



PLS-SEM Approach to Second-order Factor of Entrepreneurial Orientation: The Moderating Role of Culture

Oswald Timothy Edward

Faculty of Business Management, Universiti Teknologi MARA Segamat, Johor
Corresponding Email: oswaldte@gmail.com

Abstract

Increasing challenges posed by globalization, liberalization, technological advances and explosive growth of information, make it critical for every firm to be entrepreneurial oriented. Past studies have shown that firms which display relatively high levels of innovation, risk-taking and proactive behaviour are known to have entrepreneurial orientation (EO), hence positively affect growth. This study investigates an integrated and complex relationship between entrepreneurship and performance by using partial least squares structural equation modelling (PLS-SEM). EO is tested with second-order factors comprised of innovativeness, proactiveness and risk taking propensity. In this survey, the consequences of EO to business performance of firms is examined in a sample of middle-level managers within the public listed companies in Malaysia. Consequently, the finding suggests that EO is in its initial stage; there is a significant correlation between the degree of EO and performance of firms; and cultural value is determinant in the degree of EO-performance relationship.

Keywords: *Entrepreneurship, Entrepreneurial Orientation, Corporate Entrepreneurship*

1. Introduction

Entrepreneurship has long been viewed as an engine that drives innovation and promotes economic development (Kuratko and Hodgetts, 2004). In today's intensifying global competition, increasing interdependence, rapid technology development, unstable environments, and many other factors have highlighted the need for organizations to become more entrepreneurial in order to survive and prosper (Lisboa, Skarmeas, & Saridakis, 2016; Zhang, Edgar, Geare, & O'Kane, 2016; Dess, Lumpkin, and McGee 1999). Many observers believe that an organization's survival and success require continuous organizational renewal, innovation, and risk-taking, which in turn require the conceptualization and pursuit of new opportunities (Miller 1983).

We have only a limited understanding of why rates of entrepreneurship vary cross-nationally (Valliere, 2017; Oswald, 2016). Essentially, scholars have a limited understanding about why entrepreneurial oriented firms are more successful in one country than in another (Shane, 1992). Anomalous evidence has accumulated regarding the direct and indirect influence of EO on performance. Interestingly, most of the inconsistent findings have emerged in non-U.S. contexts that have distinctive cultures and economic infrastructures. This inconsistency implies that underlying forces of culture may have masked the direct performance effects of EO in other cultures. In other words, culture may moderate the influence of entrepreneurial orientation on performance.

Thus, in today's extraordinarily competitive and unstable environment, organizations' success, including that of public listed companies, requires purposeful adaptation and accommodation to their culture – environmental factor. To what extent this factor can moderate the relationships between the EO and performance in a non-Western setting has yet to be examined. This study will

examine the moderating role of culture on entrepreneurial orientation's effects on public listed firms' performance in non-Western business environment.

Therefore, it is the main interest of this study to investigate the relationship between EO and firm's performance. Specifically, this article attempts to contribute to the literature by addressing the following research questions:- (1) what is the state of EO in Malaysia?; (2) do entrepreneurial orientation influence the performance of firms in Malaysia?; and (3) to what extent does culture moderate the effects of entrepreneurial orientations on the performance of public listed firms in Malaysia. To accomplish these objectives, the study draws from: (1) the evolving entrepreneurial orientation theory from marketing and strategic management literature (Morris and Paul 1987; Covin and Slevin's 1989; Miles and Arnold 1991); (2) the national culture theory from sociology, management, and marketing literature (Almond and Powell 1968; Hofstede 1980; Narvar and Slater 1990).

The next section provides a brief literature on EO and culture. The section is followed by an explanation of the research method employed in this study, and the analysis of the result in detail. Implications and conclusion are presented in the last section.

2. Literature review

The EO concept which is the processes that managers use in determining how a new business is undertaken, has its origins in the strategy literature (Lumpkin and Dess, 1996). For example, in 1973, Mintzberg posited three types of strategy making: entrepreneurial, planning, and adaptive. Miller (1983) appears to offer the earliest operationalisation of the EO concept. Miller clarifies the construct of EO when he defines an entrepreneurial firm as one that "engages in product marketing innovation, undertakes somewhat risky ventures, and is first to come up with

proactive innovations, beating competitors to the punch.” (Miller, 1983).

