International Journal of Business and Economy
e-ISSN: 2682-8359 | Vol. 2, No. 2, 75-89, 2020
http://myjms.moe.gov.my/index.php/ijbec

THE PERCEPTION OF TOP MANAGEMENT'S COMMITMENT, ENVIRONMENTAL MANAGEMENT ACCOUNTING AND CORPORATE SUSTAINABILITY PERFORMANCE IN MALAYSIAN MANUFACTURING SECTOR

Yang Runlei[1*], Junainah Jaidi[2] and Nur Shahida Ab Fatah[3]

[1 2 3] Faculty of Business, Economics and Accountancy, Universiti Malaysia Sabah, Sabah, MALAYSIA

*Corresponding author: 1544883961@qq.com

Accepted: 30 May 2020 | Published: 3 June 2020

Abstract: *This study aims to examine the effect of the top management's commitment with a focus on the role of environmental management accounting (EMA), on corporate sustainability performance. Using an online survey, this study sampled from 55 respondents in ISO 14001 certification companies which are listed on the FMM (Federation of Malaysian Manufacturers). The empirical evidence shows that there is a positive and significant influence between top management's commitment and the use of EMA, which in turn can improve the sustainability performance of the firm. The finding suggested that EMA is a useful and important tool to provide information to boost corporate sustainability performance in Malaysian manufacturing firms. Moreover, top management's commitment has positive effect on the implement of EMA and improvement in corporate sustainability performance.*

Keywords: EMA, Top management's commitment, Corporate sustainability performance

1. Introduction

Recently, corporate sustainability performance (CSP) has received more and more attention from the research field. Some researchers discuss the factors which affect corporate sustainability and offer effective operational methods to improve CSP (Abdul-Rashid, Sakundarini, Raja Ghazilla and Thurasamy, 2017; Cankaya and Sezen, 2019; Raharjo , 2019; Wijethilake, 2017; Orji, 2019; Islam, Tseng and Karia, 2019; Orazalin, Mahmood and Narbaev, 2019; Shamraiz, Yew, and Hassan ,2017; Ahmad, Hami, Shafie and Yamin, 2019). CSP is the internal indicator which measure the corporate sustainability. It evaluates the company comprehensive strength and developing prospect from three dimensions; economy, environment and society. This study conceptualizes the corporate sustainability performance as the performance or information about the company in the extent of the corporate strategic plan to be more sustainability which consist of environmental performance, economic performance and social performance (Tavana and Puranam, 2014). Considering the importance of CSP, some studies have linked CSP with various factors that contribute in improving the firm performance, which include stakeholder expectation, corporate culture, organization change and green supply chain management practices. However, sustainability attaches great importance to

the environment and takes environmental protection as one of most important factors for the company to pursue the sustainability vision. Incorporating the environmental aspect to the CSP has attracted a new concern from academicians and practitioners. Even though many academicians and practitioners have focused on the relationship between "green" practices and CSP, especially in the manufacturing industry (Abdul-Rashid et al., 2017; Cankaya and Sezen ,2019; Raharjo, 2019; Wijethilake, 2017), thus the new focus on the relationship between the top management's commitment and environmental management accounting (EMA) with CSP, which may be fill up the gap of previous research. Therefore, this gap will serve as the missing link which will be the focus of this study.

Moreover, to date, there is an absence of the discuss between top management's commitment with the CSP, especially EMA with CSP. The sustainability prospect in Malaysian manufacturing industry should also taken into account. In fact, environment-related regulations and measurements are mainly concentrated in developed countries, while Malaysia, as an emerging developing country, has an incomplete environmental system (Gunarathne and Alahakoon,2016; Qian et al., 2015). Therefore, a research on the implement of environmental initiative on the CSP, specially prospects for development in Malaysian manufacturing industry, deserves the effort.

