The relationship between organizational performance and computerized accounting: The role of business environment

Quang Linh Huynh

School of Economics- Law, Tra Vinh University, Tra Vinh, Vietnam

ABSTRACT: *This study was to investigate the causal relationship from the adoption of computerized accounting in business to organizational performance. Significantly, this research attempted to examine the moderating role of business environment in the effect of computerized accounting on organizational performance. The results show that the adoption of computerized accounting in business likely improves organizational performance, the link of which is in turn moderated by business environment. The companies facing highly uncertain business environment will have a trend to adopt more computerized accounting to attain the best possible organizational performance. The empirical results provide managers with an insight into the intricate associations among business environment, the adoption of computerized accounting in business and organizational performance; which could help them to decide a suitable adopting level of computerized accounting in their business, so that they can cope with the uncertain business environment, and so gain the best organizational performance.*
Keywords: Computerized accounting; organizational performance; business environment

----

I.   INTRODUCTION

Manual accounting had been the tendency until 1980s when speedy computers began to be popular. Computers for various purposes were not only found dependable, extremely exact and the easiest to handle in accounting, but also made it so easy to save and deal with financial accounting information. Accounting software that allows small and medium enterprises basically accomplish any type of accounting function computerized accounting. Computerized accounting is designed to mechanize and incorporate all the organizational operations, such as sales, finance, purchase, inventory and manufacturing, and helps the organization deal with all the business processes easily. With computerized accounting the firm will have greater visibility into the day-to-day business operations and better access to fundamental accounting information. Changes in management information are regular and continuous with the ever-changing business environment. Without the adoption of technology such as computerized accounting, it can be more complex for the firms to make good business decisions (Sam et al. 2012). The major barriers to implement the information technologies may be due to the lack of knowledge about the advantages of using technologies (OECD 1998), and the resistance to change organizational structures (King and Teo 1994; Palvia et al. 1994; Tambotoh et al. 2017). One of the barriers in managerial systems is that the full benefit of the system can be reached only if the amount of data and information is large enough to process (Klier et al 2017). The building and execution expenses to handle the accounting system electronically are likely to be too high in small and medium enterprises compared to the benefits achieved (Zhang 2017).

Furthermore, prior studies emphasize that under a high uncertainty business environment, the implementation of management system make managerial decisions more effective, so gaining better business performance (Ajibolade et al. 2010; Yulius 2010; Rogers 2016). From previous perspectives,, it can argue that the role of business environment is very imperative in adopting computerized accounting system for business. The implementation of this system in business likely augments organizational performance, especially in the high uncertain business environment. However, previous studies have not explored the role of the business environment on the adoption of computerized accounting and organizational performance. The purpose of this study is to investigate the influence of business environment on the relationship between the adoption of computerized accounting and organizational performance. In addition, this project analyzes the moderation of business environment to computerized accounting and organizational performance in the Vietnamese economic and environmental context as an emerging economy.

This work makes the important contribution to the accounting knowledge. It is one of the first studies to explore and evidence the moderation role of business environment on the link between the adoption of computerized accounting and organizational performance. To the practical implication, the findings offer business managers with a better understanding of computerized accounting in the developing economies. These findings are meaningful to managers involved in management and accounting in designing computerized

accounting in the appropriate ways that facilitate the managers' perception of their function to cope with the highly uncertain business environment. Finally, the business managers can make better business decisions on the adoption of computerized accounting in business, which helps gain the best possible performance. The rest of the research is structured as follows. The next section "hypotheses development" reviews the relevant literature and then arrives at hypotheses being tested, followed by the section "research methodology". The research methodology describes the way to collect the data, how the data is analyzed, as well as the way to measure the variables in the research model. The empirical results are presented in the subsequent section. Then, some summaries will be offered in the section "conclusions" after the empirical results.

