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### The Influence of Activity- Based Costing Implementation on Firm Performance: An Empirical Evidence from Vietnam\*

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#### ABSTRACT

*This study aims to investigate the influence of implementation of Activity-based-costing (ABC) method on Vietnamese firms' performance. The research is based on agency theory, uncertainty theory, sociological theory and literature review to construct model with seven hypotheses. Research data was collected from 112 mining companies with 1,008 observations and data was analyzed by Cronbach Anpha, Exploratory Factor Analysis, and Regression. Results from the study firstly show that environmental uncertainty and market orientation are significant factors enhancing the successful implementation of ABC among manufacturing companies in Vietnam. Consequently, ABC implementation demonstrates a positive and significant role in the improvement of firm performance. This result supports the notion that promoting ABC implementation can help manufacturing companies to develop stably and sustainably, constantly improving their position and their firm performance. With the results, the research recommend that the firms' managers should pay more attention to the application of modern management methods, especially the ABC. In addition, the firms' managers should also pay more attention to environmental uncertainties caused by suppliers, competitors, customers, and other factors. All of these affects to firms' performance via influence on the ABC implementation which in turn has effect on firms' performance.*

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## INTRODUCTION

Changes in the competitive environment and structure of organizations affect their performances, and encourage strategic management accounting (SMA) practices in order to achieve a better fit with these changes. The process of deepening, broadening integration of Vietnam into the world economy has brought about great achievements for manufacturing companies in Vietnam. These companies have more opportunities to enter the global market, and the world financial market to mobilize foreign capital at cheaper rate. In this context of fiercer competition, the accounting profession has witnessed significant changes due to globalization, digital transformation, regulations and competitions. The role of management accounting has expanded to include a focus on helping managers to solve problems and improve their competitive position. The focus is now on assisting the formation, selection and operational implementation of strategies.

Cost management accounting information is one of the most important tools, helping businesses to create competitive advantage in the integration period. Therefore, the pressure placed on accountants to provide useful cost information, the correct and full identification of production costs is becoming increasingly important for cost management accounting. Indirect costs are related to complexity and diversity of production, rather than to the volume of output. The greater degree of variation in the range of products manufactured by a company, the more complex and diverse its support activities become. This, in turn, increase the need for and importance of a costing system that allocates costs as accurately as possible. ABC is a technique designed and widely applied to assist organizations to classify and allocate indirect costs properly.

The study of factors affecting the ability to successfully apply the ABC method in enterprises is also of great interest to scholars, however, the results are still diverse. While some scholars evidenced that the ABC method is one of the most cost-effective accounting tools (Lu et al., 2017; Sorros et al, 2017; Alsayegh, 2020). However, these studies have been conducted for companies in developed countries which may have many different characteristics with Vietnam.

For Vietnam, there has been several studies on factors affecting the method of determining activity costs (For instance, Tran and Thao, 2020), factors affecting the use of management accounting (Doan, 2016). Authors found that there are some factors like behavior and organization factors, technical factors, corporate structure factors, and corporate culture factors. However, the research about the influences of ABC method on firm's performance is quite rare and results are not converged.

The study was conducted to answer the questions: (a) Whether environmental uncertainty and market orientation have significant effects on ABC implementation, (b) The effect of ABC implementation on firm performance, (c) Whether ABC implementation plays a mediating role in the relationship between external contingency factors and firm performance. These findings are important in encouraging manufacturing companies using activity-based costing implementation to create and manage value that assist in the growth of business value.

The remainder of the paper is structured as follows. Section 2 presents literature review. Section 3 describes method. Section 4 is about the research results. Section 5 presents the discussions, Section 6 is about conclusion.

## 1. LITERATURE REVIEW

ABC emerged from the work of Cooper and Kaplan in 1991 (Cooper & Kaplan, 1991). The views on the ABC accounting approach suggest that the ABC accounting approach emphasizes activities as primary cost collectors. The cost of these activities will then be allocated to the cost object according to the number of activities (Aldukhil, 2012). The ABC accounting method overcomes the disadvantages of traditional pricing, providing more flexible and useful information for decision makers. The ABC approach not only aims at accurately pricing costs to provide information for financial accounting but also aims to provide cost information to decision makers (Fadzil & Rababah, 2012).

