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Research paper



Determinant of e-accounting (EA) adoption among Malaysian maritime SMES

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Abstract

Good financial management will ensure improved performance of a company, especially a small company and so the company can compete and survive in their respective industries. Maritime industry as a high-tech industry has a significant contribution to our economy can be regarded as an imperative scope. Small Medium Enterprise (SME) mostly collapse due to poor financial management. The using of information technology (IT) in Accounting Information System (AIS) acts as crucial medium in creating a high-quality of financial management expecting better performance. This study attempts to identify determinants concerning the e-accounting (EA) adoption, particularly in the maritime industry for Malaysian SMEs. It intended at finding out the factors that led to e-accounting adoption by applying TOE (Technology, Organization and Environment) theory. A survey design was adopted in the form of a structured questionnaire with 7 Likert scale of point, which was used to collect data from 103 of owner-managers from SMEs maritime industry in Malaysia. Analysis took the form of computation of means and regression utilizing SPSS 21.0 software. Four independent variables namely technological, organizational, environmental and decision-maker have been examined for the predictor of the EA adoption. Organizational variable was attained to have a significant influence on IT adoption in AIS for maritime small business ($\beta = 0.38$). The overall results showed that 44.4% of the variables can explain key factors in determining the deployment of EA among Malaysian maritime SMEs. Future research should take into consideration of SMEs from other maritime nations worldwide.

Keywords: *Decision-Maker; E-Accounting Adoption; Environmental; Organizational; Technological.*

1. Introduction

The initiation of the Malaysian Shipbuilding & Ship Repair Industry Strategic Plan 2020 (SBSR 2020) and recognition as Entry Point Project under the Economic Transformation Program (ETP) are substantiation of the importance of the maritime industry under transportation banner, especially in creating further growth towards achieving the nation's development aspirations. Information and communication technology (ICT) (Azammi, 2011) and small and medium-sized enterprises (SME) (Bass & Siebert, 2007) are the strategies to promote the goal. Malaysia has many advantages and features that can be leveraged upon to make it as internationally competitive oil and gas nation. It has generated revenue of RM8.36 billion which attracted RM0.33 billion in investment and provided more than 35,000 jobs opportunities for the year 2013 (MIGHT, 2015).

Accounting information system (AIS) can help businesses, particularly SMEs to manage short-term problems in areas such as costing, expenditure and cash flow, by providing information to support monitoring and control and operate in a dynamic and competitive environment (Ismail & King, 2005). The transformation in information technology (IT) and information systems (IS) has elicited several issues that need to be carefully addressed, particularly in the context of SMEs. E-accounting (EA) refers to electronic accounting, a term used to describe any accounting system that relies on computer technology for capturing and processing financial data in organizations (Amidu, Effah, & Abor, 2011; Noronha & Kulkarni, 2012).

SMEs accounted for the majority of businesses in many countries in the world as they create new business, increase employment opportunities, develop innovative product ideas, and raise productivity (Samujh, Twiname, & Reutemann, 2012). SME define with the alternative criteria either employ less 200 employees or turnover less than RM50 million (SME Corporation Malaysia). Regrettably, a study by Fatoki (2012) found a high failure rate among SMEs, especially new SMEs operators which correlated with poor financial management. Mwakujonga & Bwana (2013) exposed a large number of SMEs' managers have dumped an important role of preparing and using financial information in decision making. Thus, they are encouraged to employ the EA in their operations for better performance. Few attempts have been made to study the usage of EA especially in the context of SMEs sized in Malaysia (e.g Ali, Rahman, & Wan Ismail, 2012; Amelia, Fariha, & Azliza, 2014). However, researchers within the field need to acquire a good understanding about the different factors affecting the adoption of EA by organizations operating in different sectors such as the maritime sector. Consequently, this study is performed to investigate the factors influencing the EA adoption among SMEs in Malaysian maritime industry.

The next section provides a brief literature on EA studies, theory and the factors towards EA adoption. The section is followed by an explanation of the research method and the analysis of the result in detail. The last section is conclusion.

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2. Literature review

In this study, EA adoption defined as using computer (hardware and software) for accounting works and financial reports preparation at organization whether the accounting software is built in the company or developed by vendor. This means the IT is used creatively and is not a 'white elephant' (Thong & Yap, 1995). EA adoption plays a crucial role to the firm to ensure all financial data is well managed and can be used to make decisions. Thus, that business can be well taken care of and improving the performance of companies, especially SMEs.