2. Literature Review

2.1 Problem Statement

Bakar et al., (2017) proposed that the absence of environmental improvement is a major issue on the CSP. In particular, the environmental issues link with the corporate sustainability prospective in Manufacturing industry. It is obviously from the Environmental Investigation Agency (EIA, 2007) reported that the manufacturing industry is responsible for a large amount of resource consumption and waste generation in worldwide. The evidences have exposed that manufacturing is generally bad for the environment due to the increase in the pollution from waste and rapid consumption of natural resources. Therefore, in manufacturing industry, making full of the potential in voluntary environmental initiatives help companies move toward more sustainability industrial systems and improve the CSP (Paton, 2000). But, now in Malaysia, the manufacturing is still in the infancy stage of moving towards sustainability (Abidin, 2008).

2.1.1 Top Management's Commitment and Corporate Sustainability Performance

The vision, values, goals and systems provided by top management will lead to the positive organization's quality culture, thus ultimately cause customers to trust the company and improved firm's performance (Ahire and O'Shaughnessy, 1998; Deming, 1986; Senge, 1990). Similarly, when top management improve the firm's performance by implementing environmental measures, the potential benefits will prompt them to make a commitment to sustainability (Latan et al.,2018). Many studies have also confirmed that there is a positive relationship between leaders or top management and organizational performance (Ahire and O'Shaughnessy, 1998; Flynn et al., 1995; Powell, 1995; Saraph, Benson and Schroeder, 1989). Various researchers have found a significant relationship between top management's commitment and the improved environmental performance (Perez et al., 2007; Dixon-Fowler et al., 2017 and Spencer et al., 2013). Top management's social environmental commitment influences the implement efficiency of economic performance (Lisi,

2016). Moreover, top management's commitment as a specific external pressure of corporate social activities, may have more effect on the social performance (Weaver, Trevino and Cochran, 1999). As previously studies, top management's commitment has directly relationship with CSP.

H1: There is a positive relationship between top management's commitment and CSP

2.1.2 Top Management's Commitment and EMA

Top management's commitment to the environment is an important measurement rule for the corporate environmental awareness. Top management's commitment is a key factor to the implementation of green initiatives (Lisi, 2016). EMA as an internal accounting tool, deals with the environmental issue in the firm. Environmental management accounting collects and analyzes environment-related information in accordance with the requirements of the company's green initiative. Top management has made a commitment to environmental management accounting practices by directly participating in the company's environmental issues (Carter et al., 2009; Wee and Quazi, 2005).

H2: There is a positive relationship between top management's commitment and EMA.

2.1.3 Environmental Management Accounting and Corporate Sustainability Performance

EMA is proposed as a core weapon for the company to maintain its long-term sustainable competitiveness in changeable market (Saeidi, Sofian and Saeidi, 2011). EMA can reduce environmental cost and help the company improve product differentiation, build the firm's green product image, thus improving the company's competitive advantage (Saeidi et al., 2011) and promoting the improvement of environmental performance. Klassen and McLaughlin (1996); Sharma and Vredenburg (1998) claimed that better environmental performance provides competitive advantage which cause financial performance enhancement. Corporate reputation, is as a part of corporate social performance, which depends on economic support and marketing, so companies are encouraged to collect environment-related information through EMA, and use environment, resources, management and green marketing as a source to improve reputation and competitive advantage (Miles and Covin, 2000). Bennett and James (1998) proposed that environmental management accounting is defined as the generation of financial and non-financial information, analysis and use for optimistic environmental and economic performance, then finish the sustainability business. Especially in recent years, the environmental management system by company as a kind of management and control means to implement environmental and social performance (Jasch and Stasiskiene, 2005).

H3: There is a positive relationship between EMA and CSP.

2.1.4 Environmental Management Accounting Mediates the Relationship Between Top Management's Commitment and CSP

The support from top management is considered to be one of the most important factors in the adoption of various modern accounting systems (Baird, Harrison and Reeve, 2007; Tung, Baird and Schoch, 2011). In the environmental management system, Darnall, Henriques and Sadorsky (2008) thought that top management support is very important to ensure the organization understanding and commitment to environmental issues. Without commitment and support from top management, it is very difficult to execute EMA and obtain environmental benefits from EMA, because the information and benefits require management to understand the metrics and utilize the information (Kokubu and Nashioka ,2005). Perez, Ruiz and Fenech (2007) and Spencer et al. (2013) said that various researchers have found a significant relationship between top management commitment to the improved firm's performance and between top management support and the use of EMA. Another study by Wee and Quazi (2005) showed that the top management's commitment to the corporate sustainability is a key point to estimate and adopt the EMA (Chang and Deegan, 2010). The integrity of the EMS (environmental management system) and the support of top management affect the implement of EMA (Phan, Baird and Su, 2017).

