

ORGANISATIONAL PERFORMANCE, ENVIRONMENTAL MANAGEMENT ACCOUNTING PRACTICES AND COMPETITIVE ADVANTAGE: EVIDENCE FROM MALAYSIA

Junainah Jaidi¹, Sarminah Samad, Raman Noordin², Rasid Mail³ and Lim Thien Sang⁴

^{1,2,3,4} Faculty of Business, Economics and Accountancy, Universiti Malaysia Sabah, Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia
E-mail: nenjaidi@ums.edu.my

² Department of Business Administration, College of Business and Administration
Princess Nourah bint Abdulrahman University Riyadh, Saudi Arabia

Abstract: In order to respond to the demand for the integration of environmental aspects of the corporate strategy, hotel managers' belief that the practice of right management accounting practices is crucial. The management teams within the hotel industry believe that practising the right management accounting practices, termed as environmental management accounting (EMA), will lead to better organisational performance. They believe that the information produced by EMA will not only garner competitive advantage, but will result in another outcome which is value creation. Grounded in the resource-based view, this study examined the relationship between EMA practices and organisational performance among Malaysian hotels. This research further examined the mediating role of competitive advantage on the link between EMA practices and organisational performance. Employing the simple random technique, the Partial Least Squares (PLS) approach to Structural Equation Model (SEM) was used to analyse data collected from 122 hotel managers from 3 to 5-star hotels in Malaysia. The findings of the hypothesis testing showed that all hypotheses were supported. Thus, it was concluded that there is a significant and positive relationship between EMA practices and organisational performance.

Keywords: organisational performance, environmental management accounting, environmental management system.

1. INTRODUCTION

The past decades have seen an upsurge in the issue of environmental consideration as a major topic for debate. The severity of the problem has been intensified with changes in the climate in the forms of massive natural disasters witnessed in parts of the world. Communities in developed countries are particularly concerned about the effects of land, water, and air pollutions on their quality of life and wellbeing. As a result, organisations are seriously considering the implementation of public green awareness to ensure sustainability (UNSD, 2001). However, developing countries such as Malaysia have not awarded the same amount of emphasis towards the similar concern. The modern and current

stakeholders such as investors, consumers, employees, local communities, government, and so forth are not only interested on the financial performance of the companies, but also on the environmental performance. Therefore, as the environment is now considered a valuable asset, companies worldwide are strategically looking into their ability to manage their environmental performance. Managers, as such, are tasked with more environmental responsibilities apart from the usual expectation of improving quality, enhancing flexibility, and reducing costs and lead times (Montabon, Frank, Steven, Robert & Roger, 2000). Managers require timely information about various aspects of their operation beyond those reflected in the organisation's financial performance. Central to information managers' needs

are well-designed environmental management accounting (EMA) systems.

2. RESOURCE-BASED VIEW THEORY

The resource-based view theory (RBV) suggests that organisational resources (which include the organisations' capabilities) are the source of the organisation to stay competitive (Barney, 1991). The organisation's ability to mix up organisational resources is viewed as an environmental management accounting practice. In this case, the resources may include environmental management accounting tools or activities, environmental management systems, physical and monetary environment-related information, water, energy and raw materials, environmental management staffs, and plant and equipment used in environmental related activities. By tying up these individual resources, organisations adopting environmental management accounting practices are able to create superior value. Since environmental management accounting practice was claimed to provide more relevant information regarding environmental related themes, the practice can therefore improve the decision making by the management (Ferreira, Moulang & Hendro, 2010; Ranganathan & Ditz, 1996). Environmental management accounting practices also contribute to cost reduction especially to the organisations' environment related activities (Ann, Zailani & Abd Wahid, 2006; Sulaiman & Mokhtar, 2010). The availability of better information and the reduction of cost help to increase organisational efficiency and productivity (Chiou, Chan, Lettice & Chung, 2011). Subsequently, organisational performance can be improved (Ann, Zailani & Abd Wahid, 2006; Vries, Bayramoglu & Wiele, 2012).