From a marketing perspective, Morris and Paul (1987) define EO as a propensity of a company’s top management to take calculated risks, to be innovative, and to demonstrate proactiveness. Webster (1981) views EO as an essentially more proactive marketing orientation. Morris and Paul (1987) perceive marketing as a means of achieving corporate entrepreneurship. Slater and Narver (1994) view entrepreneurial orientation as complementary to marketing orientation, where a firm needs both in order to achieve maximum effectiveness.

Researchers make studies on EO on a basis of multiple dimensions, which mainly include innovativeness, risk-taking, and proactiveness (e.g., Covin & Slevin, 1986; Dess & Lumpkin 2005; Lumpkin & Dess, 1996). EO refers to the organizational processes, methods, styles, practices, and decision-making activities employed by entrepreneurs that lead to new entry (Covin, Green & Slevin, 2006; Dess & Lumpkin, 2005; Lumpkin and Dess 1996, 2001; Stevenson and Jarillo 1990; Wiklund & Shepherd, 2005). Therefore, an organization with an EO could, thus, be defined as an entrepreneurial organization (Covin & Slevin, 1990).

Researchers make studies on EO on a basis of multiple dimensions, which mainly include innovativeness, risk-taking, and proactiveness (e.g., Covin & Slevin, 1986; Dess & Lumpkin 2005; Lumpkin & Dess, 1996). EO refers to the organizational processes, methods, styles, practices, and decision-making activities employed by entrepreneurs that lead to new entry (Covin, Green & Slevin, 2006; Dess & Lumpkin, 2005; Lumpkin and Dess 1996, 2001; Stevenson and Jarillo 1990; Wiklund & Shepherd, 2005). Therefore, an organization with an EO could, thus, be defined as an entrepreneurial organization (Covin & Slevin, 1990).

The influence of culture in an organization surfaces through key managers who tend to see themselves, and are perceived by others, as champions of the culture they represent (Bloodgood, Sapienza, and Almeida 1996). Such roles played by key executives are further evident from the assertion that organizations are reflections of the values and beliefs of powerful actors (Hambrick and Mason 1984). These key organizational leaders perceive organizational practices through the lens of their cultural orientation (Schein 1996). More specifically, they are likely to have all-out faith, motivation, and commitment toward an organizational practice given that it fits with the underlying values of their national culture (Amabile et al. 1996).

In contrast, any incongruity between the inherent values of the culture and an organizational practice will weaken the organization leaders' faith in that organizational practice. In essence, key decision-makers' cultural orientations may enhance or diminish the impact of organizational practices on organizational performance (Ralston et al. 1995). This contention is theoretically supported by the practice-culture fit paradigm (Schoonhoven 1981; Newman and Nollen 1996) which purports that certain cultural profiles correspond with certain organizational practices. That is, the performance effects of certain management practices are dependent on the co-alignment between the practices and the culture (Roth 1995).

In light of the literature review, it is posited that high degree of innovativeness, proactiveness and risk taking will improve performance of firms. Further, it is argued that culture acts as a contextual moderator that conditions the extent to what degree entrepreneurial orientation influence firm performance. Specifically, it is expected the performance-enhancing effects of EO to be stronger for firms with cultural value of high individualism. Therefore, the following hypotheses are proposed:

Hypothesis 1: the greater the degree of firms’ entrepreneurial orientation, the higher the business performance of firms.

Hypothesis 2: entrepreneurial orientation will have a stronger relationship with performance in firms that have higher individualism than with firms with lower individualism.

3. Methodology

This study seeks to define the integrated yet complex relationships among the EO, performance and cultural value. In order to examine the hierarchical models, this study employs quantitative analysis using partial least squares structural equation modelling (PLS-SEM) in a second-order factor structure. This second-order factor modelling can enhance the conceptualization and estimation of the overall model through the underlying commonality among its first-order dimensions (Chin, 1998). Thus, it offers both greater flexibility and parsimony in specifying model constructs (Chin, 1998).