H4: Environmental management Accounting mediates the relationship between top management's commitment and CSP.

3. Method

The hypothesis of this research explored the relationship between corporate sustainability performance (CSP), top management's commitment and environmental management accounting (EMA). Therefore, the research design is used for discovering the relationship between these variables. This research is cross-sectional study. At the same time, the study uses letter questionnaire, email questionnaire and calling survey to collect data. Sekaran and Bougie (2013) thought that wherever the information could be received by mail questionnaire and respondents could complete the questionnaire in their convenient places. Therefore, mail questionnaire could be accepted.

3.1 Materials

3.1.1 Samples

To ensure enough sample size for analysis, we use G-power (Cohen, 1992) for F test- Linear multiple regression: Fixed model, R^2 deviation from zero. Assuming a medium effect size ($f^2 = 0.15$) for the one predictor, a significant level of 0.05 (α), and a desired power of 0.80 ($1 - \beta$), our analysis would require a sample size of 55. PLS-SEM instrument is to assess the relationship of the latent constructs and hypothesis (Hair et al.,2014; Ramayah et al., 2018).

This study is done in Malaysia. Based on World Economic Outlook 2018, Malaysia is the 3rd-largest economy in southeast Asia and the 35th largest in the world. According to the Global Competitiveness Report 2018, Malaysian economy ranked 25th among the world's most competitive ability during 2018-2019. Therefore, Malaysia has strong development momentum and plays an important role on the global economy. Malaysia has a large impact in the world's sustainable development.

Malaysian manufacturing industry has made a positive contribution to economic development, particularly in terms of employment opportunities and GDP (Adebambo, Ashari and Nordin, 2015). However, compared with the economy, the hazard of generating the pollution still cannot be ignored. It is obviously from the Environmental Investigation Agency (EIA, 2007) reported that the manufacturing industry is responsible for a large amount of resource consumption and waste generation in worldwide. Hence, it is suitable to set the study in the Malaysian manufacturing industry.

3.1.2 Site

This study is done in Malaysia. Based on World Economic Outlook 2018, Malaysia is the 3rd-largest economy in southeast Asia and the 35th largest in the world. According to the Global Competitiveness Report 2018, Malaysian economy ranked 25th among the world's most competitive ability during 2018-2019. Therefore, Malaysia has strong development momentum and plays an important role on the global economy. Malaysia has a large impact in the world's sustainable development.

Meanwhile, we get the information from manufacturing industry. Malaysian manufacturing industry has made a positive contribution to economic development, particularly in terms of employment opportunities and GDP (Adebambo, Ashari and Nordin, 2015). However, compared with the economy, the hazard of generating the pollution still cannot be ignored. It is obviously from the Environmental Investigation Agency (EIA, 2007) reported that the manufacturing industry is responsible for a large amount of resource consumption and waste generation in worldwide. Hence, it is suitable to set the study in the Malaysian manufacturing industry.

3.1.3 Procedures

The ISO 14001 certificated companies were chosen because these companies have high environmental awareness and environmental measurement. There are 400 companies surveyed in this study, which have ISO 14001 certification in FMM directory. In this study, it is easy to select

suitable companies which have more than 3 years of ISO14001 certification from all the Malaysian manufacturing companies. The data collection starts from December 1, 2019 and now is still in collecting. So far, 62 responds have been received.

3.2 Measurement

This study employed the perceptual measurement in measuring the variables since it is quite difficult to acquire the physical measurement for each variable due to the company policies. Moreover, perceptive measurement had been used by most of the similar studies in this field. The questionnaire uses five-point scale and seven-point scale. Research proves that data from Likert items is less accurate when the points exceed seven (John, 2010) and seven-point Likert items have proven to be more accurate, easier to use, and better to reflect the true evaluations of the respondents (Finstad, 2010). Moreover, the five-point Likert scale does not discourage the respondent's patience, which in turn increases the rate and quality of the response (Buttle, 1995).