According to Liu (2009), uncertainties affecting the design of a business also impact the technical tools of management accounting. In other words, an appropriate corporate management accounting system depends on the characteristics of the business and the business environment that is operating. This shows that it is not possible to develop a modeling paradigm for the use of accounting methods for all businesses. This means that choosing the ABC accounting method should be appropriate for each business, with the internal and external environment in which the business operates. Many other scholars' study about implementation of the ABC method suggest that the success of applying the ABC method to the firms is different, depending on different stages of firm's development (Anderson & Young, 1999; Babu & Masum, 2019; Elhanna, 2015; Fei & Isa, 2010; Laitinen, 2014; Göde & Ekergil, 2020).

Brown et al. (2004) believed that both shareholders and company managers want to maximize their benefits, so it is reasonable to believe that the company manager will not always act in the best interest of the employer, or other stakeholders. The conflict then arises when the information is incomplete and asymmetric between the subject and the agent in the company, because both sides have different interests. Therefore, the level of the successful use of the ABC method will depend on the relationship between business owners, executives and outside partners.

Cagwin & Bouwman (2002) argue that the existence of a socially acceptable organization of acceptable behavior is required to achieve a high level of productive efficiency. According to sociological theory, the efficiency of an enterprise is not only an internal problem of the enterprise but it is influenced in a general social context and related to regimes and policies. According to this theory, the ability to successfully apply the ABC accounting method is influenced by factors such as: social and political power, social policies and modes of solving workers' interests.

In developed countries, the method of activity-based costing has received much attention from both academics and business executives. The benefits of ABC's accounting method and its impact on the company's economic performance have driven many empirical researches, and it is considered one of the most cost-effective accounting tools (Alsayegh, 2020; Lu et al., 2017). Recently, there are quite a number of related studies such as theoretical studies, research on the practical application. The research of Kucera (2019) showed that 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. The research by Sorros et al. (2017) pointed out that 49.21% of all schools responded that the use of ABC accounting was necessary and effective in financial management. The study also found that the lack of appropriate software, data collection difficulty and the level of accounting staff were key barriers to the successful application of ABC accounting. The research of Lu et al. (2017) indicated that the SMA 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

The study of factors affecting the ability to successfully apply the ABC method in enterprises is also of great interest to scholars. The research of Brown et al. (2004) Fei & Isa (2010) has identified the groups of factors that affect the implementation and use of the ABC accounting methodology. These include: Organizational factors such as the support of senior managers, training to apply the activity-based costing system; contextual factors such as the level of competition, the suitability of managerial decisions, the adaptation of the current system. Research by Madwe et al. (2020), which studies the use of ABC accounting in multinational companies in South Africa, has highlighted the benefits of using activity-based costing method. Research also shows that, although this method is not widely used, they recognize it as an useful tool for improving the efficiency of the company. Some elements needed to ensure the success of the ABC method include (1) the organizational structure should be designed in a horizontal pattern in which the production process is divided into activities; (2) the key responsible person in the ABC project must have sufficient capacity and extensive knowledge of information technology; (3) cost information on activities; and (4) the support of executives and shareholders.

A study by Fei & Isa (2010) shows that factors such as behavior, organization, and technology are key factors in the success of ABC accounting. In addition, factors such as the role of culture and the structure of the organization also significantly affect the ability to successfully apply the ABC accounting

method to the enterprise. The research by Wegmann (2019) has shown that even in small firms, the potential for product cost distortion is real if traditional costing is used. Suggested application of ABC accounting method to the steel manufacturing enterprises and the research has also shown the factors including: the proportion of costs, production processes, types of products, inputs, finished products and sales, and product inventory.

The previous ABC studies have examined the relationships among competitive strategies, information technology, ABC implementation and organizational performance. There has only been little empirical evidence on whether organizational performance is influenced by environmental uncertainty, market orientation and ABC implementation. Laitinen (2014) 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. Farhood (2005) reported that previous studies have tested environmental uncertainty in the context of innovativeness, other than the ABC system. Also, Elhamma (2015) argued that market orientation has not been widely studied and should be considered as an added contingency factor. The results reported in previous studies on environmental uncertainty and market orientation are inconclusive. One of the possible reasons for these inconclusive results is that managers' use SMA of information, such as ABC information, may mediate this relationship (Zhang & Isa, 2010). Alsayegh (2020) echoed that understanding the mediating effect of advanced SMA practices such as ABC implementation on the relationship between contingency factors and organizational performance is considered as an important research area.