3. HYPHOTHESES DEVELOPMENT

3.1. Environmental Management Accounting Practices

The idea of environmental management accounting has gained prominence for the past few decades due to the rise in environmental-related problems and issues. In general terms, environmental management accounting is defined as a system which identifies, collects, analyses,

estimates, reports, and uses information related to environmental costs to make decisions within a firm. In the contemporary world, it has become a widely used tool to balance economic, technological and social factors while developing processes and policies for a sustainable business environment.

The social accounting framework is often used to position environmental management accounting. Experts such as Parker (2000), have in fact suggest that social accounting is the process through which the influences of an organisation's environmental and social features are communicated. According to Gray, the social accounting system "as such involves extending the accountability of companies beyond the provision of financial accounts to the owners of capital (particularly shareholders)." Taking the cue further, experts such as Epstein also echoed similar opinions and said, "Social accounting and accountability, social responsibility reporting, and sustainability reporting are all terms that refer to the measurement and reporting of an organisation's social, environmental, and economic impacts" (Epstein, 2004). Although imitation proves to be difficult (for example business strategy development or quality management activities), the process of tacit capabilities allows the integration of sustainability. According to the (natural) resource-based view, this integration is then turned into strategic resource (Aragon-Correa & Sharma, 2003; Claver, Lopez, Molina & Tari, 2007). In parallel to this assertion, the integration of environmental issues has been shown to positively relate to economic performance (see Judge & Douglas, 1998; Molina-Azorin *et al.*, 2009). Hence, in relation to environmental management accounting practices, this supports the presence of organisational peculiarities. As such, organisations which are able to enhance this integration may enjoy improved performance and competitive advantage in diverse dimensions of economic performance, for instance, market performance, efficiency, image, and risk (Godfrey, Merrill & Hansen, 2009; Hart & Dowell, 2011).

The purpose of implementing environmental management accounting practices is to provide better information which cannot be provided by traditional management accounting practices (Sulaiman & Mokhtar,

2010). One of the drawbacks in the traditional management accounting practices is that these practices are unable to specifically identify the costs that are related to environmental activities (Ranganathan & Ditz, 1996). In contrast, environmental management accounting practices (EMAP) are capable of identifying the costs so that the organisation can use this information for better decision making. Thus, environmental management accounting practices will directly provide useful information that help in improving organisational performance (Sirisom & Sonthiprasat, 2011).

However, previous studies have reported managers' doubt in the ability of environmental management accounting practices to enhance organisational performance (Goh & Wahid, 2010), which may be due to the high cost in the implementation of the practices (Bansal & Bogner, 2002). This argument has also been supported in a study done by Vries, Bayramoglu and Wiele (2012), which demonstrated that environmental management accounting practices did not help organisations to enhance their performance. Nevertheless, the rest of the empirical literatures have indicated that the information produced by environmental management accounting practices allowed organisations to make decisions and then enhance organisational performance. Therefore, the following hypothesis is proposed based on the above considerations:

Hypothesis 1: EMA practice has positive relationship with organisational performance.

3.2. Competitive Advantage

The competitive advantage of a firm is defined as ways which create value for customers, which allows the firm to establish and sustain a defensible position in its product market (Flynn, Schroeder & Sakakibara, 1995). Nowadays, the public are more concerned with environmental issues. Aside from company performance, stakeholders are also looking at how companies deal with the environment. According to Welford (1998), companies which lack awareness or due care towards the environment will alter the stakeholder's opinion which will lead to the loss of business. On the other hand, companies which proactively demonstrate environmental concern and build environmental factors into their overall business strategy

can win the favour of stakeholders and attain several other benefits, such as improved image and competitiveness, support from banks and insurance companies, new and strengthened business relationships, and supply chain involvement (Schaltegger, Burritt & Peterson, 2003).

Based on the work conducted by AT&T, the USEPA (1995) reported that environmental management accounting has the potential to improve customer, societal, shareholder, employee, and government relations by exceeding environmental expectations or facilitating the expectations. As higher productivity, waste minimisation, lower health and environmental risks, and disposal cost reduction are among the remunerations of an environmentally conscious manufacturing and design (Zhang et al. 1997), then the framework provided by environmental management accounting contributes to product quality possessing the attributes that are likely to contribute to competitive advantage.