3.3 Data Analysis

The data we analysed using SmartPLS which consist of two stages using the method proposed by Chin (1998) and Hulland (1999). First, we evaluate the measurement model was evaluated to ensure that the indicators for each construct are reliable and valid. Second, the direct effects and the indirect effects of EMA on the relationship between IV and DV in inner model were tested.

3.3.1 Validity and Reliability

The recommended value of the loading factor, average variance extracted (AVE) and reliability derived from the analysis of the measurement model for all variables were loading factor > 0.60, composite reliability/rho_A > 0.70 and AVE > 0.50 (Henseler et al., 2017; Latan and Ghozali, 2015). Although there is the problem of loading coefficient < 0.60, as long as the value is AVE > 0.50, it is acceptable.

About composite reliability (CR), based on the latest literature in Hair et al., (2019), the maximum limit value of CR is 0.95. If the value exceeds 0.95, the indicator is redundancy, which affects the indicator validity. Therefore, this paper deletes 3 items of EMA in order to decrease CR values.

From the Table 3.1, It can be seen that the loading factor, AVE, CR and composite reliability/rho A are suitable for the standard. Therefore, the reliability of the study is proven.

Table 3.1 Construct indicators and measurement model of TMC, EMA and CSP

	Items	Loading	AVE	CR	Rho _A
Top	TMC1	0.820	0.741	0.945	0.950
management's	TMC2	0.854			
commitment	TMC3	0.753			
	TMC4	0.794			
	TMC5	0.954			
	TMC6	0.968			
Environmental	EMA1	0.848	0.659	0.945	0.952
management	EMA2	0.698			
accounting	EMA3	0.614			
	EMA4	0.758			
	EMA5	0.759			
	EMA7	0.794			
	EMA8	0.866			
	EMA10	0.913			
	EMA12	0.989			
Corporate	CSP1	0.482	0.503	0.949	0.959
sustainability	CSP2	0.868			
performance	CSP3	0.637			
	CSP4	0.745			
	CSP5	0.723			
	CSP6	0.557			
	CSP7	0.609			
	CSP8	0.441			
	CSP9	0.624			
	CSP10	0.994			
	CSP11	0.782			
	CSP12	0.659			
	CSP13	0.583			
	CSP14	0.755			
	CSP15	0.582			
	CSP16	0.896			
	CSP17	0.596			
	CSP18	0.836			

CSP19 0.827

In addition, the discriminant validity was tested for all latent variables in the model using the Fornell-Lacker criterion, cross loading and heterotrait-monotrait ratio (HTMT).

Table 3.2 Cross Loading

Items	Corporate sustainability performance	Environmental management accounting	Top management's commitment
CSP1	**0.482**	0.288	0.274
CSP2	**0.868**	0.497	0.514
CSP3	**0.637**	0.344	0.395
CSP4	**0.745**	0.366	0.495
CSP5	**0.723**	0.398	0.442
CSP6	**0.557**	0.278	0.366
CSP7	**0.609**	0.375	0.337
CSP8	**0.441**	0.215	0.294
CSP9	**0.624**	0.338	0.386
CSP10	**0.994**	0.624	0.540
CSP11	**0.782**	0.427	0.481
CSP12	**0.659**	0.326	0.435
CSP13	**0.583**	0.332	0.356
CSP14	**0.755**	0.356	0.514
CSP15	**0.582**	0.291	0.382
CSP16	**0.896**	0.634	0.424
CSP17	**0.596**	0.319	0.373
CSP18	**0.836**	0.503	0.473
CSP19	**0.827**	0.529	0.441
EMA1	0.498	**0.848**	0.446
EMA2	0.422	**0.698**	0.354
EMA3	0.400	**0.614**	0.282
EMA4	0.455	**0.758**	0.388
EMA5	0.469	**0.759**	0.375
EMA7	0.491	**0.794**	0.392
EMA8	0.481	**0.866**	0.485
EMA10	0.437	**0.913**	0.585
EMA12	0.516	**0.989**	0.590
TMC1	0.437	0.502	**0.820**
TMC2	0.481	0.495	**0.854**
TMC3	0.443	0.415	**0.754**
TMC4	0.471	0.433	**0.794**
TMC5	0.594	0.489	**0.954**
TMC6	0.619	0.479	**0.968**

Table 3.2 provides for the cross loading between constructs. We can see, all loadings are highest on its own but lower on other constructs.