II. HYPOTHESES DEVELOPMENT

The adoption of computerized accounting can be one of decisive factors for a firm to be successful and also to be surviving (Sam et al. 2012). It is defined as the degree to which a firm decides computers and the internet for its accounting practices (Iacovou at al. 1995). Organizational performance refers to the actual output or results of an organization as measured against its targeted goals or objectives, which are related to strategic planners, operations, finance, legal, and organizational development (Schulz et al. 2010; Wickramasinghe et al. 2017). The adoption of managerial systems is proved to improve organizational performance (Uchenna 2011). Wan (2011) disclosed a positive influence of e-accounting on the task performance. Furthermore, a number of previous studies have confirmed the impact of e-commerce, information system, accounting information system and information technology on company's performance (Choe 2003; Ajibolade et al. 2010; Yulius 2010; Schulz et al. 2010). Additionally, Gnawali (2017) revealed a positive link between management accounting system and organizational performance. Wickramasinghe et al. (2017) discovered that computerized accounting is an important factor to the production of quality accounting information on a timely basis and the communication of that information to the decision makers, which will improve organizational performance.

Business environment refers to as an important contextual variable (Duncan 1972). It is mentioned perceived external environmental uncertainty as variables related to customers, suppliers, competitors, social-political issues and technologies. Managerial perceptions of perceived environmental uncertainty are identified by the predictability of business conditions in a company's environment (Miles et al. 1978). In addition, Jusoh (2010) deems predictability as the ability of a firm to estimate the situations of the external environment. Business environment can be classified by Miller (1993) into six areas; namely government policies, economy, resources and services used by the company, product market and demand, competition, and technology. Nevertheless the technology variable was removed, because it does not meet the internal reliability. Moreover, Werner et al. (1996) recommend that the inter-item correlations of the technology are also relatively low compared to the other five factors, indicating further evidence on the removal of this item. Consequently, they suggest not using the technology variable in the environmental uncertainty. Brouthers et al. (2002) utilize this refined measure with five variables by Werner et al. (1996) for their study. The refined measure with five variables for perceived external environmental uncertainty is applied in this research. When levels of environmental competitiveness become higher, managers' demands for formal procedures tend to increase (Pfeffer and Leblebici 1973). Moreover, Gordon and Miller (1976) confirm that if there is an increase in the degree of environmental uncertainty, it is necessary for an organization to incorporate more non-financial data into its accounting information system and adopt a quite sophisticated control system. Following Iacovou et al. (1995), external pressures put an impact on managerial systems adopted by firms. Haldma and Laats (2002) claim external factors influence the use of the accounting system. In addition, Masrek (2009) shows the relationship between the environmental uncertainty and the utilization of information systems. A year later, The Impact of environmental Uncertainty perceptions on the use of marketing information systems is supported by Ashill and Jobber (2010). Ibadin and Imoisili (2010) find the evidence on the relationship between perceived environmental uncertainty and accounting system design. More sophisticated accounting systems will improve organizational performance, if they are tailored to business environment (Huynh and Yaling 2013, Lutfi et al. 2016).

Organizational performance is proposed to be improved under increasing competition (Mia and Clarke 1999). When business environment is increasingly uncertain, managers take more attention to their business, so firm performance can be enhanced (Ajibolade et al. 2010). Under a highly competitive environment, organizational performance can be higher. Additionally, when the business environment become difficultly predictable, managers pay more attention to management so that they better control the situation, which help their business more effectively operates and so gains a better performance (Huynh and Yaling 2013; Farole et al 2017).

Under conditions of high competition, the adoption of computerized accounting is associated with higher organizational performance (Huynh and Yaling 2013). In consistence with their argument, Lutfi et al. (2016) indicates that under a highly uncertainty situation, the extent of computerized accounting will result in effective managerial decisions and therefore make managerial performance better. Farole et al (2017) suggest

that, when the business environment becomes difficultly predictable, directors pay more attention to management so that they better control the firm, helping their business more effective and so gains superior performance. In addition, Kren (1997) found out the effects of business environment on the link between accounting measures and organizational performance. Hence, it can recommend the moderating influence of business environment on the relationship between the adoption of computerized accounting and organizational performance. Overall, it can reach the following hypotheses.

H1: The adoption of computerized accounting in business can improve organizational performance
H2: Uncertain business environments likely boost the adoption of computerized accounting in business
H3 Uncertain business environments likely enhance organizational performance
H4: Business environments can moderate the relationship between adoption of computerized accounting in business and organizational performance.