The structure can be constructed as the entrepreneurial orientation (EORI) is determined by three first-order factors i.e., innovativeness (INNOV), proactiveness (PROAC) and risk-taking propensity (RISKT). The individualism internal (CINDI) and individualism external (CINDX) form the second-order construct of cultural value (CULTRE). In addition, environmental competitiveness (ENVC) and environmental dynamism (ENVD) are treated as control variables. The relationships among EO, performance (PERFM) and cultural value are laid out schematically in Figure 1.

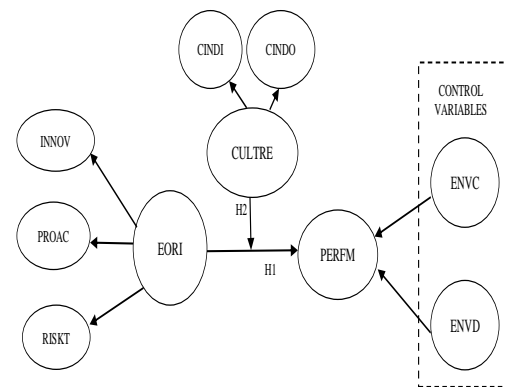


Figure 1: Research Model of the Study

In the research model, partial least squares structural equation modelling (PLS-SEM) was used to measure each variable based on multiple indicators. This technique is also referred to as “latent variable measurement” (Ketkar et al., 2012). It allows for the inclusion of higher-order variables (hierarchical component model). Thus, the first-order latent variables (measurement model) can be represented as the loading of the second-order latent variable (structural model) (Wetzels et al., 2009). Consequently, EO as the second-order latent variable consists of three first-order factors: innovativeness, proactiveness, and risk-taking propensity. The variable of cultural value can also be constructed as second-order latent variables consists of two first-order factors: individualism internal and individualism external.

The measures used in this study was selected from established sources, rather than being an explanatory study that generates its own items. Stratified proportionate random sampling was adopted for this study. The total population of the public listed companies was stratified into two categories i.e. industry and location to which they belong to. Industry was further categorized into 7 sub-categories whereas, the strata of location was further categorized into 3 sub categories. Finally, following a systematic random selection procedure, a total sample of 469 was proportionately compiled in which 164 useable responses received.

Data was initially analyzed using t-tests to see if there were any significant differences in the mean values of the constructs between the two timing of survey distribution (i.e., early response and late response). The results show that there were no significant differences between early response and late response. Exploratory factor analysis (EFA) was subsequently performed to determine factorial validity of the items. The EFA was conducted using principal component analysis extraction with oblique rotation. The

result from the EFA was used as a basis for the development of the latent constructs in subsequent analyses.

Partial least square structural equation modeling (PLS-SEM) was later used to test the full research model, which included environmental factors (ENVD & ENVC) as control variables. In this study, the PLS regression mode was used to reduce the potential for the collinearity effect. A two-step approach to PLS-SEM was used in the analysis following suggestions by Anderson and Gerbing (1998) and Hair Jr et al. (2011). This step requires assessments on the measurement and the structural models. WarpPLS version 5.0 was used in this study.

4. Results and discussion

The PLS-SEM was used to test the proposed research model. This method evaluates the predictive power of the independent variables by looking at the standardized partial regression coefficients (β), and evaluates the explanatory power of the entire model by looking at the coefficient of multiple determinations (R^2). The results of β coefficients together with the corresponding level of significance and the R^2 of the dependent variables are depicted in Figure 2.