The maritime, oil, gas and offshore industry is undergoing continuous changes in technology and regulations. It is necessary that this industry is always up to-date with the latest to stay in business and be competitive. Study by Amelia et al. (2014) indicated that most of Malaysian SMEs include in maritime industry use UBS Accounting Software as the system is easy to operate and applicable to all types of businesses. At international level, the world's most important maritime countries and territories such as Japan, Greece, Germany, China, Norway, U.S, Hong Kong and Singapore have adopted specific maritime accounting system. For example, a Norwegian company produces NetLedger Maritime Accounting that offers the internet based accounting system ledger, accounting services, payroll services and consulting services to the maritime industry which suit with most maritime segments, ranging from tankers, chemicals, lightering, gas, LNG, liner, general bulk, reefer, offshore supply and heavy lift use widely in Europe, Asia and the US. Meanwhile, Marine Accounting Software produced by Norcomms at Singapore is designed for multi-company, multi-group and multi-currency accounting. It supports voyage accounting and analysis, running cost reporting and cash flow analysis including accruals which suitable for ship management, ship owning, ship holding groups, operators, agents, bunker trader and others.

Technological-Organizational-Environmental (TOE) framework (Tornatzky & Fleischer, 1990) identifies three aspects of an enterprise context that influence the process by which it adopts and implements a technological innovation. This framework as originally presented, and later adapted in IT adoption studies, provides a useful analytical framework that can be used for studying the adoption and assimilation of different types of IT innovation. It has a solid theoretical basis and the potential of application to IS innovation domains. Thong (1999) proposed a model for small business in adopting IT / IS. He extracted owner-manager from organizational context as it plays a very significant role to make decision for organization operation. Decision maker's characteristic is a key adoption predicator of DTOE model (Awa, Eze, Urieto, & Inyang, 2011). Then, Wan Ismail & Azwadi (2013) adopted the model in computerized accounting information system (CAIS) employment for Malaysian SMEs in multiple industry. Thus, this study will extend their model in different setting specifically in maritime industry.

Technological (T). It is reasonable that organizations think the advantages of adopting any innovation (Wang, Wang, & Yang, 2010). It also must has high compatibility with business culture and strategy (Wang et al., 2010). The complexity of innovation must take into account since it can prevent the successful implementation (Tornatzky & Klein, 1982). It may take users a long time to understand and implement the technology (Wang et al., 2010). Hence, EA is expected to be able to give organizations greater competitive advantage, compatible with the company and easy to use.

Organizational (O). Malaysian maritime industry cluster comprising three main sectors: ports and terminals, shipping services and ship industry (Othman, Bruce, & Hamid, 2011). Oil and gas sector also included in maritime cluster as it supports the shipping sector. Each cluster has its own business transaction processing complexity and inventory which could affect the EA adoption. The decision to adopt any technology acquire company to consider on financial, technology infrastructure and manpower (Kuan & Chau, 2001). In addition, SMEs are needed to meet adequate resources of technological and financial, prior to adopt the EA.

Environmental (E). Every day, reports can be found in accounting and financial publications about computer related data errors, incorrect financial information, violation of internal controls, thefts, burglaries, fires and sabotage (Abu-Musa, 2006). So, organizations should be aware of the potential security threats that might challenge their EA and implement the relevant security controls to prevent, detect and correct such security breaches as it is related with financial data which are private and confidential. Beside, Thong, Yap, & Raman (1994) stated that vendor support traits as technical support during and after IS implementation and efficient training of human resources must be considered by firm to adopt the IS.

Decision-maker (D). The decision-maker will adopt such technology if they are IT savvy (Thong & Yap, 1995). Unfortunately, they are lacking in specialized IT knowledge and technical skills as they are more concentrated on how to run the business. Many of them rejected the IT because they had no idea and exposure of the IT benefits. They also will support the innovation adoption at their organization if they believe the benefits are more than uncertainty threat (Thong & Yap, 1995). Moreover, manager with knowledge in accounting did not hesitate to make innovation in their accounting system and tend to utilize technology that give them more benefit related to accounts work such as bookkeeping.

3. Methodology

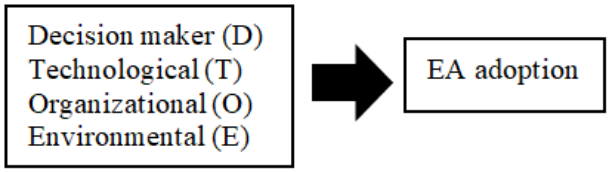

Fig. 1: Theoretical Framework.

The central theme of this study is EA adoption (Figure 1). The variance of EA is calculated by the independent variables which are decision- maker, technological, organizational and environmental. Based on the above framework, the research further attempts to address (5) hypotheses as listed below:

H1A: There is a significant relationship between decision-maker (D) and the EA adoption of maritime SMEs.

H1B: There is a significant relationship between technological (T) and the EA adoption of maritime SMEs.

H1C: There is a significant relationship between organizational (O) and the EA adoption of maritime SMEs.

H1D: There is a significant relationship between environmental (E) and the EA adoption of maritime SMEs.

H2: All the contexts (DTOE) are able to explain the factor influencing EA adoption of maritime SMEs.

The study was conducted in the form of quantitative studies involving a total of 450 owner-managers of maritime SMEs in Malaysia included Sabah and Sarawak which proportional stratified random selected based on Malaysian Marine and Offshore Industries Directory (MMOID) as a sampling frame.

