			
	IT4	0.653			
	IT5	0.783			
	IT6	0.764			
ABC Implementation (ABCI)	ABCI 1	0.705	0.507	0.837	0.833
	ABCI 2	0.791			
	ABCI 3	0.687			
	ABCI 4	0.651			
	ABCI 5	0.719			

In determining the construct reliability in SEM, the Cronbach's alpha and composite reliability were used (see Table 1).. All values of composite reliability are above than the cut-off 0.6 as suggested by Hair *et al.* (2011). All values of Cronbach's alpha are above than the cut-off as 0.7 recommended by Hair *et al.* (2006). It can be concluded that the outcomes of the overall measurement model prove the unidimensionality of the constructs, and provide acceptable level of convergent validity and discriminant validity. Further, fit indices values proved good model fit. Thus, the overall measurement scale to evaluate the constructs and its indicators was found reliable and valid.

HYPOTHESES TESTING

The parameter estimates and determination coefficients were tested for hypothesized effects of the variables. The findings of examining the hypothesized relationships relating the direct relationships among constructs in the structural model are presented in Table 2.

Table 2: Examining Results of hypothesized Effects of the Variables

Hypothesis(Path)	Unstandardized Estimate		Standardized Estimate	CR	P value	Assessment
	Estimate	S. E	Beta (β)			
H1: TMS \rightarrow ABCI	0.126	0.039	0.21	3.257	0.001	Supported
H2: IT \rightarrow ABCI	0.177	0.065	0.238	2.707	0.007	Supported

Based on results depicted in table 2, it can be said that not all hypothesized relationships were supported. A support for a direct relationship hypotheses of top management support (TMS) and information technology (IT) with the ABC implementation (ABC) were found. The following sections discuss the results of path analysis in relation to the above hypotheses in the research structural model:

H1) Top Management Support (TMS) has a positive effect on ABC Success Implementation

Hypothesis 1 proposed that top management support (TMS) will have a positive influence on the ABC success implementation (ABC). As shown in table 2, the C.R and p-value of top management support (TMS) in predicting ABC success implementation (ABC) were 3.257 and 0.001 respectively. It means that the probability of getting a critical ratio as large as 3.257 in absolute value is 0.001. In other words, the regression weight for top management support (TMS) in the prediction of ABC success implementation (ABC) is significantly different from zero at the 0.01 level (two-tailed). Thus, H1 was supported. Further, the standardized estimate of Beta was 0.21, indicating a positive relationship. It means, when top management support (TMS) goes up by 1 standard deviation, ABC success implementation (ABC) goes up by 0.21 standard deviation.

H2) Information Technology (IT) has a positive effect on ABC Success Implementation

Hypothesis 2 proposed that information technology (IT) will have a positive influence on the ABC success implementation. As shown in table 2, the C.R. and p-value of information technology (IT) in predicting ABC success implementation (ABC) were 2.707 and .007 respectively. It means that the probability of getting a critical ratio as large as 2.707 in absolute value is 0.007. In other words, the regression weight of information technology (IT) in the prediction of ABC success implementation (ABC) is significantly different from zero at the 0.01 level (two-tailed). Thus, H2 was supported. Further, the standardized estimate of Beta was 0.238, indicating a positive relationship. It means, when that information technology (IT) goes up by 1 standard deviation, ABC success implementation (ABC) goes up 0.238, standard deviation.

DISCUSSION OF RESULTS

In a wider perspective, an integrated model was suggested in order to describe the phenomenon under examination. The theoretical model of this study was principally built on contingency theory. The model supposed that ABC implementation success as dependent variable is affected by independent variables (i.e. top management support and information technology). Besides, recent related studies also demonstrate that top management support plays a vital role on ABC implementation success (e.g. Brown et al., 2004; Taba, 2005; Sartorius et al., 2007; Fei and Isa, 2010; Akinyomi, 2013; Dubihlela and Rundora, 2014; Intakhan, 2014; Madwe, 2017). Also, a number of studies have offered an empirical evidence of a significant effect of information technology on ABC implementation success (e.g. Agbejule, 2006; Al-Sayed et al., 2008; Rahmouni and Charaf, 2010; Xiao et al., 2011; Kongchan, 2013). This study provided clear empirical evidence to support the proposition that information technology have effect on the ABC implementation success. Based on the above discussion in the prior parts, the current study provided an integrated model of achieving a successful ABC implementation, which can be also applied for explaining other factors that increase the rate of ABC success.

CONCLUSIONS AND RECOMMENDATION

Given the importance of the ABC and its related implementation issues, there is a great need for a complete understanding of what factors are important in the implementation of the ABC. The results suggest that the proposed model of the ABC implementation demonstrates a considerable explanatory and predictive power. The results reported in this research provided a number of significant implications that may assist the managers to facilitate the implementation of the ABC especially in developing countries. Therefore, among manufacturing firms, the present study explores top management support and information technology in terms of the key crucial factors influencing on ABC implementation. This study confirmed that top management support was found to be the most critical factor in determining whether the implementation of any management accounting innovation could be successful or not. In the scenario of ABC implementation, it can be argued that without top management support, the implementation process of ABC is unlikely to be successful. The findings of this research indicate that the information technology significantly impact the success of the ABC implementation. For Jordanian companies to secure a high level of implementation, great attention must be placed on information technology infrastructure during the introduction and implementation of the ABC. This result can offer firms and their managers with the necessary tools to evaluate ABC implementation success and to take the right kinds of proactive and corrective actions in terms of offering training programs for their employees, as needed, in order to enhance the success of the ABC implementation. The current study provided an integrated model of achieving a successful ABC implementation, which can be also applied for explaining other factors that increase the rate of ABC success. The present study developed an integrated model for the ABC implementation. Several beneficial areas for future research, however, remained to be explored. For example, results of the current study were limited to ABC implementation. Although the proposed theoretical model of the present study provided a systematic approach to gain a better understanding of ABC implementation, it can be tailored to investigate other accounting techniques in Jordan or in other similar contexts. This would be valuable in establishing validity of the model.

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