

The Impact of Environmental Dynamism on Strategic Outsourcing Success

Mohamad Ghozali Hassan, Abdul Aziz Othman, Mohd Azril Ismail

II. RESEARCH MODEL

Abstract—Adapting quickly to environmental dynamism is essential for an organization to develop outsourcing strategic and management in order to sustain competitive advantage. This research used the Partial Least Squares Structural Equation Modeling (PLS-SEM) tool to investigate the factors of environmental dynamism impact on the strategic outsourcing success among electrical and electronic manufacturing industries in outsourcing management. Statistical results confirm that the inclusion of customer demand, technological change, and competition level as a new combination concept of environmental dynamism, has positive effects on outsourcing success. Additionally, this research demonstrates the acceptability of PLS-SEM as a statistical analysis to furnish a better understanding of environmental dynamism in outsourcing management in Malaysia. A practical finding contributes to academics and practitioners in the field of outsourcing management.

Keywords—Environmental Dynamism, Customer Demand, Technological Change, Competition Level, Outsourcing Success.

I. INTRODUCTION

IN strategic outsourcing success, Environment Dynamism (ED) has long been considered one of the important contingencies. Recently, the complexity of business environment has increased proportionally with the Customer Demand (ED), Competition Level (EC), and Technological Change (ET) [1]. Since ED stands as an important research topic here, it is therefore a need to dig deeper information out to confront the influence of environmental dynamism on Outsourcing Success (OS) thoroughly. The main objective of this research is to access how environmental dynamism affects the strategic performance of outsourcing success. Despite the abundance of literature previously, an expression of environmental dynamism in term of customer demands, competition levels, and technological changes simultaneously is considered rare in hitherto. Thus, this research proposes to investigate the effects of this environmental dynamism expression on strategic outsourcing success.

M. G. Hassan is the senior lecturer with the School of Technology Management and Logistics and the principals of student residential halls, CO 4868 Universiti Utara Malaysia (phone: 604-928-4370; e-mail: ghozali@uum.edu.my).

A. A. Othman is the senior lecturer with the School of Technology Management and Logistics and the coordinator of COB Postgraduate Programme, Universiti Utara Malaysia (phone: 604-928-7016; e-mail: abdaziz@uum.edu.my).

M. A. Ismail is the senior lecturer with the School of Technology Management and Logistics under Department Of Logistics and Transportation and the principals of student residential halls Malaysia Airlines System, Universiti Utara Malaysia (phone: 604-928-7046; e-mail: azril@uum.edu.my).

A. Environmental Dynamism

Environmental dynamism is defined as “the extent of frequency of change in technology, demand and competition” [2]. According to [3], environmental dynamism is an outcome caused by the complexity and instability of the exchange in the environment. Additionally, there are three dimensions of environmental dynamism namely technology changes, customer demands and levels of market competition. The above arguments lead to a key hypothesis:

H1. Environmental dynamism has a significant positive impact on outsourcing success.

B. Technological Change

In this research, technology change is considered as the possible technology enhancement. In other words, it is needed by novel technology which may make the current technological efforts obsolete. Following previous scholars [4], this study defines technology change as “The extent of changes in the supplier-manufacturer relationship resulting from the technology advancement within the industry”.

Technological changes that normally follow high levels of environmental dynamism can deteriorate what was once a very successful company. Through their increased reliance on manufacturing outsourcing within high levels of environmental dynamism, managers may be flexible enough to opt for alternative suppliers as technology requires. Hence, strategic outsourcing not only offers scale economies during technological changes, but also helps in coping with risk. From this viewpoint, strategic outsourcing enables predictable and organized patterns of exchange in and among firms. The above arguments lead to the first sub hypothesis that *technological change, as one of the dimensions of environmental dynamism, has a significant positive impact on outsourcing success.*

C. Level of Competition

An exchange might face different possible levels of competition in a new market. Competition levels may have different implications on the exchange partner's market strategy. Based on the definition of previous scholar [5], this study defines level of market competition as “the extent of the level the environmental entities facing a channel are dissimilar to one another and the minimal extent to which these entities are coordinated or structured”.

The above arguments lead to the second sub hypothesis that *competition level, as one of the dimensions of environmental dynamism, has a significant positive impact on outsourcing*

success.

D. Customer Demand

An exchange between supplier-manufacturer may face unsystematically fluctuating levels of customer demand for a product or product type. Based on the definition of volatility by [6], this study defines customer demand as “the extent of unanticipated changes in the forecasted volume requirements and the mix of items needed”.

