

## The Influence of External Contingency Factors and Activity-Based Costing Implementation on Organizational Performance

(Pengaruh Faktor Kontingensi Luaran dan Pelaksanaan Pengkosan Berasaskan Aktiviti ke atas Prestasi Organisasi)

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### ABSTRACT

The Activity-Based Costing (ABC) system continues to gain attention due to the increasing challenges in the current business environment. This situation motivated the researchers to examine external contingency factors (environmental uncertainty (EU) and market orientation (MO)) that influence ABC implementation and the possible effects of ABC implementation on organizational performance. This study also examines the mediating effect of ABC implementation on the relationship between external contingency factors and organizational performance in a developing economy. A cross-sectional survey was conducted among 114 manufacturing companies in Iraq. The data was analyzed using PLS3-SEM, and the results revealed that EU and MO have a positive and significant effect on ABC implementation, and that ABC implementation has a positive and significant effect on organizational performance. Furthermore, this study establishes the mediating role of ABC implementation on the relationship between external contingency factors and organizational performance.

Keywords: ABC implementation; contingency factors; organizational performance; Iraq

### ABSTRAK

Sistem Pengkosan Berasaskan Aktiviti (ABC) terus mendapat perhatian disebabkan oleh peningkatan cabaran dalam persekitaran perniagaan semasa. Keadaan ini telah mendorong para penyelidik untuk mengkaji faktor-faktor kontingensi luaran (ketidakpastian persekitaran (EU) dan orientasi pasaran (MO)) yang mempengaruhi pelaksanaan ABC dan kesan mungkin pelaksanaan ABC terhadap prestasi organisasi. Kajian ini juga memeriksa kesan mediasi pelaksanaan ABC ke atas hubungan antara faktor kontingensi luaran dan prestasi organisasi dalam ekonomi yang sedang membangun. Satu kajian selidik telah dijalankan di kalangan 114 syarikat pembuatan di Iraq. Data tersebut dianalisis dengan menggunakan PLS3-SEM dan hasilnya menunjukkan bahawa EU dan MO mempunyai kesan yang positif dan signifikan terhadap pelaksanaan ABC, dan pelaksanaan ABC tersebut mempunyai kesan yang positif dan signifikan terhadap prestasi organisasi. Tambahan pula, kajian ini membuktikan peranan mediasi pelaksanaan ABC terhadap hubungan antara faktor-faktor kontingensi luaran dan prestasi organisasi.

Kata kunci: Pelaksanaan ABC; faktor-faktor kontingensi; prestasi organisasi; Iraq.

### INTRODUCTION

Changes in the competitive environment and structure of organizations affect their performances (Kalkan, Erdil & Çetinkaya 2011), and concomitantly stimulate such organizations to change their management accounting (MA) practices in order to achieve a better fit with these changes (Cescon, Costantini & Grasseti 2018). As such, the implementation of the ABC system for generating accurate costing information and making effective decisions to improve organizational performance in today's advanced and highly competitive manufacturing environment continues to receive momentous attention from both practitioners and researchers (Cinquini et al. 2015; Sorros, Karagiorgos & Mpelesis 2017).

Employing the theoretical perspective of the contingency theorists, the particular feature of an

appropriate cost accounting system depends on the specific circumstances within and outside an organization (Tillema 2005). Studies in the realm of MA literature have affirmed that environmental uncertainty (EU) and market orientation (MO) are essential contingency factors that can determine the success of MA techniques used by an organization (Gliubicic & Kanapickienė 2015; Anderson & Young 1999; Laitinen 2014). Also, MA techniques, such as the ABC system, are crucial for companies to cope with different challenges, while also providing astute information that does not only help in overcoming the challenges of changes in a business environment, but also help in improving organizational performance (Baines & Langfield-Smith 2003). While previous ABC studies have examined the relationships among competitive strategies, information technology, ABC implementation and organizational performance

(Frey & Gordon 1999; Maiga, Nilsson & Jacobs 2013), there has only been little empirical evidence on whether organizational performance is influenced by EU, MO and ABC implementation. Zaman (2009) affirmed that the extant body of knowledge has left an apparent gap in measuring the perception of ABC and the impact of its implementation on overall organizational performance. Elhamma (2015) reported that previous MA studies have tested EU in the context of innovativeness, other than the ABC system. Also, Cadez and Guilding (2008) argued that MO has not been widely studied and should be considered as an added contingency factor. Therefore, this study fills these gaps in current ABC research.

The results reported in previous studies on EU (Uyar & Kuzey 2016; Rivard, Raymond & Verreault 2006) and MO (Noble, Sinha & Kumar 2002; Ismail, Isa & Mia 2018b) are inconclusive. One of the possible reasons for these inconclusive results is that managers' use of MA information, such as ABC information, may mediate this relationship (Ismail, Isa & Mia 2018a). Mat and Smith (2014) echoed that understanding the mediating effect of advanced MA practices such as ABC implementation on the relationship between contingency factors and organizational performance is considered an important research area. Frazier, Tix and Barron (2004) argued that a mediating variable is required to explain and enhance the relationship between the independent variable (external contingency factors) and the dependent variable (organizational performance). This implies that the implementation of ABC by Iraqi manufacturing companies is motivated by the imprecision in determining costs and control pitfalls, as well as lack of rationalizing decisions resulting from the use of traditional cost systems. Furthermore, the results of the traditional cost systems impacted negatively on the performance of the Iraqi manufacturing companies (Youssef & Oudah 2014). However, previous studies have shown that the implementation of ABC influences organizational performance in so many ways, such as reducing the effect of EU and intense competition (Gupta & Galloway 2003). Despite these facts, evidences on how ABC implementation has contributed to the relationship between contingency factors and organizational performance are scarce in developing economies.

Conversely, Cadez and Guilding (2008) were unable to support the mediation effect of strategic MA usage, including an activity-based approach to the relationship between MO and organizational performance. Hoque (2004) found no evidence of a mediating role of non-financial performance measures between EU and organizational performance. In order to address the highlighted gaps, the following objectives are set out:

1. To examine whether EU and MO have significant effects on ABC implementation.
2. To examine whether EU and MO have significant effects on organizational performance.
3. To investigate the effect of ABC implementation on organizational performance.

