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# Uncertain Supply Chain Management

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The contribution of strategic management accounting in supply chain outcomes and logistic firm profitability

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#### CHRONICLE

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#### ABSTRACT

In the current decade, with an increase in e-commerce, the logistics activities have grown rapidly. However, the logistics industry of the Malaysian country is declining, as the ranking of this industry has shown downfall continuously during the past few years. The decrease in logistics industry performance reduces the contribution in a Gross Domestic Product (GDP). Therefore, to address this issue, the primary objective of this study was to examine the role of strategic management accounting practices to enhance the profitability of the Malaysian logistics firms. Questionnaires were adopted to collect the primary data and they were distributed among the employees of the logistics companies. All the questionnaires were distributed through area cluster sampling technique. Partial least square (PLS) structural equation modelling (SEM) was used to analyze the collected data. The results indicate that strategic management accounting practices had a significant positive relationship with supply chain outcomes and supply chain outcomes had a significant positive relationship with the profitability of the logistics companies. Finally, this is one of the pioneer studies, which examined the impact of strategic management accounting practices on the outcome of the logistics firms.

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#### 1. Introduction

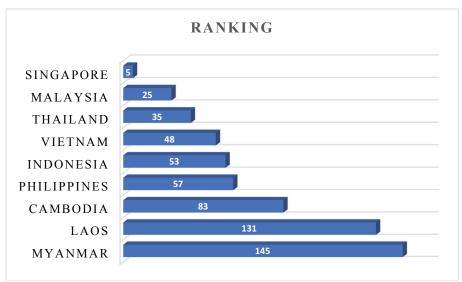
In the current decade, with an increase in e-commerce, the logistic activities have grown rapidly (Hameed et al., 2018a, 2018b). The logistics industry is one of the most significant industries to boost the nation's economy. It has a significant contribution in GDP of every country. However, this industry is presently facing various issues, particularly in the Malaysia including high distribution rate, increase in transit time and payment methods issues, etc. (Imran et al., 2019). World Bank Logistic Performance Index (LPI) 2016 published a report on the performance of the logistics of various countries and indicated that the Malaysian logistics industry performance decreased in recent years. The Malaysian logistic industry ranking was 25 in 2014, however, in 2016 it was decreased to 32 out of 160 countries (Karim et al., 2018). The decrease in ranking was due to low warehouse productivity and supply chain performance. Fig. 1 shows the Asian Countries Logistic Performance Index. In 2014, the Malaysian logistics industry ranking was at 25. Singapore was at the top with number 5 ranking. Myanmar faced

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with the worst conditions and it was ranked 145. However, the Malaysian logistics industry performance decreased to number 32 in 2016 from number 25 in 2014 (Karim et al., 2018). The decrease in performance was due to the inferior supply chain activities.



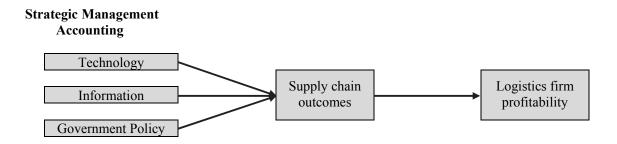
**Fig. 1.** Asian Countries Logistic Performance Index Source: State of Logistics Indonesia (2015)

As per the Malaysian Productivity Corporation (2015), efficiency in the transportation and storage services grew 10.1% to RM 50,683 for each employee in 2014 from RM 46,051 for every employee in the earlier year. Despite its large employment base, the warehousing demonstrated an especially amazing change in labor cost with profitability grew by 10.7%, while work cost per employee grew 4.5%, and unit work cost was dropped by 5.4%. Indeed, the warehousing and services recorded the most noteworthy growth level which was a sign that the industry was growing. However, the Malaysian logistics industry ranking was decreased as compared to 2014. According to Fig. 1, Singapore performed the best followed by Malaysia and Thailand while Myanmar was rated the worst in terms of logistics performance. There are presently some evidences that the performance of Malaysian logistics industry is decreasing, which also decreases the overall profit the entire industry. The decrease in worldwide ranking has a negative consequence on the economy of the Malaysia. As the logistics industry has a significant association with the economy of every country, the Malaysian government is now focusing on various transportation activities and supply chain activities to boost this industry.

The transportation is the backbone of the Malaysian and global economy, encouraging international trade, empowering financial exercises, and connecting makers and purchasers with business sectors, products, materials and services. The advancement of transportation and capacity services sub-segment will be a key factor in the effective development of the Malaysia's different financial sectors (Purnama, 2014; Wireko-Manu & Amamoo, 2017; Nazal, 2017; Taqi et al., 2018; Karim et al., 2018). However, apart from these efforts, strategic management accounting can be used to boost supply chain outcomes to enhance the profitability of logistics companies.