Made available through the environmental management accounting, the provision of environmental cost information may also crucially influence the relation between product quality and competitive advantage (Ranganathan & Ditz, 1996). By focusing on environmental management accounting, the literature has suggested that environmental costs can be reduced or eliminated through product redesigning or as a result of investment in greener process technology (USEPA, 1995a,b). It has also been claimed to provide a means of responding to mounting pressure for firms to track environmental costs (see Bonifant *et al.*, 1995; White & Savage, 1995; Wilmschurst & Frost, 1998; Parker, 2000). The USEPA (1995a,b) emphasised that the promotion of support firms and more accurate product costing is possible with the determinant of environmental costs in achieving a more environmentally desirable output. Judge and Douglas (1998) reported that firms can often reduce waste and hence cost through the use of environmentally preferable material substitutes. The reductions of environmental risks and disposal costs, the improvement of product quality at lower costs, and the maximisation of productivity and minimisation of wastes are among the objectives of environmentally conscious manufacturing and design (Rugman & Verbeke, 1998; Zhang, Kuo, Lu & Huang, 1997). Brady, Henson and

Pava (1999) contended that firms which are concerned over their environmental costs will create competitive opportunities. Furthermore, risks and losses may be reduced or eliminated altogether when firms are able to identify the environmental costs attached to their products, and the competitive advantage of the firms will be subsequently enhanced (Todd, 1995; USEPA, 1995a,b).

The empirical literature has reached a conclusion in that significant competitive opportunities are possible through the inclusion of environmentally friendly products (see Thornton, Kagan & Gunningham, 2003; Brady et al., 1999). It has been made evident in the literature that environmental management accounting influences the extent to which product quality affects the competitive advantage of firms. That is, a reliance on environmental management accounting is likely to result in product quality contributing to a firm's competitive advantage to a greater extent than when there is little reliance on environmental management accounting. Hence, the following hypotheses are formulated:

Hypothesis 2: EMA practice has a positive relationship with competitive advantage.

Hypothesis 3: Competitive advantage has a positive relationship with organisational performance.

Hypothesis 4: The relationship between EMA practices and organisational performance is mediated by competitive advantage.

4. METHODOLOGY

The study was conducted based on 98 hotels in the Peninsular Malaysia. Survey data were collected using the random sampling method. The items in the questionnaire were operationalized using a five-point Likert scale (1 strongly disagree and 5 strongly agree) to capture all the variables: EMA, competitive advantage and environmental performance. A section in the survey was also included to gather demographic data. The profile of the respondents is presented in Table I.

5. RESULTS

Data collected were analysed using the SmartPLS Software version 3.0 for partial least squares (PLS). PLS was considered appropriate for the research's predictive

stance on the relationships between the variables (see Roldan & Sanchez-Franco, 2012). In addition, PLS works well with a small sample size (Reinartz, Haenlein & Henseler, 2009), and is less restricted in its distributional assumption (Chin, 1998).

5.1. Profile of Respondent

Table I describes the profile of the respondents taking part in the study.

Table I
The Demographic Profile

<i>Variable</i>	<i>Descriptions</i>	<i>N</i>	<i>Percentage (%)</i>
Position	Operation Manager	37	37.8
	Finance Manager/Accountant	14	14.3
	Environmental Manager	6	6.1
	Quality Manager	15	15.3
	General Manager	12	12.2
	Others	<u>14</u>	14.3
		98	
Region	Northern	27	27.6
	Central	46	46.9
	Southern	20	20.4
	East Cost	<u>5</u>	5.1
		98	
Rating	3-star	48	49.0
	4-star	38	38.8
	5-star	<u>12</u>	12.2
		98	

5.2. Testing the Measurement Model

Before testing the hypotheses, the measurement models should be evaluated. Measurement models were used to evaluate the relationship between the indicators and the constructs, where the reliability and validity of the indicators in explaining the constructs were tested.