In Vietnam, the research related to ABC accounting method mainly involve theory and testing applied in some enterprises. Recently, there have been a number of studies concerning the factors affecting the applicability of the ABC accounting methodology. The study by Tran and Thao (2020) on factors affecting the method of determining activity costs. Factors in the company include: Behavior and organization factors, technical factors, corporate structure factors, and corporate culture factors. However, the influencing factors in the research model have not been tested by the authors to examine how each factor influences the success of the ABC method. The study of Tran & Thao (2020) and the study of Tam & Tuan (2020) also found the factors that influence the ABC application such as: Gross Revenue, Product Diversity, and Cost Structure. However, it is limited to assess whether or not there is a correlation between these factors and the likelihood of successful implementation of the ABC methodology. Cost structure at a rate how the business can successfully apply the ABC method. Beside that, these studies have not yet evaluated the impact of ABC implementation on firm performance.

In short, there have been many studies related to ABC implementation and its impact on the corporate performance. However, most of these studies were conducted in developed countries. There are a small number of studies in Vietnam about the factors that influence the success of the ABC method, but these studies are limited to assess whether correlations between individuals affect the ability to manipulate the ABC method without measuring how specific is the impact. Therefore, developing empirical studies to prove the importance of ABC implementation to the performance of enterprises is really necessary in promoting business administrators to apply the ABC method into practice in the future. 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 Vietnamese manufacturing companies.

In the current studies about effect of ABC implementation on firm's performance, this study formulates the following hypothesis:

*H<sub>1</sub>: Environmental uncertainty has a positive effect on 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 SMA techniques, hence, the need to understand the significance of market orientation on the implementation of the ABC system. The research of Lu et al. (2017) reported that one of the strong reasons that urged organizations to increased adoption of SMA techniques is market orientation. Jiran et al. (2019) suggested that ABC is applicable when the customer is the unit of analysis, 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. Aldukhil (2012) found that the changes in customer behavior, due to pricing

competition, have a considerable influence on ABC implementation. The contingency theory assumes that SMA systems such as ABC are functions of environmental factors, including market orientation. Given these, the current study proposes the following hypothesis to answer the question, whether environmental uncertainty and market orientation have significant effects on ABC implementation.

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

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. The study of Farhood (2005) have reported that the use of modern SMA techniques such as the ABC method can enhance firm performance, particularly in the manufacturing sector. Laitinen (2014) demonstrated that the implementation of ABC has contributed greatly to increase organizations' profitability and competitive power. Vetchagool et al. (2020) indicated that ABC is a SMA system with functionalities that improve return on investment and provide accurate profitability analysis, the level of ABC usage is significantly correlated with financial and non-financial performance improvement. Based on previous contingency studies, there is a significant positive and strong correlation between ABC implementation and organizational performance. In the fact of the current unimpressive performance of Vietnam manufacturing companies, the current study expects that ABC implementation would enhance the performance of Vietnam manufacturing companies in the future.

*H<sub>3</sub>: ABC implementation success has a positive effect on firm performance.*

Uncertainty theorists have argued that the influence of uncertainty is to limit the ability of the strategic planning function of the organization. Hence, when the environmental uncertainty, it limits the operational implementation of strategies and subsequently affects firm performance (Elhamma, 2015). Laitinen (2014) found that environmental uncertainty has a significant negative correlation with firm performance. Swenson (1995) found that environmental uncertainty has a partial significance on organizational performance. Thus, the following hypothesis is predicted:

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

Numerous researchers have attempted to establish the various levels of relationship between market orientation and firm performance. Some of studies have been able to provide statistical or rather empirical evidence as to how market orientation leads to an improvement in firm performance. Zhang & Isa (2010) demonstrated that market orientation is a subset of organizational culture, which leads to improvement in brand performance. Elhamma (2015) measured market orientation with three constructs: customer orientation, competitor orientation and inter-functional coordination. It was reported that the three constructs of market orientation are significantly and positively related to organizational performance. Vietnam manufacturing companies need to be continuously alert of the challenges in the global market. Therefore, market orientation is fundamental to enhance the performance of Vietnam companies. As such, the present study hypothesizes that:

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

Sociological and representation theorists have posited that organizational performance requires fit between the use of SMA techniques and contextual variables (Alsayegh, 2020). 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. 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 theoretical Background and the results of previous studies to depict the relationship between environmental uncertainty, market orientation, ABC implementation and firm performance.