4. To determine whether ABC implementation plays a mediating role on the relationship between external contingency factors and organizational performance.

The remainder of this paper presents a section on literature review, where the key variables were operationally defined and explained, followed by a section on research framework and hypotheses development. This is followed by a section on methods and a section on analysis, which includes subsections on measurement, structural models and results of the mediation effect. The final sections are dedicated to the discussion and conclusion, where the findings, implications, limitations and recommendations are discussed in detail.

## LITERATURE REVIEW

The ABC system refers to a costing approach that itemizes activities as the significant objects of costing. This approach uses a cost driver as the basis for allocating cost to different cost objects such as products, services and customers (Anderson & Young 1999). Consistent with prior ABC adoption research (Anderson & Young 1999; Byrne 2011), the definition of the implementation of ABC in this study refers to the operating units that are currently using ABC systems in their organizations. Previous studies (e.g. Cinquini et al. 2015; Lu et al. 2017) provided empirical evidence on the use of the ABC system in different aspects, such as for cost reduction, for planning and controlling organizational activities, and for improving organizational performance. However, prior ABC-based studies conducted in Iraq have been limited in two ways. First, some of these studies (e.g. Farhood 2005; Yaqoob & Bachay 2017) concentrated on the early version of ABC as a full costing system. Thus, other potential benefits of ABC that could be developed in practice are largely ignored in these studies. Second, there has been a lack of investigation on the functionality and compatibility issues of ABC systems. For instance, quantitative studies (e.g. Cadez & Guilding 2008; Jusoh & Miryazdi 2015) attempted to link EU and MO with the ABC system, but evidence of this kind of research in Iraqi manufacturing companies is scarce.

Buchko (1994) defined EU as the inability of an individual to predict an organization's environment accurately because of a lack of information, or an inability to discriminate between relevant or irrelevant data. That is, a higher level of uncertainty increases companies' need to get more information, including cost information with emphasis on advanced costing system (Ajibolade 2013). However, Jusoh and Miryazdi (2015) argued that the prior contingency studies such as Chenhall and Morris (1986) and Anderson and Young (1999) provided conflicting evidences on the condition of external environments affecting costing systems, particularly the implementation of ABC in organizations. As such, there is an urgent need to conduct further studies in this regard.

MO, on the other hand, is defined as the culture of an organization in implementing marketing activities, which requires that customer satisfaction be put at the center of business operations, and therefore produces superior value for customers better than competitors, and thus engenders outstanding performance for the organization (Han, Kim & Srivastava 1998). This study focuses on three facets of MO (Narver & Slater 1990); (1) customer orientation, (2) competitor orientation and (3) inter-functional coordination. When MO activities are deployed individually, they are more likely to be less effective. In other words, when an organization relies exclusively on customer orientation, this can result in an imbalance of strategy, which leaves the organization reactive rather than proactive towards competitors' strategies (Han et al. 1998). Similarly, when organizations focus more on their competitors, they can end up neglecting their valuable customers (Day & Wensley 1988). As a result of these, Narver and Slater (1990) proposed a balanced deployment of market strategies between customers' and competitors' orientations, as well as inter-functional coordination. The debate on whether MO is a contingency factor to the strategic MA or the implementation of ABC being an innovative strategy is still ongoing in the literature (Naranjo-Gil 2009). Hence, there is a need to understand the significance of MO on the implementation of ABC (Abdel-Kader & Luther 2008).

Notably, organizational performance is influenced by EU, MO and MA system. Kaplan (2001) puts forth the argument that it is unanimously acceptable among strategic MA researchers to use both financial and non-financial constructs for measuring organizational performance. The benefit of combining financial and non-financial performance measurements is to concurrently assess organizational improvements in all the important areas such as products, profits, operations, customers, and market growth (Baines & Langfield-Smith 2003). Some empirical evidences have proved the theoretical argument of a positive association among EU, MO, and organizational performance (Uyar & Kuzey 2016; McManus 2013). In contrast, no association among EU, MO and organizational performance is documented (Houqe 2004; Zhou, Brown & Dev 2009). In view of the mixed findings in the current literature, this study is therefore motivated to re-examine the relationship among EU, MO and organizational performance.

Though previous studies (e.g. Lee et al. 2010; Zaman 2009) have exerted significant efforts in understanding the direct relationship between ABC and performance, only few studies, such as Frey and Gordon (1999) and Ittner, Lanen and Larcker (2002), have considered the mediating role of ABC on the relationship between organizational factors and performance. In addition, previous studies (e.g. Cadez & Guilding 2008; Mia 1993) typically focused on the mediating effect of the MA system on the relationship between external contingency factors and performance, while only little attention has been

given to the mediating effect of ABC implementation. As such, Jänkälä and Silvola (2012) stressed that further examinations are needed to investigate how contingency factors affect the use of ABC and the subsequent emergence of performance. Thus, this study attempts to bridge these apparent gaps in prior research, by contributing to our understanding of contingency factors, ABC implementation and organizational performance in Iraq.

#### RESEARCH FRAMEWORK AND HYPOTHESES DEVELOPMENT

This study adopts a Cartesian type with a mediation model under the contingency approach (Chenhall 2003; Gerdin & Greve 2004). The purpose of employing the contingency approach and precisely the mediation model is to determine the equal influence of external contingency variables (e.g. EU and MO) and structural variables (e.g. ABC implementation) on improving and enhancing organizational performance (e.g. financial and non-financial performance) among manufacturing companies in Iraq. Based on this theoretical foundation, the following relationships are discussed and predicted.