Table 3.3 Fornell and Larcker's Criterion

	Corporate sustainability performance	Environmental management accounting	Top management's commitment
CSP	0.709		
EMA	0.57	0.812	
TMC	0.594	0.544	0.861

In Table 3.3, it can be seen that the the square root of AVE (diagonal) is greater than the correlation(off-diagonal) between the constructs in the model. This means that the discriminant validity is sufficient (Chin,2010; Chin, 1998b; Fornell and Larcker, 1981).

Table 3.4 HTMT Criterion

	Corporate sustainability performance	Environmental management accounting	Top management's Commitment
CSP			
EMA	0.537		
TMC	0.574	0.528	

The HTMT was also used to test the discriminant validity. It can be seen from the analysis results in Table 3.3 that the value of HTMT is less than 0.85 (Kline,2011) or less than 0.90 (Gold et al.,2001), therefore the discriminant validity conforms to the standard.

3.3.2 Structural Model

The measurement in a structured method of latent collinearity, path coefficients, the level of R square values, effect size (f^2) and predictive relevance(Q^2) (Hair et al.,2014).

The thresholds of effect size (f^2) are > 0.15 means moderate effect and > 0.35 means strong effect. From Table 3.4, there are two relationship in moderate effect and top management's commitment has strong effect on the environmental management accounting. Additionally, the inner VIF values need to be tested are less than 5. All the lateral collinearity in Table 3.4 fit for the standard and the structural model can be recommended.

Table 3.5 Effect size (f^2) and Lateral collinearity (VIF)

	f^2	VIF
TMC→CSP	0.204	1.421
TMC→EMA	0.421	1.000
EMA→CSP	0.155	1.421

Stone and Geisser's Q^2 is applied using the blindfolding procedure (Ramayah et al., 2018). Additionally, R^2 measures the model's predictive accuracy and higher values indicate higher levels of predictive accuracy. According to Falk and Miller (1992), R^2 values should be greater than 0.1. The predictive relevance (Q^2) and R^2 from Table 3.6 values conform with the recommended rule.

Table 3.6 Predictive Relevance (Q^2) and Coefficient of Determination (R^2) Result

	Q^2(=1-SSE/SSO)	R^2
EMA	0.165	0.296
CSP	1.870	0.44

In this procedure, 500 sub-samples are taken from the original sample to use a bootstrapping procedure (Chin, 1998b). Table 3.7 presents the path coefficient result for direct and indirect hypothesis.

Table 3.7 Path Coefficient Result

Hypothesis	Relationship	Std. Beta	Std. Error	t-value	P value	Decision
H1	TMC→CSP	0.397	0.109	3.711	0.000	Support
H2	TMC→EMA	0.557	0.087	6.228	0.000	Support
H3	EMA→CSP	0.375	0.122	2.883	0.004	Support
H4	TMC→EMA→CSP	0.209	0.078	2.448	0.015	Support

The threshold in this study is that p value less than 0.05 proposed by Hair et al. (2017) and indicate a t-value greater than 1.96 (Peng and Lai,2012) to support the hypothesis. Therefore, in Table 3.7, t-values of all hypotheses were greater than 1.69 at the significance level of 0.05.