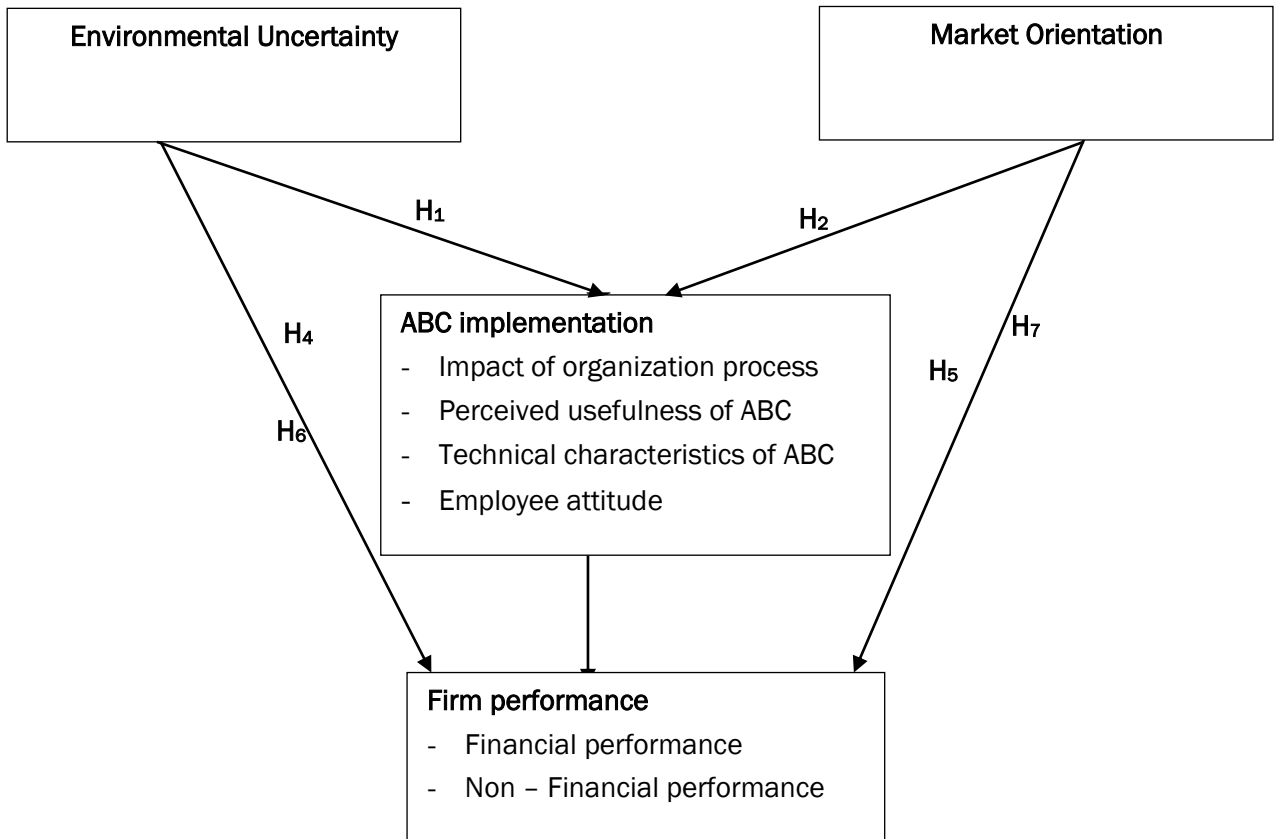


Figure 1. Theoretical framework

## 2. RESEARCH METHODOLOGY

The sample of this study is a selection of 305 Vietnamese manufacturing companies that are listed in the Vietnamese stock market. A preliminary survey was prepared and sent to the survey participants with the support of the Google Forms Access Application. During the survey period from 1/2020 to 6/2020, the number of questionnaires sent was 305, and the number of valid questionnaires received was 223.