The term strategic management accounting has been in the management accounting literature for more than a decade (Lord, 1996; Nze, et al., 2016; Kimengsi & Gwan, 2017). Strategic management accounting is one of the tools to enhance the profitability of every firm (Ward, 2012; Solomon, et al., 2014; Jaya and Verawaty 2015; Angbre, 2016; Tanoos, 2017; Chowdhury, et al., 2018). It can increase the output of operations which ultimately improves the overall performance. In progressively dynamic environments the establishment of strategically applicable information is of dominant importance to the formulation as well as the execution of business strategies (Dixon, 1993), particularly in logistics companies. The accountants in logistics companies needed adaptability in the field of good

strategic management and accountability (Castorena, et al., 2014; Dim & Ezeabasili, 2015; Suryanto, 2015; Wang & Lu, 2016; Rekarti & Doktoralina, 2017; Intezar, 2017; Suryanto et al., 2018). Strategic management accounting is generally based on various elements. These elements include; use of technology, use of effective information, and government policy. These elements are crucial to operationalize strategic management accounting system. Therefore, in the current study, these elements (technology, information, government policy) are taken as the key elements of strategic management accounting system to boost supply chain outcomes and profitability of Malaysian logistic companies. Therefore, the objective of the current study is to examine the role of strategic management accounting practices to enhance the profitability of Malaysian logistic companies. In the current study three independent variables were used, namely; technology, information and government policy. One mediating variable, namely; supply chain outcomes and dependent variables, namely; logistic firm profitability, as it is shown in Fig. 2.



**Fig. 2.** The theoretical framework was showing the effect of strategic management accounting practices on logistic firm's profitability

Therefore, the current study is one of the attempts to boost logistics firm's profitability among Malaysian logistic firms through strategic management accounting practices. None of the studies formally documented the supply chain profitability through strategic management accounting practices. Therefore, this is a pioneer study which examined the impact of strategic management accounting practices on logistic company's operations.

## 2. Literature Review

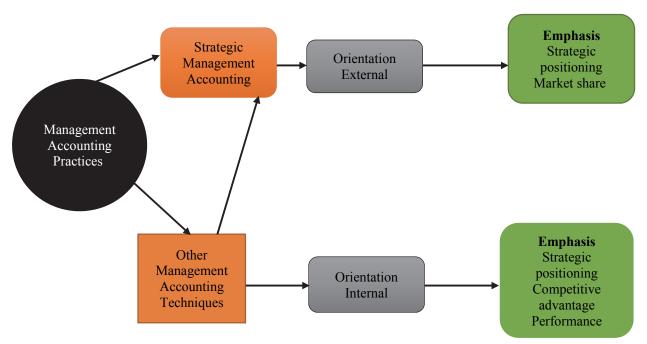
Over the past two decades, strategic management accounting ideology was presented into the literature as a seminal development. During this period, strategic management accounting came to importance among other innovative methods designed to restore the decreasing relevance of management accounting activities (AlMaryani & Sadik, 2012; Cinquini & Tenucci, 2007; Roslender & Hart, 2003; Tillmann, 2002). At the first time, the term strategic management accounting was used by Simmonds in the 1980s to identify and externally oriented tactic to the practice of management accounting (Roslender & Hart, 2010).

Institute of Management Accountants defines management accounting as "the process of identification, measurement, accumulation, analysis, preparation, interpretation, and communication of financial information used by management to plan, evaluate, and control within an organization and to assure appropriate use of and accountability for its resources." It also includes the preparation of financial reports for non-management groups such as shareholders, regulatory agencies, creditors, and different tax authorities (Aziz, 2012). The definition of management accounting highlights what management accountants do, more importantly, it emphases on why the management accounting strategies are deployed.

Management accounting and strategic management are dependably parts of similar management. Strategic management has a place at the strategic level while management accounting traditionally belongs more or less in the tactical level (Simons, 1991). Management control frameworks cannot just

be utilized to control current procedures, yet additionally to define new systems, in the event that they are utilized intelligently. The poor planning of strategic accounting supports supply chain operations in logistics firm can increase the supply chain outcomes.