III. RESEARCH METHODOLOGY

The research population was the 1147 firms listed on the Vietnamese Stock Exchanges in the third quarter of 2018. A simple random sampling was applied to collect the data. The questionnaires were interviewed with executives involved in accounting in the selected firms. The total of 450 copies of the questionnaire were delivered to the respondents, of which 150 worked for the small firms, 150 for the medium firms, and the remaining 150 for the large firms with one respondent for one firm. Out of the 450 conducted questionnaires, only 382 provided adequately required information for analyses. This number meets the requirements for the sample size stipulated by Hair et al. (2012).

In this study, three constructs are employed and measured as follows. The adoption of computerized accounting in business (ACA) was measured with a five-point linear numeric scale ranging from never considering, to under implementation of computerized accounting in business. The following are five variables for the adoption of computerized accounting in business; namely "the usage of computer for accounting practices", "the usage of accounting software", "the usage of internet-accounting within the company", "the usage of internet-accounting with other outside agencies", and "the usage of internet-accounting for other purposes". This measure was modified from Huynh and Yaling (2013). Organizational performance (ORP) was measured by using a five-point linear numeric scale from the state of decrease to no growth, a little growth, growth, and fast growth for the five items that are "growth in sales", "returns on investment", "returns on sales", "growth in market share", and "growth in profit". This measure was modified from Huynh and Yaling (2013). Business environment (BUE) was evaluated with a five-point linear numeric scale ranging from unpredictability in business environment to ever-predictability in business environment. The five items for business environment are "government policies", "economy", "resources and services used by the company", "product market and demand", and "competition". This measure was modified from Huynh and Yaling (2013).

Table 1: Reliability analyses

Variables/ Items	Item-total correlations	Alphas
Adoption of computerized accounting (ACA)		0.824
ACA1	0.763	
ACA2	0.665	
ACA3	0.693	
ACA4	0.675	
ACA5	0.686	
Organizational performance (ORP)		0.817
ORP1	0.753	
ORP2	0.711	
ORP3	0.763	
ORP4	0.771	
ORP5	0.715	
Business environment (BUE)		0.831
BUE1	0.702	
BUE2	0.633	
BUE3	0.627	
BUE4	0.712	
BUE5	0.728	

Source: Author's calculations based on the collected data

This research employed reliability analysis and exploratory factor analysis to verify the validity and reliability of the variables. In order to test our causal hypotheses, the Structural Equation Modeling process using Analysis of Moment Structures was carried out. Subsequently, the moderating role of business environment in the causal relationship from the adoption of computerized accounting in business to organizational performance was explored by using a procedure of hierarchical regression analyses.

IV. EMPIRICAL RESULTS

The results of reliability analyses that were performed to investigate the consistency of items within their variables are shown in Table 1. The Cronbach's Alpha coefficients for the scales (ACA: 0.824, ORP: 0.817, BUE: 0.831) are all over the lowest accepted limit of 0.7 (Hair et al. 2012). In addition, the item-total correlations fluctuate from 0.665 to 0.763 for Adoption of computerized accounting (ACA), from 0.711 to 0.771 for Organizational performance (ORP), from 0.627 to 0.728 for Business environment (BUE). These figures all exceed 0.5, the lowest threshold suggested by Hair et al. (2012). Therefore, the items are internally consistent with their variables. Subsequently, the exploratory factor analysis was carried out to classify the items to their own variables with the criteria of the loadings above 0.4 and the cross-loadings over 0.3 (Hair et al. 2012). The results of the exploratory factor analysis are revealed in Table 2. The validity of convergent was checked reliant on factor loadings which should be more than 0.4 (Hair et al. 2012). The validity of discriminant was evaluated based on cross-factor loadings which should be greater than the 0.3 value proposed by Hair et al. (2012). All factor loadings are well greater than the 0.4 level. All cross-factor loadings are in excess of the 0.3 value. KMO achieves a value of 0.896, more than the 0.7 limit proposed by Hair et al. (2012). The communalities all attain the levels of over 0.5, which allows them to be retained for the further analysis (Hair et al. 2012). The analyses were significant at the 1% level. These results reasonably assure that all the items in the research model meet the validity of variable. Therefore, the items of ACA, ORP and BUE were reasonably used for other analyses.

