Empirical Review on Innovation-performance Linkage in Malaysian Manufacturing Small And Medium Enterprises

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ABSTRACT

Small and medium enterprises (SMEs) have demonstrated significant impact on the overall economic performance of Malaysia. Nevertheless, it has not reached their full potential. It is vital to comprehend its drivers in order to improve the production of SMEs. Previous studies discovered that organizations with better innovative behavior often instigate changes which could influence organizational's performance. Hence, this study seeks to explore the relationship between organizational innovation (OI) and organizational performance (OP) of Malaysian SMEs. For that reason, this article does not only analyze the concept of OI and OP, but also the linkage between both concepts at the end of the findings. Data from SMEs in manufacturing sectors were collected. Data from the respondents were assembled using a total of 321 self-administered questionnaires. The hypotheses were tested using Smart PLS 2.0. As a conclusion, a positive relationship was displayed between OI and OP. This study will be helpful for future researchers, entrepreneurs and policy makers in grasping the value of OI towards boosting SMEs performance.

Keywords: Organizational Innovation, Organizational Performance, Small and Medium Enterprises
JEL Classification: M1

1. INTRODUCTION

The Economic Census 2011: Profile of small and medium enterprises (SME Census 2011) indicates that the Malaysian SMEs represent the lion share of the businesses with 97.3% SMEs controlling the total business establishments in Malaysia. Some 59% employment opportunities were offered by the SMEs and they contribute about 32% to the gross domestic product (GDP) as well as 19% to the total export in 2010. Nevertheless, the Malaysian SMEs have still a long way towards achieving the targets set in the SME Masterplan. According to this plan, SMEs are expected to provide 62% of the total employment, 41% of the GDP, and 25% of the total export by 2020 (NSDC, 2012b).

The existing environment characterized by rapid changes in global businesses and the continuing liberalization pressures triggered by economic and financial crises have brought about new challenges as well as opportunities for Malaysian SMEs. To improve the

performance of SMEs, understanding its drivers is crucial. With the launch of the SME Masterplan 2012-2020, SMEs have to take a new approach to boost their growth by focusing on productivity and innovation. One of the pivotal factors that is considered influential in the Malaysian SMEs performance, notably in driving its productivity, is innovation (NSDC, 2012a).

However, comparative studies indicated that the innovation level of Malaysian firms was far below that of the high-income countries and even at par or higher than that of the middle-income countries (NSDC, 2012b). Many SMEs do not participate irrespective of the implementation of various initiatives to create a national innovation system to facilitate innovation. SMEs also do not have sufficient manpower, funds, and time to conduct research and development (R and D) activities and product commercialization. Upgraded technology is likewise viewed as a cost instead of an investment which results in poor technology commitment by SMEs (NSDC, 2012b). Therefore, to address this constraints,

the entrepreneur or owners/managers of SMEs should have the advantage of innovation to compete with larger established businesses in order to perform better in business (Rosenbusch et al., 2011). Taking this fact into account, this study seeks to examine the relationship between organizational innovation (OI) and organizational performance (OP).

2. LITERATURE REVIEW

2.1. OP

OP is probably the most complex and subjectively described phenomenon. Scores of research in the field of organizational studies have been carried out using OP as a dependent variable (Brewer and Selden, 2000; March and Sutton, 1997) as it concerns primarily with effectiveness, productivity, efficiency, or excellence. The performance of an organization is an area of a particular interest to stakeholders including owners, investors, suppliers and employees (Madrid-Guijarro et al., 2007) because strong performance supports growth and profitability of the organizations. When a firm performs well, it means that the stakeholders will benefit, as well as the surrounding community, particularly through the attraction of resources and employment opportunities. In contrast, low-performing firms are often not competitive enough and have financial problems that can lead to stagnation or failure (Madrid-Guijarro et al., 2007). Therefore, an inspection of a firm performance is needed in light of environmental changes and uncertainty. This is because gaining a good understanding on how SMEs achieve high performance will have significant implications for SME owners/managers, SME employees and the economy where the SME operates (Wolff and Pett, 2006).