#### ENVIRONMENTAL UNCERTAINTY AND ABC IMPLEMENTATION

McManus (2013) argued that detailed information on the complexity of the external environment is paramount to the successful implementation of sophisticated MA techniques. The findings reported by Innes and Mitchell (1990) concurred with this, as demonstrated in a case study research on how changes in the business environment motivate the implementation of ABC. Furthermore, Arnaboldi and Lapsley (2005) hold that the more information at the disposal of an organization on the condition of its external environment, the more accurate their cost information, which by extension, improves the accuracy of the organizations' cost management system. Similarly, Naranjo-Gil (2009) revealed that there is a positive relationship between technological innovations and EU. Elhamma (2015) found that EU has a significant and positive impact on the use of the ABC system. A contingency-based model is proposed, such that greater emphasis on sophisticated MA techniques is associated with organizations facing high uncertainty (Govindarajan 1984). In the light of this fact, and particularly in the wake of the persistent political and economic uncertainties currently in Iraq, this study formulates the following hypothesis:

H<sub>1</sub> Environmental uncertainty has a positive effect on ABC implementation.

#### MARKET ORIENTATION AND ABC IMPLEMENTATION

One of the most commonly raised questions is whether market-oriented organizations are influenced by either customer, competitor or inter-functional factors to implement MA techniques, hence, the need to understand the significance of MO on the implementation of the ABC system (Cadez & Guilding 2008; Abdel-Kader & Luther 2008). The current intense competition in the modern and globalized business environment has heightened the importance of customers and accurate information about customers (Juhdi, Hong & Juhdi 2015). Notably, MO may motivate ABC usage. For instance, Bromwich (1990) reported that one of the strong reasons that urged organizations to increased adoption of strategic MA techniques is MO. Guilding and McManus (2002) suggested that ABC is applicable when the customer is the unit of analysis. Liu and Pa (2007) demonstrated that market and customer orientations produce successive changes in activities, while cost drivers led to the adoption of the ABC system to meet customers' needs and to overcome competitors. Yapa and Kongchan (2012) found that the changes in customer behavior, due to pricing competition, have a considerable influence on ABC implementation. The contingency theory assumes that strategic MA systems such as ABC are functions of environmental factors, including MO (Cadez & Guilding 2008). Furthermore, contingency-based studies have demonstrated that there is a strong and positive relationship between MO and innovativeness or ABC implementation (Gliubicic & Kanapickienė 2015; Guilding & McManus 2002). Given these, the current study proposes the following hypothesis:

- H<sub>2</sub> Market orientation has a positive and significant effect on ABC implementation.

#### ABC IMPLEMENTATION AND ORGANIZATIONAL PERFORMANCE

The aim of implementing ABC across organizations is primarily to perfect cost analysis and influence the decision-making process with a view to enhancing and improving organizational performance (Sorros et al. 2017). Evidently, studies have reported that the use of modern MA techniques such as the ABC system can enhance organizational performance, particularly in the manufacturing sector (Cinquini et al. 2015; Qian & Ben-Arieh 2008). For instance, Lu et al. (2017) demonstrated that the implementation of ABC has contributed greatly to increasing organizations' profitability and competitive power. Other studies conducted by Cagwin and Bouwman (2002) and Maiga and Jacobs (2003) indicated that ABC is a strategic MA system with functionalities that improve return on investment and provide accurate profitability analysis. Also, the empirical results from 100 responses collected by Lee et al. (2010) demonstrated that the level of ABC usage is significantly correlated with financial and non-financial

performance improvement. A similar finding was reported from an explanatory study conducted by Zaman (2009) in Australia. Based on previous contingency studies, there is a significant positive and strong correlation between ABC implementation and organizational performance (Chenhall & Langfield-Smith 1998; Fei & Isa 2011; Kennedy & Affleck-Graves 2001). In the light of this fact, and particularly the current unimpressive performance of Iraqi manufacturing companies, the current study expects that ABC implementation would enhance the performance of Iraqi manufacturing companies.

- H<sub>3</sub> ABC implementation success has a positive effect on organizational performance.

#### ENVIRONMENTAL UNCERTAINTY AND ORGANIZATIONAL PERFORMANCE

Contingency theorists have posited that the necessary effect of uncertainty is to limit the ability of the organization to pre-plan or make decisions about the activities of their operations in advance of execution. Hence, when the environment becomes highly uncertain, it limits the preparation and execution of organizations and subsequently affects organizational performance (Govindarajan 1984). Jusoh (2008) found that EU has a significant negative correlation with organizational performance. Köseoglu et al. (2013) found that EU has a partial significance on organizational performance. Their findings are consistent with the conclusion presented by Kotha and Nair (1995) with regard to the significant impact of EU on firm profitability. However, other studies have demonstrated that EU has no significant impact on organizational performance (Houqe 2004; Rivard et al. 2006). Mia (1993) revealed that there is no association between EU and organizational performance. The results indicated that the MA system mediates this relationship. It is now more critical than ever to understand the connection between EU and organizational performance further, the reason being that the current global market is increasingly becoming uncertain (Soheilrad & Sofian 2016). Thus, the following hypothesis is predicted:

- H<sub>4</sub> Environmental uncertainty has a negative effect on organizational performance.

#### MARKET ORIENTATION AND ORGANIZATIONAL PERFORMANCE

Numerous researchers have attempted to establish the various levels of relationship that connect MO and organizational performance. Meanwhile, far little studies have been able to provide statistical or rather empirical evidence as to how MO leads to an improvement in organizational performance (Hunt & Lambe 2000; Narver & Slater 1990). O'Cass and Viet Ngo (2007) employed a structural equation modelling (SEM) approach to test

the relationship between MO and brand performance statistically. Their findings demonstrated that MO is a subset of organizational culture, which leads to improvement in brand performance. Low, Chapman and Sloan (2007) measured MO with three constructs; customer orientation, competitor orientation and inter-functional coordination. It was reported that the three constructs of MO are significantly and positively related to organizational performance. The interpretation of these findings is that MO is a type of organizational culture that leads to an improvement in organizational performance. The results of previous researchers (Cadez & Guilding 2008; McManus 2013; Slater & Narver 2000) showed a strong positive relationship between MO as a contingency factor and organizational performance. Meanwhile, other studies reported that MA information, innovation or learning significantly influence the relationship between MO and organizational performance (Noble et al. 2002; Han et al. 1998; Zhou et al. 2009). However, Iraqi manufacturing companies need to be continuously alert of the challenges in the global market. Therefore, MO is fundamental to enhancing the performance of Iraqi companies. As such, the present study hypothesizes that:

H<sub>5</sub> Market orientation has a positive and significant effect on organizational performance.