Three questions (Yes/No answers) were used to distinguish between the ABC implementing groups and non-ABC implementing 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 124 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 99 respondents, who were from firms that have yet to implement ABC, are excluded from this study. However, of the 124 usable respondents, 4 respondents were omitted during the assessment of outliers, and 8 respondents were unusable and excluded from further analysis. Hence, only 112 usable respondents were retained for this study.

## 3. RESEARCH RESULTS

The descriptive findings presented in Table 1. This table revealed that the majority (58.03%) of the respondents in this study are Chief Financial Officers, 36.61% are financial managers. In addition, the majority of the respondents (51.79%) have worked in their current organization for more than 8 years. That proves that the data provided guarantees reliability. Table 1 also reveals that 108 (96.43%) respondents are from organizations that have been established for more than 6 years. These distributions

suggest that majority of the respondents are from organizations which have been established for more than 8 years, which is enough time to reflect on the performance of their organizations. The results of comparative analysis (t-tests) confirmed that the variances were 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 was not significant. Therefore, these results suggest no issue of response bias in the data of this study.

**Table 1.** Descriptive information

	<i>Criterion</i>	<i>Frequency</i>	<i>Percent (%)</i>
Position	Chief Financial Officer	65	58.03
	Financial Manager	41	36.61
	Other	6	5.36
Years of working in the organization	Below 3 years	7	6.25
	3-8 years	47	41.96
	Above 8 years	58	51.79
Age of organization	Under 4 years	0	0
	4-6 years	4	3.57
	More than 6 years	108	96.43

Source: Synthesis of the research team

To analyze the reliability of each scale and explain the effect of variables that intervene in relationships between independent variables and dependent variables, the study conducted Cronbach's Alpha test and Composite Reliability for 9 variables with 43 observational variables in the model introduced. The internal consistency reliability has been achieved for all reflective constructs as represented in table 2. This table shown that the cronbach's Alpha and composite Reliability of all variables are above the threshold of 0.6 and 0.7 respectively (Hair et al., 2014). The Average Variance Extracted (AVE) from the reflective dimension is higher than 0.5, 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.

**Table 2.** Results of reliability testing, EFA of variables

<i>Say right</i>	<i>Loading</i>	<i>Cronbach's Alpha</i>	<i>Composite Reliability</i>	<i>AVE</i>
<b>ABC implementation (ABC)</b>				
<b>Impact on organization process (IP)</b>		<b>0.786</b>	<b>0.860</b>	<b>0.546</b>
Quality of decision	0.647			
Efficiency and waste reduction	0.758			
Innovation	0.749			
Relationship across functions	0.713			
Communication across functions	0.721			
Overall goal of the organization	0.615			
<b>Perceived usefulness of ABC (PU)</b>		<b>0.745</b>	<b>0.813</b>	<b>0.529</b>
Operations control	0.624			
Accomplishment of task more quickly	0.745			

Enhancement of effectiveness	0.812			
Making jobs easier	0.604			
Usefulness on my job entirely	0.527			
<b>Technical characteristic (TC)</b>		<b>0.833</b>	<b>0.814</b>	<b>0.625</b>
Accurate information	0.562			
Accessible information	0.635			
Reliable information	0.714			
Timely information	0.801			
<b>Employee attitude (EA)</b>		<b>0.859</b>	<b>0.821</b>	<b>0.621</b>
Favorable attitude	0.613			
Embrace ABC	0.701			
Willingness to use ABC	0.608			
Easy to incorporate ABC system	0.713			
<b>Firm performance (FPI)</b>				
<b>Financial (FP)</b>				
Level of firm profitability Sales and revenues	0.654			
Return on investment	0.701	<b>0.807</b>	<b>0.841</b>	<b>0.591</b>
Operational and cost efficiency	0.812			
<b>Non-financial (NP)</b>				
Market share	0.652			
Customer loyalty	0.710	<b>0.843</b>	<b>0.814</b>	<b>0.602</b>
Employee satisfaction	0.706			
R and D activities	0.652			
<b>Environmental uncertainty (EUF)</b>		<b>0.836</b>	<b>0.824</b>	<b>0.641</b>
Suppliers' actions	0.623			
Customer demands and tastes	0.582			
Market activities of competitors	0.610			
Government regulation and policies	0.603			
Economic environment	0.673			
Production and IT	0.673			
Stability of environment	0.725			
Industrial relations	0.625			
<b>Market orientation (MOF)</b>				
<b>Customer orientation (CU)</b>				
Create customer value				
Information about customers is freely communicated	0.625			
Understanding customers' needs	0.712	<b>0.808</b>	<b>0.798</b>	<b>0.683</b>
Customer satisfaction	0.682			
Measuring customer satisfaction	0.712			
<b>Competitor orientation (CO)</b>				
Discusses competitors' strength and weaknesses	0.756			
Competitive advantage is based on target opportunities	0.725	<b>0.842</b>	<b>0.802</b>	<b>0.598</b>
Rapidly respond to competitive actions	0.692			
Salespeople share competitor information	0.652			