From Fig. 3, it could be seen that, though other management accounting procedures lay more attention on cost decrease, management and control, execution assessment and item management, strategic management accounting underlines significantly on strategic positioning. Strategic management accounting consolidates data on clients, competitors and the market, which empowers a firm to increase competitive advantage and increment its section of the overall industry. It has a direct impact on supply chain activities which improves the outcomes (Oboh & Ajibolade, 2017). As outlined in Fig. 3, other management accounting procedures are arranged towards inner practices of management accounting, yet strategic management accounting contrasts from this introduction towards external practice (Arowomole, 2000; Cinquini & Tenucci, 2007; Juras, 2014; Roslender & Hart, 2010). As demonstrated by Okoye and Akenbor (2008), strategic management accounting is a type of management accounting in which attention is set on data that identifies with external factors and in addition non-financial data and inside produced data which influences the accuracy of supply chain outcomes. However, in this process, enterprise risk management is important, moreover, political uncertainty cannot be neglected (Maqbool et al., 2018).



**Fig. 3.** Strategic Management Accounting Source: Oboh and Ajibolade (2017)

According to Martin (2016), management accounting is the broadest section of accounting and tax accounting, financial accounting, managerial accounting and internal auditing. Fig. 4 shows all these accounting components and shows how they are linked with each other. Management accounting is extended in Fig. 4 to incorporate cost accounting, cost management, activity management and investment management.

All these components in Fig. 4 have a significant relationship with supply chain activities which influence on the outcomes of the supply chain. Tax accounting helps to identify the tax cost on the supply chain. Internal auditing ensures the accuracy of the supply chain. Managerial accounting helps to run activities smoothly. Moreover, cost management accounting has a significant relationship to handle internal cost on supply chain activities. Additionally, investment accounting facilitates how

much logistic company should invest in the supply chain process. Here, the risk management through audit (Hameed et al., 2018b) is most crucial.

# 2.1 Technology

Apart from all these components, three elements have a major contribution to strategic management accounting. These components are; technology, information and government policy. These elements have a significant association with supply chain operations and supply chain operations have a relationship with supply chain outcomes. Finally, this process enhances the logistics firm's profitability.

Keeping in mind the end goal to encourage the monetary execution and competitiveness of the firm, a comprehensive fundamental framework is required for the supply chain. An ideal physical and data innovation foundation incorporates a decent and effective framework. However, it requires strategic management accounting. In strategic management accounting technology is one of the essential element. Arowomole (2000) confirmed that innovation foundation affects in a huge way on country advancement as it can possibly invigorate the foundation of new firms. Arowomole (2000) certified that technology foundation affects in a noteworthy way on improvement as it can animate the foundation of new firm's and floated the development of already existing ones. Technology which manages application, helps firms programming in the preparing of data with the end goal of successful and effective hierarchical management. This depends on the ideal arrangement of other infrastructural offices remarkably stable power supply. Arowomole (2000) noticed that the effect of technology on the SMEs is overpowering as it encourages fast making and correspondence of management choices inside firms and to different foundations. All these technological benefits support supply chain operations and in logistic firms which definitely support supply chain outcomes and enhances the logistics firm's profitability.

**Hypothesis 1:** There is a significant positive relationship between technology and supply chain outcomes.

## 2.2 Information

In the current business environment, many firms including logistic firms seek and rely on information. This information is used to analyse and predict future decisions that would affect the logistic performance. Soleman (2008) noted that information system which is part of information could affect the organisation. Therefore, logistics firms must concern about the precise information that would translate to logistic performance. Information has a central role in the strategic management accounting system (Ward, 2012) which influences the supply chain practices. Timely and accurate information which is the part of strategic management accounting system has the ability to enhance supply chain operations. How much supply of product required, how much raw material required and how the supply chain activities should be developed to insurance better customer services is generally based on timely information.

In the strategic management accounting system, information generally has three main elements such as accuracy, consistency and time (Aziz, 2012). Without these three elements, strategic management accounting system will not be beneficial. This implies truthful and accurate information would support the logistic firm managers in better decision-making in supply chain activities. Consistent information means all the information should be the same at each level of organization. It means that the same information should be provided to all managers, workers as well as top management. However, this information should be provided timely to facilitate supply chain operations.