5.2.1. Reliability Measurement

The measurement model was evaluated to ensure there is no issue with internal consistency reliability and construct validity. One indicator which has gained popularity in measuring reliability is composite reliability.

This indicator is more prominent than Cronbach's alpha since it is considered as more accurate (Fornell & Larcker, 1981). Due to this reason, this study employed the composite reliability in measuring the internal consistency of the constructs. Table II reveals the items' loadings which recorded values exceeding Hair, Anderson, Tatham, & Black (2010) suggested cut-off of 0.5. Composite reliability depicting the extent to which the latent constructs are indicated by the construct indicators also recorded values which exceeded the recommended value of 0.7 (see Hair *et al.*, 2010) at 0.825 to 0.916 respectively.

To measure construct, convergent and discriminant validities, two assessments should be run (Hair, Hult, Ringle, and Sarstedt, 2013). The degree to which two constructs which should be related are in fact related is termed as convergent validity. The average variance extracted (AVE) which assesses the variance captured by the indicators relative to measurement error is the most common criterion used in evaluating convergent validity. To justify the use of a construct, the AVE recorded must be > 0.50 (Barclay, Thompson & Higgins, 1995). This study recorded AVE values which ranged from 0.548 to 0.639.

Table II
Measurement Model

<i>Construct</i>	<i>Item</i>	<i>Loadings</i>	<i>AVE</i>	<i>CR</i>
Environmental Management Accounting	EMA1	0.547	0.639	0.896
	EMA2	0.867		
	EMA3	0.864		
	EMA5	0.830		
	EMA6	0.843		
	Competitive Advantage	CA1		
CA2		0.665		
CA3		0.823		
CA4		0.849		
CA5		0.840		
CA6		0.797		
CA7		0.810		
CA8		0.698		

contd. table 11

<i>Construct</i>	<i>Item</i>	<i>Loadings</i>	<i>AVE</i>	<i>CR</i>
Organisational Performance	ENVP5	0.733	0.509	0.919
	ENVP6	0.751		
	ENVP7	0.797		
	ENVP8	0.780		
	OPF1	0.612		
	OPF2	0.536		
	OPM1	0.731		
	OPM2	0.733		
	OPM3	0.721		
	OPM4	0.709		
	OPM5	0.709		

^a Composite reliability (CR) = (square of the summation of the factor loadings) / {(square of the summation of the factor loadings) + (square of the summation of the error variances)}

^b Average variance extracted (AVE) = (summation of the square of the factor loadings) / {(summation of the square of the factor loadings) + (summation of the error variances)}

Note: EMA4, EMS1, EMS2, EMS4, ENVP1, ENVP2 were deleted due to low loading

Following the procedure was the assessment of discriminant validity through an examination of the correlations between the measures of potentially overlapping constructs. Discriminant validity is the extent to which items measure distinct concepts or differ among constructs. According to Compeau, Deborah, Higgins, Christopher and Huff, 1999 (1999), a stronger loading should be recorded for items on their own constructs in the model. Furthermore, each construct should record a greater average mutual variance with its own measures as opposed to the variance between the construct and other constructs.

Table III shows the correlations for each construct. It can be seen from the constructs' measurement indicators that the correlations were less than the square root of the AVE. This suggests that discriminant validity was adequate in the model. As a whole, adequate convergent and discriminant validities were demonstrated in the measurement model.

Table III
Discriminant Validity Assessment Through
Fornell-Lacker Criterion

	Competitive Advantage	EMA	Org Performance
Competitive Advantage	0.758		
EMA	0.453	0.800	
Org Performance	0.420	0.395	0.714

5.3. Testing the Structural Model

The present study employed the guideline that was proposed by Hair, Hult, Ringle, and Sarstedt (2013) to assess the structural model. According to Hair *et al.* (2013), among the few indicators that should be examined during this stage include the significance of path coefficients, the level of R² values, *f*² effect size, and Stone-Geisser's Q² value. In order to produce these values, a bootstrapping procedure with a resample of 5,000 was done.