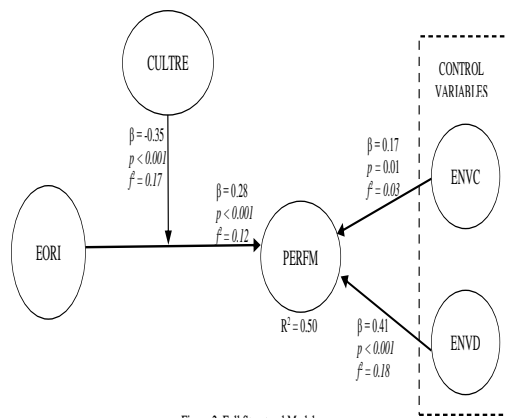


Figure 2: Full Structural Model

A principal component analysis (PCA) with oblique rotation was run as an initial test on item correlations. 5 components were extracted based on an eigenvalue more than 1. These included 1 component culture (CULTR); 1 component of the entrepreneurial orientation (EORI); 1 component of performance (PERFM); and 2 components of environmental factors (ENVC) & (ENVD). For PERFM, 7 items loaded into 1 component. For CULTR, 13 items loaded into 1 distinct component, i.e., individualism. For (ENV), 9 items loaded into 2 distinct components, i.e., competitiveness (ENVC) comprised of 5 items and dynamism (ENVD), of 4 items. As for innovativeness (3 items), proactiveness (3 items) and risk taking (3 items), all 9 items were loaded into 1 component i.e. entrepreneurial orientation (EORI). The PCA results for innovativeness, proactiveness and risk taking suggest that it is a uni-dimensional construct or a single construct. This corroborates indications from previous studies.

The measurement model was assessed. Individual item reliability was confirmed, with item standardized loading on the parent factor achieving a minimum value of 0.50. Convergent validity was also achieved with significant items loading (p -value < 0.001). Further, convergent validity was also confirmed with composite reliability for all latent constructs of more than 0.70 and average variance extracted (AVE) of more than 0.50.

The instrument's reliability was demonstrated with sufficient Cronbach's alpha of more than 0.70 and a variance inflation factor (VIF) of less than 5. The measurement model also demonstrated sufficient discriminant validity with square root of AVE of latent constructs exceeding their respective inter-construct correlation.

The construct was maintained as two distinct constructs based on a VIF assessment of less than 5 and AVE of more than 0.50.

A full structural model, shown in Fig. 2, was run for a full dataset. The structural model was assessed based on coefficient of determination (R^2), predictive relevance (Q^2), effect size (f^2) and magnitude and sign (β) and p -value of the path coefficient. The full structural model showed that the predictor accounted for 50% of variation in PERFM ($R^2 = 0.50$) after controlling for environmental competitiveness (ENVC) and effects of environmental dynamism (ENVD). According to Chin (1998), R^2 of this magnitude is considered above average and almost substantial. A Stone-Geisser test also showed that the model has sufficient predictive relevance ($Q^2 = 0.45$). These R^2 and Q^2 figures indicate a fairly predictive model. The result further showed that structural paths leading from the predictor (EORI) to the criterion (PERFM) was significant, with moderate magnitude and moderate effect size ($\beta = 0.28$, $p < 0.001$, $f^2 = 0.12$). Hence, Hypothesis 1 is supported.

With respect to Hypothesis 2, the contingency effects of culture on the entrepreneurial orientation-performance relationship was considered in PLS-SEM. The moderating analysis was run on the full sample. First, to analyze the moderating effects, it was tested whether the path coefficients capturing the moderating effects differed significantly from zero (Henseler and Fassott, 2010). Second, the strength of the identified moderating effects was assessed using the effect size (f^2). The result in Figure 1 shows that the impact of entrepreneurial orientation on performance measures varies with the culture. The effect of entrepreneurial orientation (EORI) on the firm's performance (PERFM) turns negative i.e. the less individualism a person cultural orientation (CULTR) is (interaction effect $\beta = -0.39$, $p < 0.001$). To determine the strength of the moderating effects, we calculated the effect size (Cohen, 1988). Consequently, we compared the proportion of the variance explained (as expressed by the coefficient of determination R^2) of the main effect model with the R^2 of the full model, which includes the moderating effects. The effect size for entrepreneurial orientation is $f^2 = 0.20$. Thus, the moderating effects have almost strong effect sizes, as effect sizes of 0.02 may be regarded as weak, effect sizes from 0.15 as moderate and above 0.35 as strong (Cohen, 1988). Hence, Hypothesis 2 is supported.

5. Conclusion

Dess and Lumpkin (2005) have requested researchers "to consider what factors increase or diminish the EO-firm performance relationship." The review of the literature points out that an EO firm not only needs employees perceiving opportunities, but needs as well employees actually behaving entrepreneurial upon the discovery of such an opportunity. Consequently, an EO firm needs people who execute, that are people who are not only capable of perceiving opportunities but who strive to exploit opportunities.