EXTERNAL CONTINGENCY FACTORS, ABC IMPLEMENTATION AND ORGANIZATIONAL PERFORMANCE

From a survey of 90 Australian manufacturing companies, Mia and Clarke (1999) found that MAS plays a mediating role between the intensity of market competition and business unit performance. Meanwhile, Chong and Chong (1997) conducted a study among 62 managers in manufacturing companies in Western Australia. Their findings demonstrated that there is a significant but indirect effect of EU on organizational performance

through MA information. Han et al. (1998) empirically demonstrated that MO facilitates innovations, such as ABC, in organizations, which in turn positively influence their business performance. The study by Cagwin and Bouwman (2002) found that competitive environments influence the efficacy of the ABC system, when ABC is implemented to improve financial performance. In addition, a significant relationship between market competition and organizational performance with the mediating effect of MA systems change – including ABC – was presented by Hoque (2011).

These arguments are in line with the theoretical perspectives of the contingency theory, which advocate that organizational performance requires fit between the use of MA techniques and contextual variables (Chenhall 2003; Hoque 2004; Mia 1993). However, it was noted that very little studies have explored the mediating effect of ABC implementation in the relationship between external contingency factors and organizational performance in developing countries (Elhamma 2015). In particular, no relevant evidence exists in Arab countries. Therefore, it is expected to further this longstanding argument by examining the mediating role of ABC implementation on the relationship between external contingency variables and organizational performance. Following these arguments, this study proposes the following hypotheses:

H<sub>6</sub> ABC implementation mediates the relationship between environmental uncertainty and organizational performance.

H<sub>7</sub> ABC implementation mediates the relationship between market orientation and organizational performance.

Accordingly, the theoretical framework of this study is presented in Figure 1 below. The framework relies on the contingency theory and the results of previous studies to depict the relationship between EU, MO, ABC implementation and organizational performance.

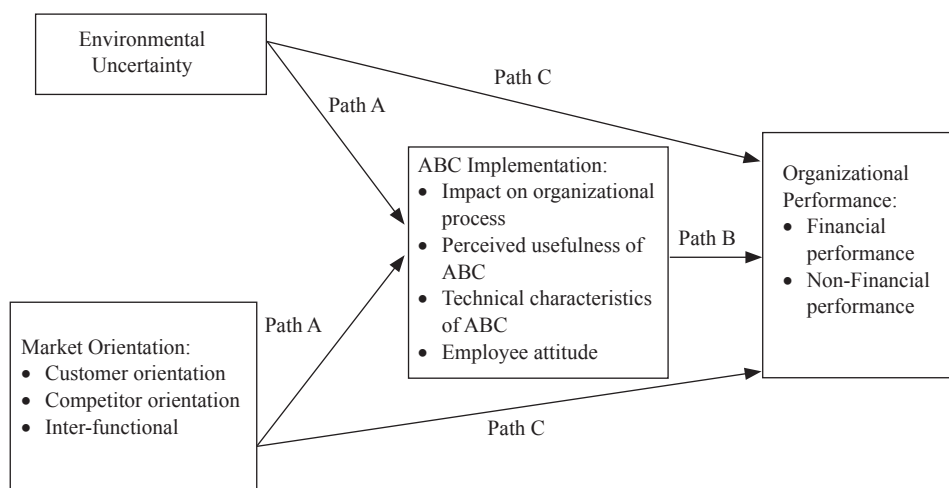


FIGURE 1. Theoretical framework

## METHOD

The population of this study is a select group of manufacturing companies in Iraq. Specifically, it focuses on large industrial manufacturing companies in Iraq. The target sample was selected because they are more likely to adopt and implement the ABC system according to Innes and Mitchell (1990). According to the Iraqi Central Statistical Organization (SCO) (2015), there are 707 large industrial manufacturing companies in Iraq. Using the sample size table generated by Krejcie and Morgan (1970) for a given population of 700 and above, a sample size of 248 would be required to represent the population of this study. Previous studies on ABC conducted in Iraq have recorded quite high response rates. For instance, a 78% response rate was recorded in the study conducted by Jaf, Sabr and Nader (2015) and a 84.44% rate was recorded in the study conducted by Al-Zaidy (2010). On this basis, this study requires a distribution of around 305 forms in order to obtain the required sample size. The sampling technique adopted for selecting the sample size from the population is the simple random sampling technique. The researchers adopted the use of survey questionnaires that were hand-delivered by the researchers and hired enumerators to the offices of the respondents. This method was chosen because of the lack of reliable postal services in Iraq, which makes it unadvisable to use a mail questionnaire. The data collection lasted for 4 months and one week, from 1<sup>st</sup> of March 2017 till 7<sup>th</sup> of July, 2017, and the researchers obtained 239 completed questionnaires. This represents a 78% response rate.

The data was collected from the Chief Financial Officers (CFOs) within the sample companies. However, the CFOs were asked whether anybody else (e.g. Financial Controller) was appropriate to complete the questionnaire, in which case it could be passed to them. In addition, Zhang, Hoque and Isa (2015) assumed that for companies without a CFO or Financial Controller, the Finance Manager would be the appropriate respondent. The CFO, Financial Controller and Finance Manager are considered appropriate to answer the research questionnaire because they have explicit knowledge and sufficient expertise for implementing ABC and understand the circumstances regarding external contingency factors that might affect the implementation of ABC and overall performance in their companies (Ismail et al. 2018b; Zhang et al. 2015). Generally, organizational researchers on quantitative research often employ the survey method, as it is considered the most appropriate method for collecting information on predetermined instruments that yield statistical data on a large sample to generalize the result (Creswell 2009). For analysis purposes, the SEM was employed for both measurement analysis and hypotheses testing using partial least squares (PLS3) path modelling (Hair et al. 2014).