Hence, within the context of this study, and following Ahmad et al. (2011), this study conceptualized OP as the extent to which owners/managers of SMEs perceive their OP in four dimensions, namely, (1) Satisfaction with financial performance such as profitability, sales turnover, sales growth, return on investment and market share, (2) Satisfaction with non-financial performance such as customer satisfaction, customer retention, relationship with suppliers, business image, workplace industrial relations and work-life balance, (3) Performance relative to competitors in terms of return on sale, cash flow, net profit, market share and return on investment, and (4) Business growth in terms of changes in sales, market share and cash flow (Ahmad et al., 2011).

Next, to further understand the concept of OP, the following sections discuss the concept of OI and its relation to OP.

2.2. OI

Research on OI has been so popular in the past few years, and it remains to be prolonged in the academic field (Damanpour and Gopalakrishnan, 1998). In a general sense, OI is normally described as "the adoption of a new idea or behavior by an organization" (Daft, 1978. p.197). It refers to the process that generates, develops and implements new ideas or behavior, to the organization during the period of adoption (Damanpour, 1991; Damanpour and Evan, 1984; Damanpour and Gopalakrishnan, 1998). This definition includes a wide range of innovation in every aspect of the organization, such as devices, systems, processes,

policies, procedures, programs, products or services that are widely available. Thus, innovation covers fresh ideas or implementation or development of behavior, which includes products or services, new technologies in the manufacturing process, the new administration system or structure, or a new plan or program to link the members of the organization (Damanpour, 1991). In other words, it is a process of changing an organization to adapt to the internal or external environment so that the organization can perform better (Damanpour, 1991).

Organizations that actively innovate, whether in new product or services, a new production of technology, a new structure or administrative system, benefit in terms of performance (Damanpour and Gopalakrishnan, 2001; Damanpour and Schneider, 2006). Innovation is crucial in distinguishing a firm from competitors and might be able to generate a firm's competitive advantage (Lee et al., 2001). Based on the various definitions of innovation and following Che-Ha and Mohd-Said (2008; 2012) and Damanpour (1991), this study conceptualized organizational innovation as the extent to which the owners/managers of SMEs perceive that the process of accepting, adopting and implementing new ideas in the organization is described by product, process and managerial innovations.

2.3. Relationship between OI and OP

OI demonstrates a strong influence on OP (Kitapci et al., 2012; Lee and Hsieh, 2010; McDermott and Prajogo, 2012; Rosenbusch et al., 2011). The capability of an organization to innovate allows a diversity of strategies and opportunities to be pursued in order to enhance growth and survival. An organization that emphasizes innovation activities have higher impact on their employees' sense of commitment and productivity (Rosenbusch et al., 2011; Zhou et al., 2005). Therefore, ability to innovate can be an effective strategic capability for SMEs to address problems related to small size and new ventures. Literature indicates that SMEs that cultivate innovation can have better performance than those mainly focusing on the creation of innovative products and services (Rosenbusch et al., 2011). Indeed, some scholars argue that firms will be more successful in responding to their environment if they have greater capacity to innovate (e.g. Avlonitis and Salavou, 2007; Calantone et al., 2002; Hult et al., 2004; Keskin, 2006; Rhee et al., 2010). This enables SMEs to develop new capabilities that can lead to competitive advantage and ultimately, achieve superior performance. Thus, the following hypothesis was developed:

H_1: OI is positively related to OP.

3. METHODOLOGY

3.1. Population and Sample Size

This study focused on SMEs in manufacturing sectors, which referred to firms in manufacturing, manufacturing-related services and agro-based industries with full-time employees between 5 and not exceeding 150 in West Peninsular of Malaysia (Kedah, Penang, Selangor, Wilayah Persekutuan and Johor). The list of companies is based on the SME Corp. directory (SME Corp. Malaysia, 2012). The manufacturing sector was selected because it contributed to the highest growth of 7.6% to SME GDP growth in 2011 in comparison to the agricultural and service sectors (each 6.4%) (NSDC, 2012a)

as well as much higher in average productivity than other sectors (NSDC, 2012b). Only 332 firms turned up as a sample and 321 usable questionnaires were analyzed. Respondents of this study were the owners/managers who were the top management of a firm. They were considered the representatives of the company and had the most extensive knowledge of the issues under investigation.