Thus, a significant characteristic of cooperation in dealing with unexpected change is to overlook short-term advantage of the situation to a single party’s benefit. However, such action is easier to carry out if the firms are confident of relationship continuity and if they have the capacity to offset opportunistic behaviours and mutually share forbearance. The above arguments lead to the third sub hypothesis that *customer demand, as one of the dimensions of environmental dynamism, has a significant positive impact on outsourcing success.*

E. Outsourcing Success

In line with [7], this study defines successful outsourcing as “the extent to what implementation factors the company undertakes in order to achieve its objectives, goals and expectations”. The overall success of the outsourcing strategy’s implementation will assist firms in improving their organizational competitiveness and financial performance, decreasing their costs, and increase their capacity, productivity, efficiency, and profitability [8].

III. RESEARCH METHOD

A. Data Collection

With postal survey, it is possible to conduct data collection from a relatively huge number of individuals from varying locations in the country as it is relatively manageable as opposed to phone interviews which entail more cost and labour. Follow-up on the late respondents was carried out by resending reminders through a postal survey again or by email contact. During this stage, e-mail response may be collected where respondents are given a choice to answer the postal survey or answer the soft copy attachment sent by e-mail.

The sample comprising of 865 companies was selected to provide invaluable responses of 130-173 or at the rate of 15-20%. Some other factors were kept into consideration in the sample’s selection such as data sufficiency for data analysis, and time and resource available as recommended by [9] in sample size determination.

B. Model Specification

It is essential to configure the measurement model in an appropriate way for formative or reflective indicators because incorrect test will results in Type I and Type II errors [10]. In this research, all the indicators of each variable are modeled carefully because the various items are interchangeable. Fig. 1 presents the summary of the relationships among the constructs.

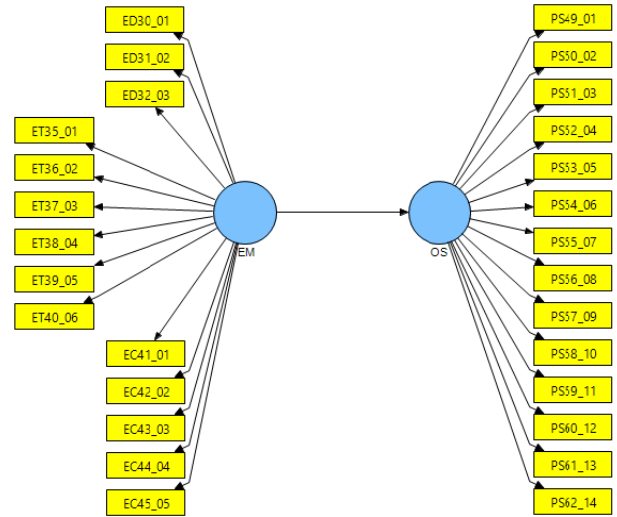


Fig. 1 Structural model

C. Internal Consistency Reliability

The Cronbach’s Alpha (CA) and Composite Reliability (CR) refer to the reliability of each variable, and were assessed through [11]. Nevertheless, CR is opted over CA as it has the ability to provide approximate variance of relevant indicators and it makes use of the related item loadings in the homological model [9]. In this research, the CR of the constructs that ranged from 0.9608 to 0.9802, are over the cut-off point of 0.70 recommended by [12]. On the other hand, CA ranged from 0.9560 to 0.9780. Both outcomes are tabulated in Table I.

Variable	CA	CR	AVE
<i>Independent variable</i>			
Environmental dynamism	0.9560	0.9608	0.6377
<i>Dependent variable</i>			
Outsourcing success	0.9780	0.9802	0.7795

D. Convergent Validity

In PLS-SEM, convergent validity refers to the range of acceptability between the measurements of the construct [13]. The variance extracted value (AVE) is often utilized for the assessment of the presence of convergent validity according to [11]. In this research, all the AVE values exceed 0.50, which lead to the variance extracted ranging from 0.6377-0.7795 indicating that the scales showed high convergent validity. The outcome of convergent validity is tabulated in Table I.

It has also been suggested that convergent validity can be established by examining the significance of the measurement items on their theoretical constructs [10]. In this research, all the reflective indicators were significant at 5% confidence interval. In other words, the entire relative constructs revealed statistical significant and subsequently, they are relevant to the estimation of their parameters [14]. Hence, the validity of the entire constructs considered in this study is confirmed and the relative outcomes reached are presented in Table II.