In addition, the theory behind EO is applicable not only to firm behaviour, but also to the process of entrepreneurial development at the societal level of countries. Whether or not certain societies actually experience an abundance of entrepreneurship does not depend solely on their cultural foundations. Rather, entrepreneurship depends upon the unique blend of cultural factors and country's institutional profile that together combine to foster (or not) a strong EO. More specifically, entrepreneurial oriented firms in Malaysia will track and respond to changes in their environments through innovativeness, proactiveness, and risk-taking.

Therefore, this article sets the stage for the decision-makers in developing countries like Malaysia in searching for answers to questions such as: (1) If EO plays pivotal roles in the achievement of superior business performance, then what are the factors that drive or hinder entrepreneurial-oriented activities?; (2) Can organizations operating in developing countries achieve superior performance by implementing the EO like their counterparts in the

United States and other developed countries? And; (3) What are the moderating roles of national culture on the impact of EO on business performance? Without answering these questions, managers in developing countries such as Malaysia cannot initiate organizational change processes directed at building EO in enhancing performance. Empirical research along this line would give us a more comprehensive picture of entrepreneurial orientation-performance relationship and allow a more detailed insight on the role of culture on the effect of EO-performance for sustainable growth.

References

- [1] Almond, G.A. and G.B. Powell. (1968). *Comparative Politics: System, Process and Policy*. Boston: Little Brown and Co.
- [2] Amabile, T., R. Contri, H. Coon, J. Lazenby, and M. Herron. (1996). Assessing the Work Environment for Creativity, *Academy of Management Journal*, v. 39 (5), 1154-1184
- [3] Anderson, J.C. and Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach, *Psychol. Bull.* 103, 411-423.
- [4] Bloodgood, J., H. Sapienza, and J. Almeida. (1996). The Internationalization of New High Potential Ventures: Antecedents and Outcomes, *Entrepreneurship Theory and Practice*, v. 20 (Summer): 61-76.
- [5] W.W. Chin, W.W. (1998). Issues and opinion on structural equation modelling. *MIS Quart.* 22, 7-16.
- [6] Cohen, J., (1988). *Statistical Power Analysis for the Behavioral Sciences*. Lawrence Erlbaum Associates, Inc., Hillsdale.
- [7] Covin, J. G., and Slevin, D. P. (1986). The Development and Testing of an Organisational-level Entrepreneurship Scale. In R. Ronstadt, J. A. Hornaday, R. Peterson, and K. H. Vesper (Eds.), *Frontiers of Entrepreneurship Research*, 628-639.
- [8] Covin, J. G., and Slevin, D. P. (1989). Strategic Management of Small Firms in Hostile and Benign Environments. *Strategic Management Journal*, 10, 75-87.
- [9] Covin, J. G., and Slevin, D. P. (1990). New Venture Strategic Posture, Structure, and Performance: An Industry Life Cycle Analysis. *Journal of Business Venturing*, 6, 123-135
- [10] Covin, J. G., and Slevin, D. P. (1991). A Conceptual Model of Entrepreneurship as Firm Behaviour. *Entrepreneurship Theory and Practice*, 16(1), 7-25.
- [11] Covin, J.G., Green, K.M. & Slevin (2006). Strategic Process Effects on the Entrepreneurial Orientation-Sales Growth Rate Relationship. *Entrepreneurship Theory and Practice*, 57-81.
- [12] Dess, G. G., G. T. Lumpkin, and J. E. McGee. (1999). Linking Corporate Entrepreneurship to Strategy, Structure, and Process: Suggested Research, *Entrepreneurship Theory and Practice*, v. 23 (3): 85-102.
- [13] Dess, G.G. & Lumpkin, G.T. (2005). The role of entrepreneurial orientation in stimulating effective corporate entrepreneurship. *Academy of Management Executive*, 19 (1): 147-156
- [14] Hair, J.F., C.M. Ringle, and M. Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet, *Journal of Marketing Theory & Practice*. 19, 139-151.