3.2. Instrument Development

In this study, a scale adapted by Ahmad et al. (2011) that includes four dimensions of perceived OP (Ahmad et al., 2010; Ahmad et al., 2011; Gholami et al., 2013; Rai et al., 2006) was utilized. The four dimensions are; (1) Satisfaction with financial performance, (2) Satisfaction with non-financial performance, (3) Performance relative to competitors, and (4) Business growth. Meanwhile, the items of OI were adapted from Che Ha and Mohd Said (2012), which comprise managerial innovation, product innovation and process innovation.

3.3. Data Analysis

The data were analyzed using Smart PLS 2.0.M3 (Ringle et al., 2005). There are two-staged processes involved: The assessment of the reliability and validity of the measurement model and the assessment of the structural model. The research model of this study is as Figure 1, which displays the loading for each item and β values for this study.

4. FINDINGS

4.1. Assessment of the Measurement Model

Confirmatory factor analysis was carried out to assess convergent validity and discriminant validity of the instruments. To assess the convergent validity, factor loadings, composite reliability (CR) and the average variance extracted (AVE) were determined. Table 1 exhibits the convergent validity, which revealed all the item loadings exceeded the recommended value of 0.5 (Hair et al., 2010). The loadings range from 0.604 to 0.945 indicates that more than half of the variance in the observed variable is

explained by the constructs. Any loadings below 0.5 were deleted, resulting in final AVE and CR above the cutoff value of 0.5 and 0.7 respectively.

The CR values describe the degree to which the construct items represent the latent, which were in the range of 0.841 and 0.952 that exceeded the recommended value of 0.7 (Hair et al., 2010). In addition, the AVE measures "the degree to which a latent construct explains the variance of its items" (Hair et al., 2014. p. 114), which is greater than 0.5. The AVE values of OI and OP contructs are greater than the acceptable threshold of 0.5 which was in the range of 0.578 and 0.868. From Table 1, the results prove that all the two construct, OI and OP are valid measures of their respective constructs based on their parameter estimates and statistical significance (Chow and Chan, 2008).

Discriminant validity measures "the extent to which a construct is truly distinct from other construct, in terms of how much it correlates with other constructs, as well as how much indicators represent only a single construct" (Hair et al., 2014). To assess the discriminant validity, the square root of the AVE is calculated which should be greater than each of the construct correlations (Hair et al., 2014). Table 2 shows that all the square root of the AVE exceeded the correlations with other variable. In sum, the measurement model displayed adequate discriminant validity.

From all the findings, it can be reasoned that the measurement model was acceptable in view of the evidences of adequate reliability, convergent validity and discriminant validity.

4.2. The Establishment of the Second Order Constructs

As proposed by Hair et al. (2014), one of the key reasons for this study to establish second order construct is to minimize the number of relationships in the model structure. Accordingly, this modeling approach becomes more theoretical parsimony, reduces the complexity of the model so that it is easier to understand as well as to avoid multicollinearity due to multidimensional model