TABLE II
 SUMMARY OF SIGNIFICANT INDICATOR

Model construct	Indicator	T-value	Decision
Environmental Dynamism	ED30_01	13.2881	Significant
	ED31_02	13.7950	Significant
	ED32_03	12.7244	Significant
	ET35_01	15.5973	Significant
	ET36_02	48.4826	Significant
	ET37_03	44.2549	Significant
	ET38_04	39.0267	Significant
	ET39_05	28.6555	Significant
	ET40_06	47.7921	Significant
	Outsourcing Success	EC41_01	19.9847
EC42_02		13.5560	Significant
EC43_03		13.5925	Significant
EC44_04		14.0294	Significant
EC45_05		15.7745	Significant
PS49_01		20.5339	Significant
PS50_02		28.2936	Significant
PS51_03		18.1164	Significant
PS52_04		40.6393	Significant
PS53_05		50.6877	Significant
PS54_06		46.6877	Significant
PS55_07		48.2205	Significant
PS56_08		49.2194	Significant
PS57_09		60.5915	Significant
PS58_10	55.2902	Significant	
PS59_11	31.8258	Significant	
PS60_12	26.4582	Significant	
PS61_13	29.2936	Significant	
PS62_14	34.2136	Significant	

E. Indicator Reliability

The indicator reliability was examined individually with the help of outer loadings in term of their factors included in the relevant latent models [15]. The greater the level of the outer loadings, the greater will be the variance shared between the construct models compared to the error variance. In the present study, the outer loadings benchmarks should be over 0.70 following [15] recommendation. The final measurement model's outer loadings are listed in Table III.

TABLE III
 SUMMARY OF LOADING RANGE

Variable	Loading range
<i>Independent variable</i>	
Environmental dynamism	
Customer demand	0.7082-0.7312
Technological change	0.7748-0.8900
Level of competition	0.7604-0.8174
<i>Dependent variable</i>	
Outsourcing success	0.7964-0.9269

F. Discriminant Validity

Discriminate validity indicates each construct's dissimilarity within the model [13]. When the constructs achieve an AVE value of over 0.5, it is considered sufficient, indicating that there exists 50% variance of the constructs extracted in the model. Additionally, the discriminant validity in the present research is obtained when the diagonal items are

considerably higher than the off-diagonal measurements within the contingency table. The former values are computed through the square root of the AVE achieved for the entire constructs. The discriminant validity obtained was shown in Table IV.

TABLE IV
 DISCRIMINANT VALIDITY OF CONSTRUCT

	1	2
1 Environmental dynamism	0.7986	
2 Outsourcing success	0.6214	0.8829

IV. STRUCTURAL MODEL ANALYSIS

Owing to the non-requirement of assumptions for normal distribution data in PLS-SEM, structural model analysis was conducted via R square for dependent underlying variables as proposed by [16]. Furthermore, R square determines fitting model measurement according to the research hypothesis for each of the model's dependent construct. This is because R square represents the variation percentage of a construct that is explained by the model [17].

TABLE V
 R SQUARE AND REDUNDANCY

	R Square	Redundancy
Outsourcing success	0.3861	0.2969

In addition, the quality of the structural model for each endogenous variable can be measured with the help of the redundancy index. Basically, redundancy indicates the capacity of the model for the indirect estimation of its manifest variables from the relevant latent variables. The R square and the redundancy index results are shown in Table V.

V. HYPOTHESIS TESTING

The next step entailed the use of path analysis to test the key hypothesis generated, which included three sub hypotheses within.

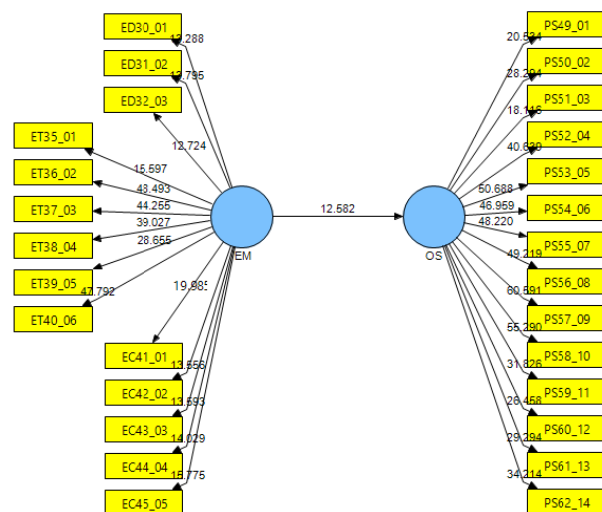


Fig. 2 Path analysis

The hypothesis testing confirmed a positive significant relationship between environmental dynamism and outsourcing success with at 1% level of significant as shown in Table VI. Fig. 2 presents a graphical view of the model together with the results of hypothesis testing.