Table IV
Hypothesis Testing

Hyp.	Description	Path Coefficient	Std Error	t-Values	Results
H1	EMA -> Org Performance	0.258	0.121	2.124*	Supported
H3	Competitive Advantage -> Org Performance	0.303	0.105	2.900**	Supported
H2	EMA -> Competitive Advantage	0.453	0.083	5.433**	Supported
H4	EMA -> Competitive Advantage -> Org Performance	0.137	0.054	2.523**	Supported

*t-value > 1.645 (p < 0.05), **t-value > 2.33 (p < 0.01)

Table V
Predictive of Relevance

Hyp.	Description	R ²	<i>f</i> ²	Q ²
H1	EMA -> Org Performance	0.229	0.095	0.094
H3	Competitive Advantage -> Org Performance		0.095	
H2	EMA -> Competitive Advantage	0.205	0.258	0.099

Tables IV and V show the results of structural model testing. In order to test the significance level, t-statistics for all paths were generated using SmartPLS 3.0 bootstrapping functions. Based on the assessment of the path coefficients, all three relationships were found to have t-value of >1.645, thus significant at 0.05 level of significance. The results showed that EMA ($\beta = 0.258, p < 0.05$) and competitive advantage ($\beta = 0.303, p < 0.01$) were positively related to organisational performance, which explained 22.9% of the variance in organisational performance. Thus, H1 and H3 were supported. The results also showed that EMA practices ($\beta = 0.453, p < 0.01$) related positively to competitive advantage, explaining 20.5% of the variance in competitive advantage. Therefore, H2 was supported. R² values of 0.229 and 0.205 which were greater than 0.13 indicated

that both were moderate in the model (see Cohen, 1989). In terms of the effect size, all *f*² values were above 0.02, signalling that all of the relationships were important. In terms of the predictive of relevance of the path model, the Stone-Geisser Q² for both endogenous variables (i.e. competitive advantage and organisational performance) were greater than zero. Hence, the model's predictive relevance was confirmed.

The mediating effect was analyzed by bootstrapping the indirect effect using 10,000 samples at 95 percent confidence interval (Preacher and Hayes, 2008). The indirect effect generated was $\beta = 0.137 (0.453 \times 0.303)$. It was significant as evidenced by the BootLLCI (LL=0.036) and BootULCI (UL=0.210), which did not contain zero and with a t-value of 2.523. As such, it is concluded that the mediator significantly mediates the relationship

between the EMA practices and the organizational performance. Thus, Hypothesis 4 was substantiated.

6. DISCUSSION AND CONCLUSION

This study which employed the RBV theory have attempted to prove the EMA, which views that an organisation's capabilities will result in competitive advantage and superior organisational performance. Findings of the study generally corroborated to that of other studies regarding the RBV theory. The study has proven that EMA practices positively related to competitive advantage and organisational performance. This finding strengthens the opinion that practicing the EMA benefits the organisation greatly. The finding also clears the doubt of some researchers and practitioners on the benefit that can be gained by implementing the EMA.

As suggested by the RBV, organisational resources which include the organisation's capabilities are the sources for competitive advantage (see Barney, 1991). In this context, EMA practices are seen as the organisation's capabilities which add to the organisation's resources to create a unique value for customers. This finding has further shown that in order to achieve competitive advantage, organisations not only require resources such as environmental values and strategic planning, but also the capabilities to tie up these resources together. The result in this study is in line with previous researchers who have stated that EMA practices are able to improve the organisation and this improvement further creates a competitive advantage for organisational performance (see Lindell & Karagozoglou, 2001; Yang, Lin, Chan & Sheu, 2010; Ambec & Lanoie, 2008).

The literature has suggested that some variables such as competitive advantage might influence the bivariate relationship between EMA practices and organisational performance (see López-Gamero, Molina-Azorín & Claver-Cortés, 2009; Saeidi & Sofian, 2014; Wang & Huynh, 2013). This theory has been proven in this study, in which the finding has supported the hypothesis that the relationship between EMA practices and organisational performance was mediated by competitive advantage. The mediating effect of competitive advantage highlights that EMA practices constitute an essential input

for the development of competitive advantage that is conducive for a better organisational performance. This therefore supported the proposition of the RBV theory (see Barney, 1991).