**Hypothesis 2:** There is a significant positive relationship between information and supply chain outcomes.

## 2.3 Government Policy

Shehab (2008) contended that government policy assumes a critical element in deciding the accomplishment of performance. European Competition Authorities in 2001 highlighted some prerequisites for a good policy condition that can help business development. It is essential to recognize basic relevant to all undertakings independent of size and those which are especially imperative for performance. European Competition Authorities in 2001 reported that there were two components which encourage all ventures: first, a stable macroeconomic condition portrayed by tight swelling control, low spending shortages, furthermore and competitive genuine trade rates. The second component identifies with an outward-arranged, showcase agreeable trade and modern policy administration which decrease import controls and duties in a more continuous and incremental way. Government policies influence on supply operations in different ways. Governments are influential by policy (Carter & Ellram, 1998; Linton et al., 2007) and looking at the purchasing as well as supply function. Sustainable supply chain management can be influenced by policy. Government regulation can hinder sustainable supply chain management (Porter & Van der Linde, 1995). Poor regulatory environments are unfriendly to the growth of business and constitute an impediment to logistic companies' growth. In 2004, the Organization for Economic Co-operation and Development reported that the governments alone could not create the enterprise culture needed to promote development, however, their actions can terminate or facilitate it. Thus, government policies and decisions, laws and regulations are important in consideration of firm performance through supply chain operations.

**Hypothesis 3:** There is a significant positive relationship between government policy and supply chain outcomes.

Moreover, from the above discussion, it is concluded that;

**Hypothesis 4:** There is a significant positive relationship between supply chain outcomes and logistics firm's profitability.

#### 3. Research Methodology

A research design is a scheme used by various researchers for definite structure as well as strategy in making an investigation into phenomena and to get logical answers to research questions. The research design could be qualitative or quantitative depending on the research problem, objective and nature of the study.

Therefore, by following the nature of the study, a quantitative research approach with cross-sectional research design was selected. A questionnaires survey was used to collect the data. A 5-point-Likert scale from strongly disagree to agree strongly was used. 5-point Likert-scale was used because it is one of the best scales which reduced the respondent frustration and increase the originality as well as reliability.

The sample size was selected based on Krejcie and Morgan (1970) instructions. By following the instructions, it was estimated that the sample size should be 380. Therefore, 380 questionnaires were distributed among the staff of logistics companies. Area cluster sampling techniques distributed questionnaires. It is one of the suitable techniques when population spread on a wide area (Ul-Hameed et al., 2018).

From 380 distributed questionnaires, 225 were returned. From these 225 questionnaires, 05 were missing with a reasonable part. Therefore, these questionnaires were excluded from the study. Finally, 220 questionnaires were selected to analyze the data. Moreover, partial least square (PLS) was used to analyze the data.

### 4. Research Analysis and Results

Before starting measurement model assessment and structural model assessment through PLS-SEM, the preliminary analysis was performed. In this part of the analysis, the missing value was examined. It was found that data have no missing value. Moreover, the outlier was also examined which shows that the current study is no outlier to resolve. After that, the normality test was used to check the distribution. It was found that data is not normal. To overcome this issue, PLS was used. As PLS-SEM is one of the suitable techniques which do not need normality of data.

#### 4.1 Measurement Model

After preliminary analysis, PLS-SEM was carried out. However, before hypotheses testing, reliability, as well as validity, was considered. As it is one of the essential steps before hypotheses testing. According to Hair et al. (2010); Hair Jr and Lukas (2014), factor loading value should be above 0.5, reliability above 0.7 and average variance extracted (AVE) should be above 0.5 to achieve convergent validity. Table 1 and Fig. 4 shows the factor loadings and value of reliability and AVE. All the values are in a satisfactory range. Furthermore, discriminate validity is shown in Table 2.

**Table 1**Measurement Model Results

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
INFO	0.954	0.955	0.965	0.846
LFP	0.798	0.880	0.869	0.596
P	0.888	0.953	0.921	0.717
SCO	0.952	0.952	0.963	0.838
TECH	0.955	0.956	0.965	0.847

**Table 2** Discriminant Validity

	INFO	LFP	P	SCO	TECH	
INFO	0.920					
LFP	0.786	0.772				
P	0.518	0.505	0.847			
SCO	0.929	0.808	0.547	0.916		
TECH	0.899	0.793	0.487	0.919	0.920	

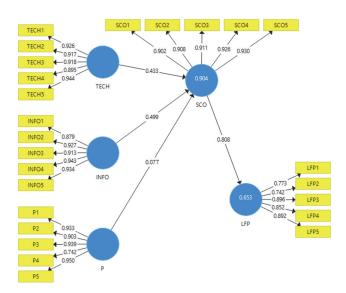


Fig. 4. Measurement Model

#### 4.2 Structural Model

The structural model assessment was used to test the hypotheses. According to the previous studies, it is one of the suitable techniques to test the hypotheses (Henseler et al., 2009). It is based on PLS bootstrapping technique. To validate the hypotheses, t-value and p-value was observed. If the relationship between the independent and dependent variable having t-value below 1.96, it must be rejected, however, if it is above 1.96, it is accepted. Moreover, to accept the hypothesis, p-value should be less than 0.05. In the current study Table 3 shows the hypotheses testing results. According to the results, all the hypotheses are accepted, as all the relationship have t-value above 1.96 and p-value below 0.05.