TABLE VI
 SUMMARY OF HYPOTHESIS TESTING

Description	Result
Relationship	Environmental dynamism to outsourcing success
Path coefficient	0.6214
Mean	0.6290
Standard deviation	0.0494
Standard error	0.0494
T-statistics	12.5821
Decision	H1 is acceptable

VI. DISCUSSION AND CONCLUSION

The concept of environmental dynamism was expected to have a positive significant relationship with outsourcing success. The three dimensions of environmental dynamism are, the extent to which company faces different possible levels of competition in a market, distinct technological changes, and unsystematically fluctuating level of customer demand for a product or product type. Cumulatively, the three dimensions of environmental dynamism represent frequency of change in demand, technological change, and competition level that indicate the organizational ability to understand complexity and instability in the environment of the exchange that is required for strategic outsourcing success. All these three dimensions are required to be present in order to explain exchange environment. Therefore, customer demand, technological change and market competition have to exist to cater to customer needs in the form of unexpected changes in the environment characterizing the supplier-manufacturer exchange.

This research supports conventional views of the influence of the three dimensions of environmental dynamism (customer demands, competition levels, and technological changes) on outsourcing success. Besides, it also assessed the reliability and validity of the measures used in PLS-SEM and provides a result that exhibited both convergent and discriminant validity. Furthermore, the values of Cronbach Alpha and Composite Reliability offered supportive reliability as well. As a conclusion, the findings of this research confirmed the impact of environmental dynamics on strategic outsourcing success.

ACKNOWLEDGMENT

A special note of thank is owed to Ministry of Higher Education, Malaysia. All respectful respondents and members who assisted in this research are appreciated.

REFERENCES

[1] A. Cingoz, and A. A. Akdogan, "Strategic Flexibility, Environment Dynamism, and Innovation Performance: An empirical study," *Social and Behavioral Sciences*, vol. 99, pp. 582-589, 2013.

[2] R. Achrol, and L. W. Stern, "Environment Determinants of Decision-Making Uncertainty in Marketing Channels," *Journal of Marketing Research*, vol. 25, no. 1, pp. 36-50, 1988.

[3] J. Anderson, and B. Weitz, "Determinants of Continuity in Conventional Industrial Channel Dyads," *Marketing Science*, vol. 8, no. 8, pp. 310-323, 1989.

[4] D. Miller, P. Friesen, "Innovation in Conservative and Entrepreneurial Firms: Two models of strategic momentum," *Strategic Management Journal*, vol. 3, pp. 1-25, 1982.

[5] R. Dwyer, and M. A. Welsh, "Environmental Relationships of the Internal Political Economy of Marketing Channels," *JMR, Journal of Marketing Research*, no. 22, pp. 387, Nov. 1985.

[6] T. G. Noorderwier, G. John, J. R. Nevin, "Performance Outcomes of Purchasing Arrangements," *Journal of Marketing*, vol. 54, no. 4, pp. 80-93, 1990.

[7] R. S. Kaplan, and D. P. Norton, "The Balanced Scorecard: Measures that drive performance," *Harvard Business Review*, vol. 70, pp. 71-79, 1992.

[8] D. Elmuti, "The Perceived Impact of Outsourcing on Organizational Performance," *Mid-American Journal of Business*, vol. 18, no. 2, pp. 33-37, 2003.

[9] J. F. Hair, W. C. Black, B. J. Babin, R. E. Anderson, and R. L. Tatham, *Multivariate Data Analysis*. 6th ed. Uppersaddle River, New Jersey: Pearson Education International, Inc., 2006.

[10] P. B. Lowry, and J. Gaskin, "Partial Least Squares (PLS) Structural Equation Modeling (SEM) for Building and Testing Behavioral Causal Theory: When to choose it and how to use it," *IEEE Transactions on Professional Communication*, vol. 57, no. 2, pp. 123-146, 2014.

[11] C. Fornell, and D. Larcker, "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *J. Mark. Res.*, vol. 18, pp. 39-50, 1981.

[12] J. Nunnally, *Psychometric Theory*. 2nd ed. New York: McGraw-Hill, 1978.

[13] E. Carmines, and R. Zeller, *Reliability and Validity Assessment*. Beverly Hills (CA): Sage, 1979.

[14] W. S. Chow, and L. S. Chan, "Social Network and Shared Goals in Organizational Knowledge Sharing," *Inf. Mang.*, vol. 45, no. 7, pp. 24-30, 2008.

[15] J. Hulland, "Use of Partial Least Squares (PLS) in Strategic Management Research: A Review of Four Recent Studies," *Strategic Management Journal*, vol. 20, no. 2, pp. 195-204, 1999.

[16] J. Cohen, *Statistical Power Analysis for the Behavioral Sciences*. Hillside, HJ: L. Erlbaum Associates, 1988.

[17] B. H. Wixom, and H. J. Watson, "An Empirical Investigation of the Factors Affecting Data Warehousing Success," *MIS Quarterly*, vol. 25, no. 1, pp. 17-41, 2001.