Source: Synthesis of the research team



Table 3 shows the results of the correlation coefficient test between the variables and the results of the multi-collinearity test. Environmental uncertainty and market orientation are positively correlated with ABC implementation, which means that the higher the level of Environmental uncertainty and market orientation, the higher the level of ABC implementation. At the same time, the level of ABC implementation is positively correlated with firm performance.

**Table 3.** Correlation and Multi - Collinearity Test

	<i>IP</i>	<i>PU</i>	<i>TC</i>	<i>EA</i>	<i>FP</i>	<i>NP</i>	<i>EUP</i>	<i>CU</i>	<i>CO</i>	<i>VIF</i>
<i>IP</i>	1.000									2.651
<i>PU</i>	0.162	1.000								3.361
<i>TC</i>	0.217	0.261	1.000							2.435
<i>EA</i>	0.133	0.257	0.112	1.000						1.865
<i>FP</i>	0.213	0.159	0.266	0.153	1.000					2.629
<i>NP</i>	0.062	0.163	0.163	0.146	0.210	1.000				3.366
<i>EUP</i>	0.493	0.144	0.249	0.376	0.226	0.124	1.000			2.291
<i>CU</i>	0.144	0.485	0.262	0.365	0.214	0.417	0.348	1.000		3.358
<i>CO</i>	0.133	0.152	0.249	0.343	0.212	0.342	0.228	0.317	1.000	2.376

Table 3 also presents the results of the multi- collinearity test, the results show that at the same time, all the correlated pairs are less than 0.8 and all the VIF of the independent variable is less than 5, which proves that there is no multi-collinearity phenomenon. In addition, in order to increase the reliability of the regression results, the study is conducted to examine whether there was a change in variance in the research model through the use of the White's General test. The test results show that the p-value is greater than 0.05, so with a significance level of 5%, the  $H_0$  hypothesis on the uniformity of the variance is acceptable. That is, the pattern does not have the variance phenomenon. With the above analysis, we assert the appropriate research data to perform multivariate regression analysis that examine the relationship between external factor and activity-based costing implementation on firm performance.

The criteria for evaluating the quality of the PLS - SEM model as well as the hypothesis testing steps in this study are based on Hair's evaluation suggestions. According to the author, PLS - SEM does not have an appropriate measure for the model, so the quality of the model is assessed by two values,  $R^2$  and  $Q^2$ , referring to the evaluation of interpretability and likelihood. The predictive power of endogenous structures. Results  $R^2$  and  $Q^2$  in Table 4 show that the structural model is of good quality. Next, the VIF coefficient of all concept structures  $<3$  shows that there is no existence of multi-collinearity phenomenon between the explanatory variables.

Path coefficients related to the environmental uncertainty and market orientation impact are significant with a significance level of 5% (Table 4). Besides, Bootstrap test results also show that these coefficients are all different from zero. Thus, it can be concluded that hypotheses from  $H_1$  to  $H_7$  are supported by data. Environmental uncertainty and market orientation have a strong impact on ABC implementation and firm performance.