The survey questionnaire as the research instrument was structured into three separate areas (A, B and C) and distributed to the respondents by mail. The Likert scale seven point (strongly disagree to strongly agree) are designed to the question from section B to C while section A is using the nominal scale. Section A focuses on the demographic profiles of the respondent. Section B was designed to investigate to what extent items measuring each variable can be the determinants of the EA adoption factors of maritime SMEs. Section C is related to the EA adoption be as a dependent variable.

The statistical software package for social sciences (SPSS) version 21 was used to compute all the data gathered from the questionnaire to analyze mean, standard deviation, reliability value and multiple regression (inferential).

4. Results and discussion

103 responses were received from 450 questionnaires distributed. The response rate should be more than 10% to avoid sample bias for mail distribution method (Hussey & Hussey, 1997). The response rate for this study of 22.8% means that the sample bias was avoided and the responses received represent the population adequately and appropriately.

Table 1: Reliability Test Result

No.	Variable	Cronbach's alpha
1.	Decision-maker (D)	0.933
2.	Technological (T)	0.947
3.	Organizational (O)	0.909
4.	Environmental (E)	0.854
5.	EA adoption (EA)	0.953

The Cronbach's alpha attempting to indicate how well the items in a set are positively correlated to one another. Based on the results tabulated in Table 1, all the values for the variables were found to be reliable for the study as the instrument has high reliability (Pallant, 2010). The analysis indicates the Cronbach Alpha for DTOE and EA variables are 0.933, 0.947, 0.909, 0.854 and 0.953 each.

Table 2: Mean Value for Research Variable

Variable	Mean	S. D.
Decision-maker	5.80	0.9
Technological	5.56	0.8
Organizational	5.35	0.8
Environmental	5.12	0.9
EA adoption	6.13	1.1

The mean values for all the variables investigated were computed for the purpose to determine the perception level of the maritime SMEs towards the decision-maker, technological, organizational and environmental. Table 2 revealed the compute values were 5.80 for decision-maker, 5.56 for technological, 5.35 for organizational and lastly 5.12 for environmental, even though, the finding through mean analysis indicated that most of the respondent had a positive view. Based on the study by Thong (1999) on IS / IT adoption, organizational factor has more influence the small business to adopt the innovation while the least factor appeared to be on environmental.

Table 3: Correlation Result

		D	T	O	E
EA	Pearson Correlation	0.588**	0.552**	0.661**	0.408**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000

Table 3 showed the relationship between decision-maker and technological towards EA adoption are in the category of the moderate (0.588, 0.552) and organizational is high (0.661). Further analysis on the environmental towards EA adoption, the result displayed the level of strength is low moderate (0.408). The result also showed the significant value between decision-maker, technological, organizational and environmental with EA adoption ($p < 0.05$).

Table 4: Result of Coefficients

	Beta	T	Sig.	Collinearity Statistics	
				Tolerance	VIF
D	0.13	1.02	0.31	0.36	2.78
T	0.17	1.49	0.16	0.38	2.65
O	0.38	2.59	0.01	0.30	3.87
E	0.12	1.29	0.20	0.61	1.64

Adjusted R Square: 0.444; Sig. F Change: 0.000

Multiple regression analysis was applied to identify which independent variable is significant to predict the outcome of the dependent variable (EA) adoption. This is essential as the result of regression is an equation that represents the best prediction of dependent variable from several independent variables. The above Table 4 suggested that there was no element of multicollinearity in the data. Any variable that has tolerance value of 0.2 or less; and VIF value higher than 5 indicate a problem with multicollinearity (De Vaus, 2002). Out of four independent variables, only one variable has a significant relationship with the EA adoption among maritime SMEs. The organizational is the best predictor that contributes to the EA adoption among maritime SMEs based on the value of 0.38. The R-square value of 44.4% indicated that all the four constructs were able to explain their relationship with the EA adoption among maritime SMEs, and they were significant that is at 0.000.

From the results, organizational is discovered to be the key determinant toward the EA adoption in Malaysian SMEs in maritime industry. Thong (1999) also reported that organizational characteristic appeared to influence the IS adoption significantly among small business. The overall result revealed that 44.4% of four predictors were able to be explained and significant in establishing the factors influencing the EA adoption among maritime SMEs. The mean analysis indicated that most of the respondent closely to be had a positive view on all four predictors. Decision-maker, technological and environmental as the predictors do not have a significant relationship towards the EA adoption among maritime SMEs. However, by exploring of the strength of their relationship, as well as the linear association, they still significantly contribute towards EA adoption of maritime SMEs.

5. Conclusion

As a conclusion, the organizational perspective in position of organizational readiness and maritime cluster plays a significant role in inducing the Malaysian maritime SMEs to adopt EA at their organization. However, the different type of innovation, scope, industry and setting may contribute different factors in technology adoption for organization. So, it is recommended that future EA adoption studies should take into consideration of other maritime nations and other industries as well.

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