- [15] Hambrick, D. C. and P. A. Mason. (1984). Upper Echelons: The Organization as a Reflection of its Top Managers, *Academy of Management Review*, v. 9: 193-206.
- [16] Henseler, J., Fassott, G., 2010. Testing moderating effects in PLS path models: an illustration of available procedures. In: Esposito Vinzi, V., Chin, W.W., Henseler, J., Wang, H. (Eds.), *Handbook of Partial Least Squares*. Springer, Berlin, pp. 713-735.
- [17] Ketkar, S., Kock, N., Parente, R., & Verville, J. (2012). The impact of individualism on buyer-supplier relationship norms, trust and market performance: An analysis of data from Brazil and the U.S.A. *International Business Review*, 21, 782-793.
- [18] Kuratko, D.F., Hodgetts, R. (2004). *Entrepreneurship, Theory, Practice*, 6th Edition, Thomson/South-Western: London.
- [19] Lumpkin, G. T., and Dess, G. G. (1996). Clarifying the Entrepreneurial Orientation Construct and Linking It to Performance. *Academy of Management Review*, 21 (1), 135-172.
- [20] Lumpkin, G.T. & Dess, G.G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and life cycle. *Journal of Business Venturing*, 16 (5):429-451.
- [21] Miles, M. R., and Arnold, D. R. (1991). The Relationship between Marketing Orientation and Entrepreneurial Orientation. *Entrepreneurship Theory and Practice*, 15(4), 49-65
- [22] Miller, D. (1983). The Correlates of Entrepreneurship in Three Types of Firms. *Management Science*, 29, 770-791.
- [23] Mintzberg, H. (1973). Strategy-Making in Three Modes. *California Management Review*, 16(2), 44-53.
- [24] Morris, M. H., and Paul, G. W. (1987). Innovation in Conservative and Entrepreneurship Firms. *Journal of Business Venturing*, 2, 247-259.
- [25] Narver, J. C. and S.F. Slater. (1990). The Effect of a Market Orientation on Business Profitability, *Journal of Marketing*, (October): 20-35.
- [26] Newman, K. L. and S. D. Nollen. (1996). Culture and Congruence: The Fit Between Management Practices and National Culture, *Journal of International Business Studies*, v. 27 (4): 753-779.
- [27] Oswald, T. E. (2008). Entrepreneurial Orientation: A critical review of literature. In *Selection of Research Paper in Social Sciences and Management*. Shah Alam, Selangor: UPENA.
- [28] Ralston, D., D. Holt, R. Terpstra, and Y. Cheng. (1995). The Impact of Culture and Ideology on Managerial Work Values: A Study of the United States, Russia, Japan, and China, *Academy of Management Journal*, v. 55: 187-190
- [29] Roth, M. (1995). The Effects of Culture and Socioeconomic on the Performance of Brand Image Strategies, *Journal of Marketing Research*, v. 32 (May): 163-175
- [30] Schein, E. H. (1996). Culture: The Missing Concept In Organization Studies, *Administrative Science Quarterly*, v. 41 (2): 229-240
- [31] Schoonhoven, C. B. (1981). Problem With Contingency Theory: Testing Assumptions Hidden Within the Language of Contingency Theory, *Administrative Science Quarterly*, v. 26: 349-377.
- [32] Shane, S. (1992). Why Do Some Societies Invent More Than Others? *Journal of Business Venturing*, v. 7 (January): 29-46.
- [33] Stevenson, H. H., and Jarillo, J. C. (1990). A Paradigm of Entrepreneurship: Entrepreneurial Management. *Strategic Management Journal*, 11, 17-27.
- [34] Webster, F. E. (1981). Top Management's Concerns about Marketing: Issues of the 1980's. *Journal of Marketing*, 45, 9-16.
- [35] Wetzels, M., Odekerken-Schroder, G., & van Oppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration. *MIS Quarterly*, 33(1), 177-195.
- [36] Wiklund, J., and Shepherd, D. (2005). Entrepreneurial Orientation and Small Business Performance: A Configurational Approach. *Journal of Business Venturing*, 20, 71-91.
- [37] Zahra, S.A. and Covin, J.G. (1995). Contextual Influences on the Corporate Entrepreneurship-Performance Relationship: A Longitudinal Analysis. *Journal of Business Venturing*, 10, 43-58. Aljaaidi, K. S., Manaf, N. A. A., & Karlinsky, S. S., 2011. Tax evasion as a crime: A survey of perception in Yemen. *International Journal of Business and Management*, 6(9): 190-201.