4. Results and Discussion

This study explored whether top management's commitment can directly affect corporate sustainability performance or indirectly by the use of EMA. Through the analysis, the results provide evidence to support H1, H2, H3 and H4. Various research has found a significant relationship between top management commitment to the improved environmental, economic and social performance (Perez et al., 2007; Dixon-Fowler et al., 2017; Spencer et al., 2013; Lisi, 2016; Weaver, Trevino and Cochran, 2017), thus improve the corporate sustainability performance at last. Moreover, top management has made a commitment to environmental management accounting practices by directly participating in the company's environmental issues (Carter et al., 2009; Wee and Quazi, 2005). Environmental management system is as a kind of management and control means to implement environmental, economic and social performance (Miles and Covin, 2000; Bennett and James, 1998; Jasch and Stasiskiene, 2005). Perez, Ruiz and Fenech, (2007) and Spencer et al. (2013) said that various research has found a significant relationship between top management commitment to the improved firm's performance and between top management support and the use of EMA. The results support the findings of previous research that found a significant relationship between top management's commitment to corporate sustainability performance directly or indirectly by using EMA.

5. Conclusion

In conclusion, with the increasing call for sustainability and the increasing awareness of people, the importance in corporate sustainable performance has become increasingly prominent. This study focuses on the implement of environment-related resources to improve corporate sustainability performance. Using PLS-SEM instrument to analysis the data from Malaysian manufacturing companies. The findings suggest that EMA is a useful and important tool to provide environment-related information to boost corporate sustainability performance. Moreover, top management's commitment has positive effect on the implement of EMA and improvement in corporate sustainability performance. Through the results in this study, we can use appropriate methods to improve the corporate sustainability performance.

References

Abdul-Rashid, S. H., Sakundarini, N., Raja Ghazilla, R. A., and Thurasamy, R. (2017). The impact of sustainable manufacturing practices on sustainability performance. *International Journal of Operations and Production Management*, 37(2), 182–204.

Abidin, N. Z. (2008). Sustainable practices in Malaysia: are we ready for it, *Global conference on global warming*, 379-388.

Ahire, S.L., and O'Shaughnessy, K.C. (1998). The role of top management commitment in quality management: An empirical analysis of the auto parts industry. *International Journal of Quality Science*, 3, 5–37.

Ahmad, A., Hami, N., Shafie, S. M. and Yamin, F. M. (2019). A proposed framework of sustainable manufacturing practice and sustainability performance among Malaysian SMEs in the manufacturing sector, *Proceedings of the 2nd Conference on Technology and Operations Management (2ndCTOM)* ,159-168.

Adebambo, H. O. , Ashari, H. and.Nordin N.,(2015). An empirical study on the influence of sustainable environmental manufacturing practice on firm performance, *Journal of Sustainability Science and Management*, 10, pp 42-51.

Bakar, N., Abdullah, H., Ibrahim, F. and Jali, M. (2017). Green Economy: Evaluation of Malaysian Company Environmental Sustainability. *International Journal of Energy Economics and Policy*, 7 (2), 139-143.

Bennett, M., and James, P. (1998). *The Green Bottom Line, Environmental Accounting for Management. Sheffield*, UK: Greenleaf Publishing.

Baird, K., Harrison, G. and Reeve, R.(2007). Success of activity management practices: the influence of organizational and cultural factors, *Accounting and Finance*, 47, 47–67.

Buttle, F. A. (1995). Marketing Communication Theory: What do the Texts Teach Our Students? *International Journal of Advertising*, 14(4), 297–313.

Carter, T., Prasnikar, J. and Carter, B. (2009). Environmental strategies and their motives and results in Slovenian business practices. *Economic and Business Review*, 11(1), 55 – 74.

Cohen, J., (1992). A power primer. *Psychological Bulletin*. 112 (1), 155–159.

Chin, W. W. (2010). *How to Write Up and Report PLS Analyses*. Handbook of Partial Least Squares, 655–690.

Chin, W. W. (1998b). *The partial least squares approach for structural equation modeling*. In George A. Marcoulides, ed. Modern Methods for Business Research. Lawrence Erlbaum Associates, Mahwah, NJ, 295–336.

Çankaya, Y. S., and Sezen, B. (2018). Effects of green supply chain management practices on sustainability performance. *Journal of Manufacturing Technology Management.* 30 (1), 98-121.