Table 2: Exploratory factor analyses

Items	Factor Loadings			Communalities
	1	2	3	
ACA1	0.814			0.747
ACA2	0.721			0.588
ACA3	0.668			0.543
ACA4	0.715			0.612
ACA5	0.743			0.631
ORP1		0.754		0.718
ORP2		0.812		0.687
ORP3		0.788		0.737
ORP4		0.809		0.746
ORP5		0.735		0.657
BUE1			0.813	0.723
BUE2			0.655	0.548
BUE3			0.745	0.613
BUE4			0.817	0.702
BUE5			0.820	0.732
KMO	0.896			
Sig	0.000			

Source: Author's calculations based on the collected data

The process of Structural Equation Modeling (SEM) reflects all the relationships in the model at the same time; consequently SEM using Analysis of Moment Structures (AMOS) was undertaken to test our causal hypotheses. The results are exhibited in Table 3 and Table 4. The indices in Table 3 are employed to evaluate the fit goodness of the model. The overall model fit appears quite good. The $\chi 2$ test yields a value of 507.643, with the degrees of freedom of 225 at a corresponding P-value of 0.000; and CMIN divided by DF gets the value of 1.991, which is smaller than 2, the preferably accepted limit by Koufaris and Hampton-sosa (2002). In addition, the Comparative Fit Index (CFI) at 0.968 is more than 0.95, and the Root Mean Square Error of Approximation (RMSEA) is 0.058 well below the 0.07 cut-off (Hair et al. 2012). Therefore, these results point out that the model is a good fit to the data.

Table 3: Summary of the main indices

CMIN	DF	P	CMIN/DF	CFI	RMSEA
507.643	255	0.000	1.991	0.968	0.058

Source: Author's calculations based on the collected data

Table 4 demonstrates the regression coefficients of the structural model. All the relationships are significant at the level of less than 1%; therefore it can conclude that the results provide statistically significant supports for our causal hypotheses 1, 2, and 3; which state: Uncertain business environments likely boost the adoption of computerized accounting in business and also improve organizational performance that is in turn determined by the adoption of computerized accounting in business.

Table 4: Regression Coefficients

			Estimate	Standard. E	P
ORP	<---	ACA	0.603	0.254	0.000
ACA	<---	BUE	0.039	0.023	0.000
ORP	<---	BUE	0.069	0.025	0.000

Source: Author's calculations based on the collected data

Although the connection between business environment and the adoption of computerized accounting in business is statistically significant; the weight is smallest. The moderation of business environment on the effect of the adoption of computerized accounting in business on organizational performance was explored by employing hierarchical multiple regressions. First, the interaction of BUE and ACA was calculated by multiplying BUE with ACA. Then, this interaction was entered into the research model to conduct the hierarchical multiple regression analysis. The results were also presented in Tables 5 and 6.

Table 5: Regression Analyses

Model		Coefficients	Std. Error	t	Sig.	F	Sig.
1	Intercept	1.631	0.138	11.819	< 1%	103.456	< 1%
	ACA	0.579	0.192	3.016	< 1%		
2	Intercept	1.953	0.149	13.107	< 1%	82.765	< 1%
	ACA	0.196	0.053	3.700	< 1%		
	BUE	0.068	0.021	3.328	< 1%		
	Interaction	0.104	0.018	5.778	< 1%		

Dependent variable: ORP
Source: Author's calculations based on the collected data

ACA was first included into Model 1 to run the ordinary least squared regression, followed by entering BUE and the "Interaction" into Model 2. The statistics in Model 1 offer significant support for Hypothesis 1 at the 1% level. The addition of the "Interaction" in Model 2 makes an increase in the explanatory power of the research model from 39.8% (Model 1) up to 47.5% (Model 2). Besides, the effect of the "Interaction" on organizational performance is statistically significant at the 1% level. The goodness of fit is significant at a statistical level of 1%. These findings provide statistical support for the moderation of business environment on the causal association between the adoption of computerized accounting and organizational performance Hypothesis 4 was significantly supported. The results imply that, higher environmental uncertainty make directors pay more attention to computerized accounting and so leading to better organizational performance. At the same time, it also makes the causal link from the adoption of computerized accounting and organizational performance stronger.