**Table 4.** Results from SEM regression

Hypothesis	Structural	Research models			VIF	Test result
		Std.Err.	t-Value	Bootstrap		
H <sub>1</sub>	ABC ← EUF	0.452	0.34***	[0.30;0.55]	1,00	Support
H <sub>2</sub>	ABC← MOF	0.319	0.45***	[0.40;0.65]	1,00	Support
H <sub>3</sub>	FPI ← ABC	0.241	0.43***	[0.38;0.51]	1,51	Support
H <sub>4</sub>	FPI ← EUF	0.432	0.21**	[0.16;0.32]	1,34	Support
H <sub>5</sub>	FPI ← MOF	0.462	0.29**	[0.16;0.45]	1,43	Support
H <sub>6</sub>	FPI ← EUF – ABC	0.610	0.18**	[0.12;0.25]	1,24	Support
H <sub>7</sub>	FPI ← MOF – ABC	0.512	0.13*	[0.10;0.23]	1,52	Support
<i>T statistics in brackets * p&lt;0.1, **p&lt;0.05, *** p&lt;0.01</i>						
R <sup>2</sup> (%)			R <sup>2</sup> FPI = 35,7			
Relevance level of forecast (Q <sup>2</sup> )			Q <sup>2</sup> FPI = 31,35			

The results in Table 4 support that the H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub> hypothesis are acceptable at a significance level of 1%. While the H<sub>4</sub>, H<sub>5</sub>, H<sub>6</sub> hypothesis are acceptable at a significance level of 5% and H<sub>7</sub> hypothesis are acceptable at a significance level of 10%. This result indicated that environmental uncertainty and market orientation significantly affect the level of practice of ABC method and significantly affect the firm performance. Again, this result confirms the importance of ABC implementation on enhance firm performance.

#### 4. DISCUSSIONS

Overall, the findings of this study provide empirical evidence for the theoretical argument of the theory of ABC applying, especially from the context of a developing country. These findings indicate a significant effect of external factors on ABC implementation and the significant effect of ABC implementation on firm performance. The findings reported in this study have significant theoretical implications. On top of this is the results of the present study provide the empirical evidence for the uncertainty, representation and sociological theory, which proffers a cause-effect relationship or fit between external variables, cost control systems and firm performance. Despite its importance, there is still scant research on ABC implementation in developing countries, especially in Vietnam. In this regard, the results of this study contribute to a growing body of knowledge on external variables, ABC implementation and firm performance.

Most importantly, this study affirms the external variables-based “mediation” model by demonstrating the significant mediating effect of ABC implementation on the relationship between external factors and firm performance. On the other hand, this study evidenced that the accurate information produced by ABC implementation enhances the effect of external factors on firm performance, which is consistent with Aldukhil (2012) “mediation” model of the Cartesian-contingency approach. Also, the results are consistent with the view put forward by previous MA researchers (e.g., Alsayegh, 2020; Elhamma, 2015; Fei & Isa, 2010) that the more the contingencies, the higher the need for sophisticated SMA 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 firm performance. This research supports that the implementation of ABC systems among manufacturing companies in Vietnam be closely associated with external factors such as environmental uncertainty and market orientation. The non-financial, as well as financial benefits of ABC systems will allow the manufacturing decision makers and managers to make successful decisions, which would in turn improve the financial and non-financial performance of Vietnam 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, environmental uncertainty and market orientation 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 firm performance.

## CONCLUSION

The study was conducted to find the effect of ABC implementation on firm performance. In addition, the research also explores the mediating role of ABC implementation in the relationship between external contingency factors and firm performance.

Based on the quantitative and qualitative research methodologies, the paper assesses the external factors that influence to successfully apply the ABC accounting method and firm performance. This study reports that environmental uncertainty and market orientation are significant factors for enhancing the successful implementation of ABC among manufacturing companies in Vietnam. Also, the ABC implementation demonstrates a positive and significant role in the improvement of firm performance. Furthermore, the mediation effect of ABC implementation on the relationships between environmental uncertainty and market orientation on firm performance demonstrates that manufacturing companies in Vietnam have the opportunity to enhance their performance through the implementation of ABC.

The research results prove the importance of applying and practicing modern management methods in improving the performance of enterprises. The results suggesting that firms' managers in manufacturing enterprises in Vietnam should pay more attention to the application of ABC method. Research has proven that environmental uncertainties have a relatively strong influence on the ability of ABC implementation and firm performance. The article has contributed to a wealth of research on modern cost management accounting as well as the improvement of cost management accounting in the future.

However, like some previous academic researches, 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 factors on ABC and firm performance, but we consider these to be suggestive for studies in the future.

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