Deming, W.E. (1986). *Out of the crisis. Cambridge*, MA: MIT Press.

Darnall, N, Henriques, I and Sadorsky, P. (2008). Do environmental management systems improve business performance in an international setting?, *Journal of International Management*, 14(4), 364–376.

Dixon-Fowler, Heather R., Ellstrand, Alan E. and Johnson, Jonathan L.(2017). The Role of Board Environmental Committees in Corporate Environmental Performance.*Journal of Business Ethics*, 140, 3, pp.423-438.

Flynn, B.B., Schroeder, R.G., and Sakakibara, S. (1995). The impact of quality management practices on performance and competitive advantage. *Decision Sciences*, 26, 659–692.

Fornell, C., and Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research*, 18(3), 382–388.

Finstad, K. (2010). The Usability Metric for User Experience. *Interacting with Computers*, 22(5), 323–327.

Gunarathne, A.D.N. and Alahakoon, Y. (2016). Environmental Management Accounting Practices and their Diffusion: The Sri Lankan Experience. *NSBM Journal of Management*, 2(1), pp. 1-26.

Gold, A. H., Malhotra, A., and Segars, A. (2001). Knowledge Management: An Organizational Capabilities Perspective. *Journal of Management Information Systems*, 18(1), 185-214.

Henseler, J., Hubona, G., Ray, P.A., (2017). Partial least squares path modeling: updated guidelines. In: Latan, H., Noonan, R. (Eds.), Partial Least Squares Path Modeling: Basic Concepts, Methodological Issues and Applications. *Cham: Springer International Publishing*, pp. 19-39.

Hair, J. F., Hult, G. T. M., Ringle, C. M., and Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling. 2nd Ed.* Thousand Oaks: Sage

Hair, J. F., Sarstedt, M., Hopkins, L., and G. Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM). *European Business Review*, 26(2), 106–121.

Islam, M. S., Tseng, M.-L. and Karia, N. (2019). Assessment of corporate culture in sustainability performance using a hierarchical framework and interdependence relations. *Journal of Cleaner Production*.

Jasch, C., and Stasiskiene, Z. (2005). From environmental management accounting to sustainability management accounting. *Environmental research, engineering and management*, *4*(34), 77-88.

Johns, R. (2010). *Likert items and scales*. Retrieved from Survey Question Bank website: http://www.surveynet.ac.uk/sqb/datacollection/likertfactsheet.pdf

Klassen, R. D. and McLaughlin, C. P. (1996). The Impact of Environmental Management on Firm Performance. *Management Science*, 42(8), 1199-1214.

Kokubu, K. and Nashioka, E. (2005). Environmental management accounting practices in Japan', in Rikhardsson, P., Bennett, M., Bouma, J. and Schaltegger, S.(eds.), Implementing environmental management accounting: status and challenges, *Springer, Dordrecht, Netherlands*, 321–342.

Kline, R. B. (2011). *Methodology in the Social Sciences. Principles and practice of structural equation modeling (3rd ed.)*. Guilford Press.

Latan, H., Chiappetta Jabbour, C. J., Lopes de Sousa Jabbour, A. B., Wamba, S. F., and Shahbaz, M. (2018). Effects of environmental strategy, environmental uncertainty and top management's commitment on corporate environmental performance: The role of environmental management accounting. *Journal of Cleaner Production*, 180, 297–306.

Latan, H., Ghozali, I., (2015). *Partial Least Squares: Concepts, Techniques and Application Using Program SmartPLS 3.0, second ed*. Diponegoro University Press, Semarang.

Lisi, I. E. (2016). Determinants and Performance Effects of Social Performance Measurement Systems. *Journal of Business Ethics*. 152(1), pp. 225-251

Miles, M. P., and Covin, J. G. (2000). Environmental Marketing: A Source of Reputational, Competitive, and Financial Advantage. *Journal of Business Ethics*, 23(3), 299–311.

Orazalin, N., Mahmood, M., and Narbaev, T. (2019). The impact of sustainability performance indicators on financial stability: evidence from the Russian oil and gas industry. *Environmental Science and Pollution Research*. 26, 8157–8168.