Nineteen items were adopted and modified based on the published items of McGowan (1998) to measure ABC implementation in this study. The items focused

on four groups of dimensions of ABC implementation; impact on the organizational process (measured with 6 items), perceived usefulness of ABC (measured with 5 items), technical characteristics of ABC (measured with 4 items) and employee attitude (measured with 4 items). The reason for using a multidimensional measure was to avoid the measurement bias that may appear in the use of a single dimension (Rahmouni & Charaf 2010). The dimensions used in the current study are the same as those used by McGowan. However, McGowan's study is based on preparers' and users' perceptions of ABC implementation. Nevertheless, the results of McGowan's (1998: 46) study affirmed that preparers (or designers) and users mostly "view the implementation of ABC similarly, because designers of the system key very strongly on how successful they believe users perceived the project to be." For this reason, and consistent with the definition of ABC implementation given in the introduction section, the current study is based only on ABC users.

Organizational performance was measured with eight (8) items for both financial and non-financial performance, which was adapted from Govindarajan (1984). Consistent with Fei and Isa (2011), the items required respondents to rate both the financial and non-financial performance of their organizations, as compared to their industry in the past three years. Furthermore, eight items were adapted from Hoque (2004) for measuring EU in the current study. Finally, fifteen (15) items were adapted from Narver and Slater (1990) for measuring MO with three dimensions; customer orientation (measured with six items), competitor orientation (measured with four items) and inter-functional coordination (measured with five items). The seven-point Likert-type scale (ranging from 1 to 7) was used to anchor the responses of the respondents for all the variables.

## ANALYSIS

Three questions (Yes/No answers) were used to distinguish between the ABC implementer groups and non-ABC implementer groups: (1) Non-implementation of ABC at all, (2) ABC implementation is used for activity cost analysis, and (3) ABC implementation is used for measuring product cost and for decision-making purposes. The descriptive analysis revealed that 127 respondents are from the organizations which have implemented ABC, either at the activity cost analysis level, the measuring product cost and decision-making purposes level, or both. The remaining 112 respondents, who were from firms that have yet to implement ABC, are excluded from this study. However, of the 127 usable respondents, 4 respondents were omitted during the assessment of outliers, and 9 respondents were unusable and excluded from further analysis. Hence, only 114 usable respondents were retained for this study.

Both SPSS and PLS3 were employed to analyze the data collected for this study. SPSS was used to effectuate the preliminary analysis, including descriptive statistics,

normality, outlier and multicollinearity. The descriptive findings presented in Table 1 revealed that majority (52.6%) of the respondents in this study are CFOs. This is followed by 22.8% who are Financial Managers and 15.8% who are Financial Controllers. Only 8.8% of the respondents are others who are holding the positions related to either cost or management accounting. In addition, the majority of the respondents (46.4%) have worked in their current organization for more than 12 years. This is expected, as the respondents in this study are highly ranked managers and officers. 29.8% of the respondents have 4 to 8 years working experience with their current organization. It was also observed that 14.9% of the respondents have 9 to 12 years of working experience with their organizations. Meanwhile, 5.2% of the respondents have the lowest working experience, in the range of less than 4 years.

Table 1 also reveals that 101 (88.6%) respondents are from organizations that have been established for more than 6 years. 12 (10.5%) respondents are from manufacturing organizations founded between 3 to 6 years ago, while there was no organization founded under less than 3 years ago. These distributions suggest that majority of the respondents are from organizations which have been established for more than three years, which is enough time to reflect on the performance of their organizations. The results of comparative analysis (t-tests) confirmed that the variances are homogeneous between the early and late respondents, who indicated no significant difference between the two groups, as the equality of the mean responses of both groups were not significant. Therefore, these results suggest no issue of response bias in the data of this study.

TABLE 1. Descriptive information

Demographic Variables	Category	Frequency	Percent (%)
Position	Chief Financial Officer	60	52.6
	Financial Manager	26	22.8
	Financial Controller	18	15.8
	Others	10	8.8
Years of working in the organization	Below 4 years	6	5.2
	4-8 years	34	29.9
	9-12 years	17	15.0
	Above 12 years	53	46.4
	Missing	4	3.5
Age of organization	3-6 years	12	10.5
	More than 6 years	101	88.6
	Missing	1	0.9

n = 114

The researchers designed the model in the PLS-SEM analysis based on the theoretical framework presented in Figure 1. The PLS-SEM analysis allows for the conceptualization of a hierarchical model through the recurrent use of manifest variables (Lohmöller 1989). As such, the current study adopts the Hierarchical Components Model (HCM). Typically, HCM consists of two layers: the Higher-Order Construct (HOC) and Lower-Order Constructs (LOCs). Specifically, the HOC is a central construct and is usually related to two or more LOCs. This means that the LOCs represent the sub-dimensions of the HOC (Hair et al. 2014). According to Hair et al. (2014), the most important reason for employing HCM is to ensure easier understanding of both the measurement and structural models and to avoid collinearity issues. The variables understudied in this research are operationalized as a reflective-reflective type of HCM, consisting of four HOCs (ABC implementation, EU, MO and organizational performance) and nine LOCs; which are the dimensions of ABC implementation (4), organizational performance (2) and MO (3). The assessment of the measurement model (HOCs and LOCs) involves a series of activities, such as determining internal consistency reliability, examining

indicator reliability, and finally, assessing the convergent and discriminant validity (Hair et al. 2014). The essence of these activities is to collectively establish the relationship between the observed variables and the latent variables. The results of both the measurement and structural models are reported in the following subsections.