**Table 3**Structural Model Results

Structural Mod	ei Resuits					
	Original	Sample	Standard	T Statistics	P Values	Decision
	Sample (C	) Mean	Deviation	( O/STDEV )		
	• •	(M)	(STDEV)			
$INFO \rightarrow SCO$	0.499	0.501	0.083	5.980	0.000	Supported
$P \rightarrow SCO$	0.077	0.078	0.033	2.319	0.021	Supported
$SCO \rightarrow LFP$	0.808	0.810	0.036	22.554	0.000	Supported
$TECH \rightarrow SCO$	0.433	0.431	0.080	5.426	0.000	Supported
	Original Sample (O)	Sample Mean	(M) Bias	2.50%	97.50%	
$INFO \rightarrow SCO$	0.499	0.501	0.001	0.345	0.667	
$P \rightarrow SCO$	0.077	0.078	0	0.023	0.156	
$SCO \rightarrow LFP$	0.808	0.81	0.002	0.735	0.88	
$TECH \rightarrow SCO$	0.433	0.431	-0.00	2 0.277	0.596	

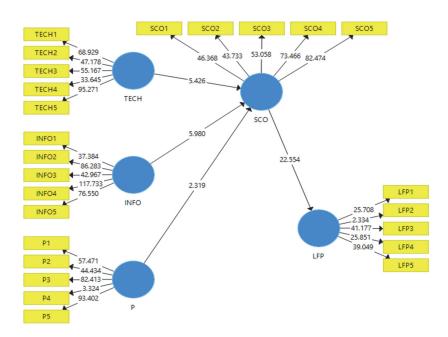


Fig. 5. Structural Model

## 4.3 R-square $(R^2)$ and Effect Size $(f^2)$

Table 4 shows the R-square ( $R^2$ ), which is 0.653 and indicates that all the independent variables, namely, technology, information and government policy represent 65.3% of the changes in logistic firm profitability. Moreover, Table 5 shows the effect size ( $f^2$ ). According to the results, technology, information and supply chain outcome had strong effect size ( $f^2$ ); however, government policy has small effect Size ( $f^2$ ).

**Table 4** R-square (R<sup>2</sup>)

=======================================	
	Variance Explained
Logistic Firm Performance	0.653

**Table 5** Effect Size (f<sup>2</sup>)

Construct	Value	Effect Size (f <sup>2</sup> )
Technology	0.375	Strong
Information	0.479	Strong
Government Policy	0.046	Small
Supply Chain Outcome	1.881	Strong

# 5. Findings

The current study has examined the role of strategic management accounting to boost the profitability of the logistic companies. The role of technology, information and government policy was examined to enhance supply chain operations. Data were collected from the staff of logistics companies in Malaysia. Previous studies have shown that strategic management accounting was positively associated with firm's performance (Dixon, 1993; Hoque, 2002; Lord, 1996; Ward, 2012), In line with these studies, the current study also proved that strategic management accounting enhances the supply chain outcomes and supply chain outcomes enhances the profitability of logistic firms in Malaysia.

It has been found that technology had a significant positive relationship with supply chain outcomes with t-value 5.426 and p-value 0.000. Increases in technology increase the supply chain outcomes. Moreover, it has been found that information also had a significant positive relationship with 5.480 and p-value of 0.000. In the same direction, it was investigated that government policy had a significant positive relationship with supply chain outcomes with t-value 2.319 and p-value 0.021. Finally, supply chain outcome had a significant positive relationship with logistic firm performance with t-value 22.554 and p-value 0.000.

Hence, technology, information and government policy had a significant positive relationship with supply chain outcomes which enhances the logistic firm profitability. Additionally, technology, information and supply chain outcome had a strong effect to enhance profitability; however, government policy has a small effect.

#### 6. Conclusion

It was found that strategic management accounting practices had a significant positive relationship with supply chain outcomes and supply chain outcomes had a significant positive relationship with the profitability of the logistics firms. Better strategic management accounting practices can enhance supply chain outcomes. Strategic management accounting practices such as technology, information and government policy had a key role in supply chain outcomes. Supply chain outcomes had a significant effect on logistic firm's profitability. Better supply chain outcomes increase the profitability of logistic companies in Malaysia. Finally, strategic management accounting practices enhance the supply chain outcomes and supply chain outcomes enhances the logistic firm profitability. Future researchers are invited to investigate the role of leadership and audit in the current framework. Moreover, the role of open-innovation can also be crucial in supply chain activities.

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