Orji, I. J. (2019). Examining barriers to organizational change for sustainability and drivers of sustainable performance in the metal manufacturing industry. *Resources, Conservation and Recycling*, 140, 102–114.

Paton, B. (2000). Voluntary environmental initiatives and sustainable industry. *Business Strategy and the Environment*, 9(5), 328–338.

Porter, M.E., and Van Der Linde, C. (1995). Toward a new conception of the environment competitiveness relationship, *Journal of Economic Perspectives*, 9(4), 97-118.

Perez, E.A., Ruiz, C.C. and Fenech, F.C. (2007). Environmental management systems as an embedding mechanism: a research note. *Account Audit. Account. J.* 20 (3), 403-422.

Perez, E.A., Ruiz, C.C. and Fenech, F.C. (2007). Environmental management systems as an embedding mechanism: a research note. *Account Audit. Account. J.* 20 (3), 403-422.

Peng, D. X., and Lai, F. (2012). Using partial least squares in operations management research: A practical guideline and summary of past research. *Journal of Operations Management*, 30(6), 467–480.

Qian, W., Burritt, R. and Chen, J. (2015). The potential for environmental management accounting development in China. *Journal of Accounting and Organizational Change*, 11 (10), pp. 406-428.

Raharjo, K. (2018). The role of green management in creating sustainability performance on the small and medium enterprises. Management of Environmental Quality, *An International Journal.* 30 (3), 557-577.

Ramayah, T., Cheah, J., Chuah, F., Ting, H., and Memon, M.A., (2018). *Partial Least Squares Structural Equation Modelling (PLS-SEM) using SMARTPLS 3.0: An Updated and Practical Guide to Statistical Analysis (2nd edt)*. Pearson: Malaysia.

Wee, Y. S. and Quazi, H. A. (2005). Development and validation of critical factors of environmental management. *Industrial Management and Data Systems*, 105(1), 96–114.

Shamraiz, A., Kuan Yew, W. and Hassan, E. (2017). Sustainability Assessment and Analysis of Malaysian Food Manufacturing Sector—A Move Towards Sustainable Development, *Advanced Science Letters*, 23(5), 8942-8946.

Senge, P.M. (1990). The leader's new work: Building learning organizations. *Sloan Management Review*, 32(1), 7–23.

Saraph, G.V.P., Benson, G., and Schroeder, R.G. (1989). An instrument for measuring the critical factors of quality. *Decision Sciences*, 20, 810–829.

Spencer, S.Y., Adams, C. and Yapa, P.W.S. (2013). The mediating effects of the adoption of an environmental information system on top management's commitment and environmental performance. *Sustain. Acc., Manage. J.* 4 (1), 75-102.

Saeidi, S. P., Sofian, S. and Saeidi, P. (2011). Environmental management accounting and firm performance, *International conference on management (ICM,2011) proceeding.* 652-661.

Sharma, S., and Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strategic Management Journal*, 19(8), 729-753.

Spencer, S.Y., Adams, C. and Yapa, P.W.S. (2013). The mediating effects of the adoption of an environmental information system on top management's commitment and environmental performance. *Sustain. Acc., Manage. J.* 4 (1), 75-102.

Sekaran, U. and Bougie, R. (2013). *Research Methods for Business: A Skill-Building Approach. 6th Edition*. New York: WILEY

Tavana, M. and Puranam, K. (2014). *Handbook of Research on Organizational Transformations through Big Data Analytics*, USA: La Salle University

Tung, A., Baird, K. and Schoch, H. (2011). Factors influencing the effectiveness of performance measurement systems, *International Journal of Operations and Production Management*, 31(12), 1287–1310.

Wijethilake, C. (2017). Proactive sustainability strategy and corporate sustainability performance: The mediating effect of sustainability control systems. *Journal of Environmental Management*, 196, 569–582.

Weaver, G. R., Trevino, L. K., and Cochran, P. L. (1999). Integrated and decoupled corporate social performance: Management commitments, external pressures, and corporate ethics practices. *Academy of Management Journal*, 42(5), 539-552.