#### MEASUREMENT MODEL

The reliability and validity of the LOCs (first-order model) were assessed by the measurement model of PLS3 path modelling. This model has been used frequently by MA researchers (e.g. Hoque 2011; Laitinen 2014). PLS3 is useful when the theory sets out to explain the effect of variables that intervene in relationships between independent variables and dependent variables (Hair et al. 2014). As shown in Table 2, the internal consistency reliability has been achieved for all reflective constructs as represented by Cronbach Alpha and Composite Reliability, which is above the threshold of 0.60 and 0.70 (Hair et al. 2014) for all variables respectively. The Average Variance Extracted (AVE) of the reflective

TABLE 2. Outer loadings, Cronbach's Alpha, Composite Reliability and AVE for the LOCs

Constructs and Items	Loadings	Cronbach's Alpha	Composite Reliability	AVE
<b>ABC implementation success (ABC)</b>				
<b>Impact on organization process (IOP)</b>		<b>0.821</b>	<b>0.870</b>	<b>0.527</b>
Quality of decision	0.747			
Efficiency and waste reduction	0.689			
Innovation	0.762			
Relationship across functions	0.715			
Communication across functions	0.725			
Overall goal of the organization	0.716			
<b>Perceived usefulness of ABC (PUA)</b>		<b>0.755</b>	<b>0.837</b>	<b>0.509</b>
Operations control	0.673			
Accomplishment of task more quickly	0.760			
Enhancement of effectiveness	0.744			
Making jobs easier	0.777			
Usefulness on my job entirely	0.600			
<b>Technical characteristic (TC)</b>		<b>0.833</b>	<b>0.888</b>	<b>0.666</b>
Accurate information	0.809			
Accessible information	0.790			
Reliable information	0.836			
Timely information	0.827			
<b>Employee attitude (EA)</b>		<b>0.896</b>	<b>0.928</b>	<b>0.762</b>
Favorable attitude	0.893			
Embrace ABC	0.863			
Willingness to use ABC	0.877			
Easy to incorporate ABC system	0.858			
<b>Organizational performance (OP)</b>				
<b>Financial (FP)</b>		<b>0.858</b>	<b>0.904</b>	<b>0.702</b>
Level of firm profitability	0.850			
Sales and revenues	0.889			
Return on investment	0.822			
Operational and cost efficiency	0.788			
<b>Non-financial (NFP)</b>		<b>0.832</b>	<b>0.888</b>	<b>0.665</b>
Market share	0.846			
Customer loyalty	0.852			
Employee satisfaction	0.758			
R and D activities	0.804			
<b>Environmental uncertainty (EU)</b>		<b>0.881</b>	<b>0.904</b>	<b>0.544</b>
Suppliers' actions	0.584			
Customer demands and tastes	0.686			
Market activities of competitors	0.764			
Government regulation and policies	0.712			
Economic environment	0.813			
Production and IT	0.775			
Stability of environment	0.773			
Industrial relations	0.769			
<b>Market orientation (MO)</b>				
<b>Customer orientation (CUO)</b>		<b>0.782</b>	<b>0.852</b>	<b>0.536</b>
Create customer value	0.786			
Information about customers is freely communicated	0.788			
Understanding customers' needs	0.741			
Customer satisfaction	0.691			
Measuring customer satisfaction	0.644			
<b>Competitor orientation (COO)</b>		<b>0.765</b>	<b>0.849</b>	<b>0.585</b>
Top management regularly discusses competitors' strength and weaknesses	0.764			
Competitive advantage is based on understanding target opportunities	0.807			
Rapidly respond to competitive actions	0.733			
Salespeople share competitor information	0.754			
<b>Inter-functional coordination (IFC)</b>		<b>0.766</b>	<b>0.842</b>	<b>0.516</b>
Business functions are integrated to serve the target market needs	0.719			
Managers understand how employees can contribute to value of customers	0.728			
Inter-functional customer calls	0.765			
Information shared among functions	0.721			
Share resources with other business units	0.656			



dimensions is higher than 0.50, indicating that the convergent validity is established and the convergent validity of reflective constructs is also achieved. Furthermore, the loadings of the items measuring the dimensions (indicator reliability) range between 0.58 and 0.89. However, only one item with loadings below 0.50 was eliminated from the model.

Additionally, to ascertain the discriminant validity of the reflective constructs for LOCs, the square root of AVE of each dimension should be higher than its correlations with any other construct (Fornell & Larcker 1981). As shown in Table 3, the diagonal bolded values represent the square root of AVE, which is above the correlation of

any reflective variable with another. This indicates that the discriminant validity is established at LOCs.

To assess the second stage HOCs, the latent variable scores in the first order model (LOCs) were recomputed in the second stage HOM. As a result, the dimensions of the constructs in the first stage model served as items for the constructs in the second stage model (Henseler 2007). The result of the second stage, which is the hierarchical measurement model, revealed that the second order model (Table 4) is fit, as the Cronbach's Alpha, Composite Reliability and AVE values are all above the expected threshold of 0.60, 0.70 (Hair et al. 2014) and 0.50 respectively (Chin 1998).

TABLE 3. Discriminant validity for first stage hierarchical construct model

	COO	CUO	EA	EU	FP	IFC	IOP	NFP	PUA	TC
COO	<b>0.765</b>									
CUO	0.400	<b>0.732</b>								
EA	0.144	0.463	<b>0.873</b>							
EU	0.077	0.284	0.353	<b>0.738</b>						
FP	0.246	0.435	0.526	0.275	<b>0.838</b>					
IFC	0.451	0.664	0.431	0.373	0.406	<b>0.719</b>				
IOP	0.281	0.595	0.521	0.355	0.529	0.543	<b>0.726</b>			
NFP	0.169	0.480	0.531	0.389	0.661	0.479	0.575	<b>0.815</b>		
PUA	0.300	0.460	0.476	0.244	0.319	0.502	0.643	0.426	<b>0.714</b>	
TC	0.282	0.530	0.514	0.356	0.438	0.435	0.687	0.516	0.572	<b>0.816</b>

TABLE 4. Loadings, Cronbach's Alpha, Composite Reliability and AVE for HOCs

Code	Loadings	Cronbach's Alpha	Composite Reliability	AVE
ABC		0.841	0.893	0.678
IOP	0.881			
PUA	0.800			
TC	0.848			
EA	0.759			
OP		0.796	0.907	0.830
FB	0.899			
NFB	0.923			
EU	1.000	Nil	Nil	Nil
MO		0.754	0.855	0.667
CUO	0.892			
COO	0.637			
IFC	0.894			

Table 5 presents the discriminant validity of the second-order model (HOCs), which is assessed with the square root of the AVE values, and it was expected to be higher than the correlations among latent constructs. The results of the discriminant validity show that the square root of the AVE values of each construct are all greater than the correlations among the constructs. Hence, this result indicates that there is a valid relationship between the first order dimensions and the second order variables.