Table 6: Model Summary

Model	R	R^2	Change Statistics				
			R^2 Change	F Change	df1	df2	Sig. F Change
1	0.631	0.398	0.398	103.456	1	330	< 1%
2	0.689	0.475	0.077	82.765	1	329	< 1%

Source: Author's calculations based on the collected data

V. CONCLUSIONS

This work was to explore the causal relationship between the adoption of computerized accounting in business and organizational performance. Particularly, it tried to analyze and investigate the moderating role of business environment on the link between computerized accounting and organizational performance. The findings suggested that the implementation of computerized accounting in business statistically improves organizational performance. A high adopting level of computerized accounting in business will lead to enhanced firm performance. The findings imply that, when firms operate in highly uncertain business environment, their directors tend to perceive computerized accounting as very useful. The adoption of computerized accounting in business can advance organizational performance with the moderating effect of business environment. These

findings are significant to managers by providing them with more understanding of the link among business environment, the adoption of computerized accounting and organizational performance. There are a few limitations in this research. The research data was based on single respondents from companies; accordingly bias problem might happen. Upcoming research could utilize a multi-informant research design to avoid this potential bias. Then, this research is performed in Vietnam as an emerging country. This research is expected to use in other emerging economies with care.

REFERENCES

[1]. Ajibolade, S.O., Arowomole, S.S.A. and Ojikutu, R.K. 2010. Management accounting systems, perceived environmental uncertainty and companies' performance in Nigeria, International Journal of Academic Research, 2 (1): 195 - 201
[2]. Ashill, N.J., and Jobber, D. 2010. The Impact of Environmental Uncertainty Perceptions, Decision-Maker Characteristics and Work Environment Characteristics on the Perceived Usefulness of Marketing nformation Systems (MkIS): A Conceptual Framework, Journal of Marketing Management, 15 (6): 519-540.
[3]. Brouthers, K.D., Brouthers, L.E. and Werner, S. 2002. Industrial sector, perceived environmental uncertainty and entry mode strategy, Journal of Business Research, 55(6): 495– 507.
[4]. Choe, J. 2003. The effect of environmental uncertainty and strategic applications of IS on a firm's performance, Information and Management, 40(4): 257-268.
[5]. Duncan, R.B. 1972. Characteristics of Organizational Environments and Perceived Environmental Uncertainty, Administrative Science Quarterly, 17(3): 313-327.
[6]. Farole, T., Hallak, I, Harasztosi, P. and Tan, S. 2017. Business environment and firm performance in European lagging regions, Policy Research working paper, No.: WPS 8281, Washington, D.C.: World Bank Group
[7]. Gnawali, A. 2017. Management Accounting Systems and Organizational Performance of Nepalese Commercial Banks, Journal of Nepalese Business Studies, 10(1): 8-19
[8]. Gordon, L.A. and Miller, D. 1976. A contingency framework for the design of accounting information systems. Accounting, Organizations and Society, 1(1): 59-69.
[9]. Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. 2012. Multivariate Data Analysis, New Jersey: Prentice Hall: USA
[10]. Haldma, T. and Laats, K. 2002. Influencing contingencies on management accounting practices in Estonian manufacturing companie, Faculty of Economics and Business Administration, University of Tartu, Tartu.
[11]. Huynh, Q.L. and Yaling, L. 2013. Mediation of Computerized Accounting System (CAS) adoption on relationship between environmental uncertainty and organizational performance, Journal of Modern Accounting and Auditing, 9(6): 747-755
[12]. Iacovou, C.L., Benbasat, I. and Dexter, A.S. 1995. Electronic Data Interchange and Small Organizations: Adoption and Impact of Technology, MIS Quarterly, 19(4): 465-485.
[13]. Ibadin, P.O. and Imoisili, O. 2010. Organization Contexts and Management Accounting System Design: Empirical Evidence from Nigeria, International Journal of Current Research, 10: 064-073.
[14]. Jusoh, R. 2010. The influence of perceived environmental uncertainty, firm size, and strategy on multiple performance measures usage, African Journal of Business Management, 4 (10): 1972-1984.