As discussed above, the findings of the study have highlighted some key findings for scholars and hotel managements alike. The findings have shown that practicing EMA in the hotel operation will create a competitive advantage for the organisation which will result in better performance. Therefore, this study concludes that even though the implementation of the EMA system into the hotel operation involves higher initial cost, the hotel management should nevertheless consider the advantage of implementing and practicing EMA towards the organisation. Future research is recommended to look at the factors that motivate organisations to practice EMA in the Malaysian manufacturing industry.

REFERENCES

- UNSD. Environmental Management Accounting: Procedures and Principles. New York, United Nations Division for Sustainable Development: Expert Working Group on Improving Governments Role in Promotion of EMA, (2001).
- Montabon, Frank, Steven A Melnyk, Robert Sroufe, and Roger J Calantone. ISO 14000: assessing its perceived impact on corporate performance. *Journal of Supply Chain Management* 36 (2000) 4-16.
- Barney, J. B. Firm resources and sustained competitive advantage. *Journal of Management*, 17(1991) 99-120.
- Ferreira, A., Moulang, C., & Hendro, B. Environmental management accounting and innovation: an exploratory analysis. *Accounting, Auditing & Accountability Journal*, 23(2010) 920-948.
- Ranganathan, J. & D. Ditz. Environmental Accounting: A tool for Better Management. *Management Accounting*, February, (1996) 38-40.
- Ann, G. E., Zailani, S., & Wahid, N.A. A study on the impact of environmental management system (EMS) certification towards firms' performance in Malaysia. *Management of Environmental Quality: An International Journal*, 17(2006) 73-93.
- Sulaiman, M., & Mokhtar, N. Environmental Management Accounting: Some Empirical Evidence from