TABLE 5. Discriminant validity for second stage hierarchical constructs model

Variables	ABC	EU	MO	OP
ABC	<b>0.823</b>			
EU	0.401	<b>1.000</b>		
MO	0.648	0.330	<b>0.817</b>	
OP	0.652	0.368	0.525	<b>0.911</b>

STRUCTURAL MODEL

In order to analyze the proposed hypotheses in this study, the PLS3-SEM was employed, using the bootstrap technique (Hair et al. 2014), to examine the direct relationship between external contingency factors, ABC implementation and organizational performance. As presented in Table 6, the results reveal that EU has a significant and positive effect on ABC implementation ( $\beta = 0.118, p < 0.05$ ), and therefore  $H_1$  is supported. The results also demonstrate that MO has a positive and significant effect on ABC implementation ( $\beta = 0.352, p < 0.01$ ). This provides the basis to support  $H_2$ . The results also show that ABC implementation has a positive and significant effect on organizational performance ( $\beta = 0.347, p < 0.01$ ). Therefore,  $H_3$  is supported. However, the results show that EU ( $\beta = 0.067, p > 0.10$ ) and MO ( $\beta = 0.022, p > 0.10$ ) have no significant effect on organizational performance. Hence,  $H_4$  and  $H_5$  are not supported.

TABLE 6. Structural model assessment

H	Relationships	Beta	SE	t-values	p-values	Decisions
H <sub>1</sub>	EU -> ABC	0.118	0.069	1.699	0.045**	Supported
H <sub>2</sub>	MO -> ABC	0.352	0.100	3.518	0.000***	Supported
H <sub>3</sub>	ABC -> OP	0.347	0.113	3.067	0.001***	Supported
H <sub>4</sub>	EU -> OP	0.067	0.083	0.809	0.209	Not Supported
H <sub>5</sub>	MO -> OP	0.022	0.097	0.230	0.409	Not Supported

Note: \*\*: P < 0.05; \*\*\*: P < 0.01

#### TESTING MEDIATION EFFECT OF ABC IMPLEMENTATION

The findings presented in Table 7 show that there is a mediation effect of ABC implementation on the relationship between EU and organizational performance ( $\beta = 0.041$ ,  $t = 1.383$ ,  $p < 0.10$ ). Also, the mediating effect of ABC implementation on the relationship between MO and organizational performance was found to be significant ( $\beta = 0.122$ ,  $t = 2.523$ ,  $p < 0.01$ ). In order to confirm the mediation effects of ABC implementation and for the

assessment of hypotheses 6 and 7, the Variance Accounted For (VAF) was calculated. According to Hair et al. (2014), the  $VAF = \text{path } a * \text{path } b / (\text{path } c + \text{path } a * \text{path } b)$  (See Figure 1). The ABC determines the size of the indirect effect about the total effect. Accordingly, the VAF is proposed as follows:  $VAF < 20\% = \text{No Mediation}$ ;  $20\% > VAF < 80\% = \text{Partial Mediation}$ ;  $VAF > 80\% = \text{Full Mediation}$ . The VAF for the H<sub>6</sub> is 0.379, which therefore means there is a partial mediation. On this basis, H<sub>6</sub> is supported. Finally, the VAF for H<sub>7</sub> is 0.847, which demonstrates full mediation. Hence, H<sub>7</sub> is also supported.

TABLE 7. Testing the mediation effect of ABC implementation

H	Mediation Path	Beta	SE	t Value	p Value	Confidence Intervals		Decision
						Lower Limit (5%)	Upper Limit (95%)	
H <sub>6</sub>	EU > ABC > OP	0.041	0.030	1.383	0.084*	0.003	0.098	Supported
H <sub>7</sub>	MO > ABC > OP	0.122	0.048	2.523	0.006***	0.049	0.205	Supported

Note: \*:  $p < 0.10$ ; \*\*\*:  $P < 0.01$

#### FINDINGS AND DISCUSSIONS

With regard to the first research objective, the results presented in Table 6 show that EU and MO have significant and positive effects on ABC implementation among manufacturing companies in Iraq. The results conform to the findings of previous ABC studies on the relationship between EU and ABC implementation (Arnaboldi & Lapsley 2005; Innes & Mitchell 1990; Elhamma 2015). From the perspective of MA studies, it is also evident that a higher level of uncertainty increases the need for sophisticated MA techniques to provide enhanced information, including cost information, to the individuals who then can take improved decisions and thus achieve the organizational goals in a better way (McManus 2013; Naranjo-Gil 2009). The findings of this study imply that, for organizations to be able to implement ABC successfully, they must take cognizant attention of their environment.

Furthermore, MO was also shown to play a significant role in enhancing the successful implementation of ABC among manufacturing companies in Iraq. The result suggests that organizations must pay attention to their markets regarding customers' demands, competitors' operations and inter-functional coordination. Hence, embracing a proactive culture in business operations

to respond to market demands and expectations will enhance the successful implementation of ABC. This result is consistent with the studies by Gliubicic and Kanapickienė (2015), Yapa and Kongchan (2012) and Liu and Pa (2007), that an increase in competition and customer needs imply that the cost of mistakes is more readily exploited by competitors, precipitating the need for more accurate costing systems to minimize the level of organizational error.