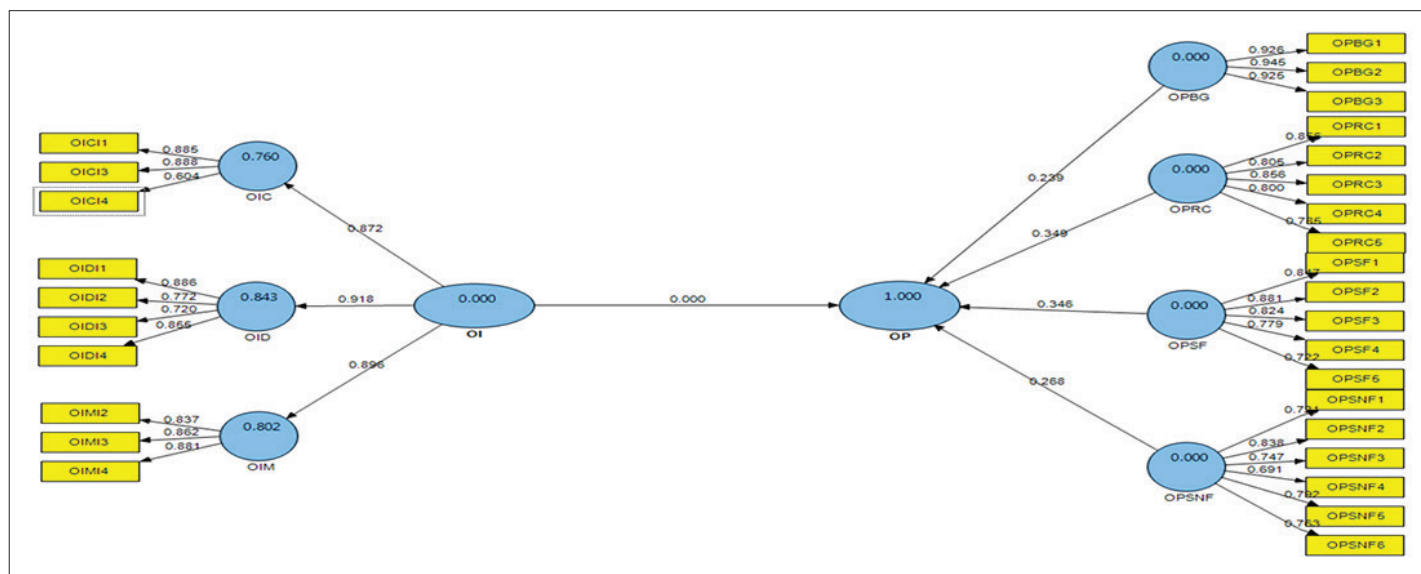**Figure 1:** Research model of the study

Table 1: Results of measurement model

First order construct	Second order construct	Scale type	Item	Loadings/ Weights	AVE/ VIF	CR/t values
Business Growth (OPBG)		Reflective	OPBG1	0.926	0.868	0.952
			OPBG2	0.945		
			OPBG3	0.925		
Performance Relative to Competitor (OPRC)		Reflective	OPRC1	0.856	0.674	0.912
			OPRC2	0.805		
			OPRC3	0.856		
			OPRC4	0.800		
			OPRC5	0.785		
Satisfaction Financial Performance (OPSF)		Reflective	OPSF1	0.847	0.660	0.906
			OPSF2	0.881		
			OPSF3	0.824		
			OPSF4	0.779		
			OPSF5	0.722		
Satisfaction Nonfinancial Performance (OPSNF)		Reflective	OPSNF1	0.721	0.578	0.891
			OPSNF2	0.838		
			OPSNF3	0.747		
			OPSNF4	0.691		
			OPSNF5	0.792		
			OPSNF6	0.763		
	Organizational Performance (OP)	Formative	OPBG	0.239	2.072	20.975**
			OPRC	0.349	2.735	25.593**
			OPSF	0.346	2.842	30.799**
			OPSNF	0.268	1.36	18.623**
Process Innovation		Reflective	OICI1	0.885	0.645	0.841
			OICI3	0.888		
			OICI4	0.604		
Product Innovation		Reflective	OIDI1	0.886	0.658	0.884
			OIDI2	0.772		
			OIDI3	0.720		
			OIDI4	0.855		
Managerial Innovation		Reflective	OIMI2	0.837	0.740	0.895
			OIMI3	0.862		
			OIMI4	0.881		
	Organizational Innovation	Reflective	Process Innovation	0.872	0.801	0.924
			Product Innovation	0.918		
			Managerial Innovation	0.896		

AVE: (Summation of the square of the factor loadings)/([summation of the square of the factor loadings] + [summation of the error variances]); CR: (Square of the summation of the factor loadings)/([summation of the square of the factor loadings] + [summation of the square of the error variances])

Table 2: Fornell-lurker criterion analysis for checking discriminant validity

	OIC	OID	OIM	OPBG	OPRC	OPSF	OPSNF
OIC	0.803						
OID	0.702	0.811					
OIM	0.695	0.718	0.860				
OPBG	0.602	0.601	0.644	0.932			
OPRC	0.432	0.475	0.440	0.683	0.821		
OPSF	0.402	0.501	0.429	0.667	0.763	0.812	
OPSNF	0.187	0.413	0.291	0.326	0.460	0.509	0.760

structures (Hair et al., 2014; Ringle et al., 2012). In this study, OP and OI are conceptualized as a second-order construct.