- Malaysia. Malaysian Institute of Accountants, (2010) 11–51.
- Chiou, Y. Y, Chan, H. K., Lettice, F., & Chung, S. H. The influence of greening the suppliers and green innovation on environmental performance and competitive advantage in Taiwan. *Transport Research Part E: Logistics and Transportation Review*,47(2011) 822-836.
- Vries, H. J. D., Bayramoglu, D. K., & Wiele, T. V. D. Business and environmental impact of ISO 14001. *International Journal of Quality & Reliability Management*, 29(2012) 425 – 435.
- Parker, L. D. Environmental Costing: A Path to Implementation. *Australian Accounting Review*, 10(2000), 43-51.
- Aragón-Correa, J. A., & Sharma, S. A Contingent Resource-Based View of Proactive Corporate Environmental Strategy. *The Academy of Management Review*,28(2003), 71.
- Claver, E., López, M. D., Molina, J. F., & Tarí, J. J. Environmental Management and Firm Performance: A case study. *Journal of Environmental Management*, 84(2007) 606-619.
- Molina-Azorin, J. F., Claver-cortes, E., Pereira-moliner, J., & Jose Tari, J. Environmental practices and firm performance: an empirical analysis in the Spanish hotel industry. *Journal of Cleaner Production*, 17(2009) 516–524.
- Godfrey, P.C., Merrill, C.B., & Hansen, J.M. The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis. *Strategic Management Journal*,30 (2009) 425–455.
- Hart, S. L., & Dowell, G. A natural-resource-based view of the firm: Fifteen years after. *Journal of Management*, 37(2011), 1464-1479.
- Sirisom, J., & Sonthiprasat, R. Environmental Management Accounting Effect on EMS and Firm Performance. *Review of Business*, 11(2011) 127–134.
- Bansal, P., & Bogner, W. C. Deciding on ISO 14001: Economics, Institutions, and Context. *Long Range Planning*,35(2002) 269–290.
- Flynn, B. B., Schroeder, R.G. & Sakakibara, S. The Impact of Quality Management Practices on Performance and Competitive Advantage. *Decision Sciences*, 26(1995) 659-691.
- Schaltegger, S. Burritt, R. & Peterson, H. *An Introduction to Corporate Environmental Management: Striving for Sustainability*, Greenleaf Publishing, Sheffield (2003).
- U.S. Environmental Protection Agency. (1995a). *Environmental Accounting Case Studies: Green Accounting at AT&T*, Washington D.C., USEPA.
- U.S. Environmental Protection Agency. (1995b). *An Introduction to Environmental Accounting as a Business Tool: Key Concepts and Terms*, Washington, D.C., USEPA.
- Zhang, H.C., Kuo, T.C., Lu, H. & Huang, S.H. (1997). Environmentally Conscious Design and Manufacturing: A State-of-the-Art Survey. *Journal of Manufacturing Systems*, 16(1997) 352-37.
- Rugman, A. M. & Verbeke, A. Corporate Strategies and Environmental Regulations: An Organizing Framework. *Strategic Management Journal*, 19(1998) 363-375.
- Zhang, H.C., Kuo, T.C., Lu, H. & Huang, S.H. Environmentally Conscious Design and Manufacturing: A State-of-the-Art Survey. *Journal of Manufacturing Systems*, 16(1997) 352-371.
- Brady, K., Henson, P. & Fava, J.A. *Sustainability, Eco-Efficiency, Life-Cycle Management, and Business Strategy*. Environmental Quality Management, Spring, (1999) 33-41.
- Thornton, D., Kagan, R. A. & Gunningham, N. Sources of Corporate Environmental Performance. *California Management Review*, 46(2003) 127-141.
- Roldán, J. L., & Sánchez-Franco, M. J. (2012). Variance-based structural equation modeling: Guidelines for using partial least squares in information systems research. In M. Mora, O. Gelman, A. Steenkamp, & M. Raisinghani (Eds.), *Research methodologies, innovations and philosophies in software systems engineering and information systems* (2012) 193–221.
- Reinartz, W., Haenlein, M., & Henseler, J. An empirical comparison of the efficacy of covariance-based and variance-based (SEM). *International Journal of Research in Marketing*, 26(2009) 332–344.
- Fornell, C., Larcker, D.F. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 18 (1981) 39-50.
- Hair, J. F., Anderson, R. E., Tatham, R. L., and Black, W. C. *Multivariate Data Analysis* (6th ed.), Prentice Hall, Englewood Cliffs, NJ, (2010).
- Barclay, D., Thompson, R., and Higgins, C. The Partial Least Squares (PLS) Approach to Causal Modeling: Personal Computer Adoption and Use an Illustration, *Technology Studies* 2 (1995) 285-309.

- Compeau, Deborah; Higgins, Christopher; and Huff, Sid. 1999. "Social Cognitive Theory and Individual Reactions to Computing Technology: A Longitudinal Study," *MIS Quarterly*, (23) 1999.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Thousand Oaks: Sage (2013).
- Preacher, K. and Hayes, A. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(200), 879-891.
- Lindell, M., & Karagozoglou, N. Corporate environmental behavior: a comparison between Nordic and U. S. Firms. *Business Strategy and the Environment*, 10, (2001) 38–52.
- Yang, C. L., Lin, S. P., Chan, Y. H. & Sheu, C. Mediated Effect of Environmental Management on Manufacturing Competitiveness: An Empirical Study. *International Journal of Production Economics*, 123, (2010) 210-220.
- Ambec, S., & Lanoie, P. Does it Pay to Be Green? A Systematic Overview, *Academy of Management Perspectives*, 22(2008), 45-62.
- López-Gamero, Molina-Azorín, Claver-Cortés. The whole relationship between environmental variables and firm performance: competitive advantage and firm resources as mediator variables. *Journal of Environmental Management*, 90 (2009), 3110-3121.
- Saeidi S. P & Sofian S. A Proposed Model of the Relationship between environmental management Accounting and Firm Performance. *International Journal of Information Processing and Management*, 5(2014).
- Wang D. H & Huynh Q. L. Mediating Role of Knowledge Management in Effect of Management Accounting Practices on Firm Performance. *Journal of Knowledge Management, Economics and Information Technology*, III (2013).