Following the second objective of this study, which was to determine the effect of external contingency factors on organizational performance, the results demonstrate a nonsignificant effect of EU and MO on the performance of manufacturing companies in Iraq. This implies that managers' perception of EU has no significant effect on the performance of Iraqi manufacturing companies. It also means that information-related MO is not important to improving the performance of manufacturing companies. These results are inconsistent with previous studies. For instance, in spite of the significant number of studies such as Jusoh (2008), Mia and Clarke (1999), Uyar and Kuzey (2016), Low et al. (2007), which unanimously agreed that EU and MO are significantly associated with organizational performance, this study could not establish the proof of the connection between EU, MO

and organizational performance among manufacturing organizations in Iraq.

Nonetheless, the findings of a non-significant association between external contingencies and organizational performance are consistent with the findings of Hoque (2004) and Han et al. (1998). Hoque (2004) found EU to be unassociated with organizational performance. He proved that MA information mediates this relationship. Han et al. (1998) found that the relationship between MO and organizational performance is positive but insignificant. They proved that technical and administrative innovations, in fact, mediate this relationship.

In addition, concerning the third research objective, the results of the current study reveal that ABC implementation has a positive and significant effect on organizational performance. The results are consistent with previous studies (Cagwin & Bouwman 2002; Fei & Isa 2011; Kennedy & Affleck-Graves 2001; Lee et al. 2010; Maiga & Jacobs 2003; Zaman 2009). This implies that manufacturing companies in Iraq are gaining the benefits of implementing ABC through the enhancement of their organizational performance.

Furthermore, with regards to the fourth research objective, the findings of this study affirm the mediation role of ABC implementation on the relationship between external contingencies and organizational performance. These findings imply that through the implementation of ABC, the impacts of EU and MO on organizational performance become notable. However, Preacher and Hayes (2008) have argued that the significant effect of an independent variable on the dependent variable is not necessary for mediation to occur. This further justifies the insignificant relationship between external contingency factors and organizational performance. The findings of this study are consistent with the findings of Chong and Chong (1997) and Mia (1993), who found that EU has to be supported by appropriate MA information to achieve competitive advantage and ensure high performance.

In addition, the findings are also consistent with the findings of Mia and Clarke (1999), Han et al. (1998) and Hoque (2011), who reported that MO is a determinant of the use of the MA information (or innovations), and organizational performance is contingent on managers' use of this information or innovations. Therefore, the implementation of ABC will lessen the negative implications of the unpredictable environments on the performance of manufacturing companies. Also, the implementation of ABC in the manufacturing companies will fortify the positive implication of MO on their performances.

Overall, the findings of this study provide empirical evidence for the theoretical argument of the contingency theory, especially from the context of a developing and an Arab country. These findings indicate mixed implications, as the significant effects of external factors on ABC implementation and the significant effects of ABC implementation on organizational performance conform to the perspective of contingency theory on the one hand.

However, the insignificant effects of external factors on organisational performance defy the contingency theory on the other hand.

The findings reported in this study have significant theoretical implications. Chief among them is that the results of the present study provide the empirical evidence for the contingency theory, which proffers a cause-effect relationship or fit (Chenhall 2003) between contingency variables, cost control systems and organizational performance. Despite its importance, there is still scant research on ABC implementation in developing countries, especially in Iraq. In this regard, the results of this study contribute to a growing body of knowledge on external contingency variables, ABC implementation and organizational performance.

Most importantly, this study affirms the contingency-based "mediation" model by demonstrating the significant mediating effect of ABC implementation on the relationship between external contingency factors and organizational performance. In other words, this study evinced that the accurate information produced by ABC implementation enhances the effect of external contingency factors on organizational performance, which is consistent with Gerdin and Greve's (2004) "mediation" model of the Cartesian-contingency approach. Also, the results are consistent with the view put forward by previous MA researchers (e.g. Cagwin & Bouwman 2002; Chong & Chong 1997; Han et al. 1998; Hoque 2011; Ismail & Isa 2011; Mia 1993; Mia & Clarke 1999) that the more the contingencies, the higher the need for sophisticated MA that can provide managers with high quality information in order to make reasonable and accurate decisions, so that organizations can enhance their overall goals.

The present study also makes some critical practical contributions about implementing ABC and improving organizational performance. This research supports that the implementation of ABC systems among manufacturing companies in Iraq be closely associated to contingency factors such as EU and MO. The non-financial, as well as financial benefits of ABC systems, will allow the manufacturing decision makers and managers to make successful decisions, which in turn improve the financial and non-financial performance of Iraqi manufacturing companies. Practically, this finding is a crucial contribution to the ABC literature. It suggests that ABC implementation has the characteristics of any information system, which covers information and details relating to the external environment of the company. In other words, EU and MO are very important sources of information to increase the level of implementation of ABC, which in turn uses this information to achieve a high level of organizational performance.

## CONCLUSION

This study reports that EU and MO are significant factors for enhancing the successful implementation of ABC

among manufacturing companies in Iraq. Also, ABC implementation demonstrates a positive and significant role in the improvement of organizational performance. Furthermore, the mediation effect of ABC implementation on the relationships between EU and MO on organizational performance demonstrates that manufacturing companies in Iraq have the opportunity to enhance their performance through the implementation of ABC. However, this study failed to support a significant relationship between EU, MO and organizational performance.

Like every academic research, this study is not without its peculiar limitations. One of the limitations of this research is that it relies only on the primary source of data gathered through a cross-sectional approach. Therefore, future researchers might consider a longitudinal research design, whereby financial and non-financial indices of organizations before and after the implementation of ABC can be compared to further elaborate on the effect of external contingency factors on ABC and organizational performance.

Although an attempt was made to reduce common method variance by ensuring anonymity and improving scale items, the possibility that participants in this study might have under- or over-reported their rate of ABC implementation and organizational performance in the questionnaire cannot be ignored. In addition, the research is limited to the Cartesian type of contingency approach. For future research, it is recommended to examine the mediating effect of ABC implementation on the relationship between multiple contingency factors and organizational performance under the Configuration type of contingency approach. At the empirical level, the study is limited to the large manufacturing companies in Iraq. Therefore, the results may not be generalizable to small and medium-sized companies and other sectors. Future studies may replicate this study in other sectors and in small and medium-sized companies.

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