[15]. King, W.R. and Teo, T.S.H. 1994. Facilitators and Inhibitors for the Strategic Use of Information Technology, Information and Management, 27(2): 71-87
[16]. Klier, J., Klier, M. and Muschter, S. 2017. How to manage IS requirements in complex public sector structures: toward an action design research approach, Requirements Engineering, 22(4): 419-432
[17]. Koufaris, M., and Hampton-sosa, W. 2002. Customer Trust Online: Examining the Role of the Experience with the Web Site, Information Systems Journal, 5(1): 1-22
[18]. Kren, L. 1997. The Role of Accounting Information in Organizational Control: The State of the Art in Behavioural Accounting Research, Foundations and Frontiers, V. Amold and S.G. Sutton. Sarasota, American Accounting Association, 1(1): 1-48
[19]. Lutfi, A.A., Idris, K.M. and Mohamad, R. 2016. The Influence of Technological, Organizational and Environmental Factors on Accounting Information System Usage among Jordanian Small and Medium-sized Enterprises, International Journal of Economics and Financial Issues, 6(7S): 240-248
[20]. Masrek, M.N. 2009. Determinants of Strategic Utilization of Information Systems: A Conceptual Framework, Journal of Software, 4(6): 591-598
[21]. Mia, L. and Clarke, B. 1999. Market competition, management accounting systems and business unit performance, Management Accounting Research, 10(2): 137-158.
[22]. Miles, R.E., Snow, C.C., Meyer, A.D. and Coleman, H.J. 1978. Organizational Strategy, Structure, and Process, Academy of Management Review, 3(3): 546-562.
[23]. Miller, K.D. 1993. Industry and country effects on managers' perceptions of environmental uncertainties, Journal of International Business Studies, 24(4): 693-714.
[24]. OECD. 1998. SMEs and Electronic Commerce, Working Party on SMEs to the OECD Ministerial Conference on Electronic Commerce.
[25]. Palvia, P., Means, D.B. and Jackson, W.M. 1994. Determinants of Computing in Very Small Business, Information and Management, 27(3): 161-174.
[26]. Pfeffer, J., and H. Leblebici. 1973. The Effect of competition on some Dimensions of Organizational Structure, Social Forces, 52(2): 268-279.
[27]. Rogers, A.D. (2016). Examining Small Business Adoption of Computerized Accounting Systems Using the Technology Acceptance Model, Walden Dissertations and Doctoral Studies, Walden University, USA
[28]. Sam, M., Fazli, M., Hoshino, Y. and Tahir, M.N.H. 2012. Adoption of computerized accounting system in small medium enterprises in Melaka, Malaysia, International Journal of Business and Management, 7(18): 12-25
[29]. Schulz, A.K.D., Wu, A.a nd Chow, C.W. 2010. Environmental Uncertainty, Comprehensive Performance Measurement Systems, Performance-Based Compensation, and Organizational Performance, Asia-Pacific Journal of Accounting and Economics: 17(1): 17–39.
[30]. Tambotoh, J.J., Kosala, R., Ranti, B., Prabowo, H., Supangkat, S.H., Isa, S.M. and Pudjianto, B.W. 2017. A conceptual model for creating effective public value through key practices in information technology governance mechanisms, In 2017 International Conference on Information Management and Technology (ICIMTech), 128-132, IEEE

[31]. Uchenna, A.J. 2011. Definitions of e-accounting, why & benefits of e-accounting, implications of e-accounting to a given firm in Nigeria: diagram component of the 21st century accounting, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

[32]. Wan, Z.W.Z. 2011. An Analysis of Task Performance Outcomes through E-Accounting in Malaysia, Journal of Public Administration and Governance, 1(2): 124-139

[33]. Werner, S, Brouthers, L.E. and Brouthers, K.D. 1996. International risk and perceived environmental uncertainty: the dimensionality and internal consistency of Miller's measure, Journal of International Business Studies, 27(3): 571-587

[34]. Wickramasinghe, M., Cooray, N.H.K. and Dissanayake, S. 2017. Impact of accounting software for Business Performance, Imperial Journal of Interdisciplinary Research (IJIR), 3(5): 2454-1362

[35]. Yulius, K.S. 2010. Usefulness of management accounting systems information and market competition on strategic business unit output, Jurnal Bisnis Dan Akuntansi, 12(3): 145-160

[36]. Zhang, L. 2017. The use of computerised accounting systems among accountants on small and micro businesses in Xi'an, Shaan Xi of China, Doctoral dissertation, Universiti Utara Malaysia, Malaysia