4.3. Hypothesis Testing

As this study calls for the measurement of both reflective and formative in the same model, the two-stage approach were used to test the hypothesis (Hair et al., 2014). Thus, this study employed the two-stage approach in examining the the relationship between OI and OP. The result from the output of the algorithm and bootstrapping PLS-SEM confirmed that OI has a positive significant relationship with OP ($\beta = 0.69$; t = 2,153; P < 0.01), as shown in Table 3. Therefore, the hypothesis is supported.

5. CONCLUSION AND DISCUSSION

Findings from this study have reinforced past studies' outcome that demonstrated a direct positive relationship between OI and OP (Kitapci et al., 2012; Lee and Hsieh, 2010; McDermott and Prajogo, 2012; Rosenbusch et al., 2011). Thus, it can be concluded that OI was found to be a primary predictor of OP of SMEs. It shows that the more the organizations are involved with innovative activities, the more the organization can improve OP.

In conclusion, this study suggests that SMEs can still achieve higher performance through innovative activities carried out within the organization. This indicates the prominet role of OI in the context of Malaysian SMEs in influencing the performance of the organization. OI seeks to impact directly on the performance of the organization and this study also proves there is a strong relationship between OI and OP.

Therefore, this study also hopes to add on to the theoretical consistency of knowledge through the investigation of the relationship between OI and OP in SMEs. This work is also

Table 3: Path coefficients and hypotheses testing

Hypothesis	Relationship	β	SE	t	Decision
H$_1$	OI→OP	0.697	0.038	2.153**	Supported

**P<0.01 (2.33)

useful for future researchers, entrepreneurs and policy makers in realizing the importance of OI in enhancing OP. Specifically, this article highlights the importance of issues related to OI, as well as verifies that the OI performs a crucial role in establishing a significant competitive advantage for the SMEs, and subsequently ensures a better OP. It is advisable for owners/managers of SMEs to develop the innovation activities in order to improve their performance. By doing so, a corporate innovative culture can be instituted across all levels in the organization. When this happens, OP will be enhanced and reliance of SMEs on the government support can be reduced to make the organizations more competitive.

REFERENCES

Ahmad, N.H., Ramayah, T., Wilson, C., Kummerowidth, L. (2010), Is entrepreneurial competency and business success relationship contingent upon business environment? A study of Malaysian SMEs. International Journal of Entrepreneurial Behaviour and Research, 16(3), 182-203.

Ahmad, N.H., Wilson, C., Kummerow, L. (2011), Assessing the dimensionality of business success: The perspectives of Malaysian SME owner-managers. Journal of Asia-Pacific Business, 12(3), 207-224.

Avlonitis, G.J., Salavou, H.E. (2007), Entrepreneurial orientation of SMEs, product innovativeness, and performance. Journal of Business Research, 60, 566-575.

Brewer, G.A., Selden, S.C. (2000), Why elephants gallop: Assessing and predicting organizational performance in federal agencies. Journal of Public Administration Research and Theory, 10(4), 685-711.

Calantone, R.J., Cavusgil, S.T., Zhao, Y. (2002), Learning orientation, firm innovation capability, and firm performance. Industrial Marketing Management, 31, 515-524.

Che-Ha, N., Mohd-Said, S. (2008), Organizational innovation – Practices and performance: An exploratory study among small & medium enterprises in Malaysia. Available from: http://www.eprints.um.edu.my/305/1/Organizational_Innovation.doc. [Last retrieved on 2011 Feb 04].

Che-Ha, N., Mohd-Said, S. (2012), Innovation practices by Malaysian SMEs. In: Che-Ha, N., Mahmood, A., editors. Malaysian SMEs in the New Economy. Petaling Jaya: Cengage Learning Asia Pte Ltd. p39-58.

Chow, W.S., Chan, L.S. (2008), Social network, social trust and shared goals in organizational knowledge sharing. Information and Management, 45(7), 458-465.

Daft, R.L. (1978), A dual-core model of organizational innovation. Academy of Management Journal, 21(2), 193-210.

Damanpour, F. (1991), Organizational innovation: A meta-analysis of effects of determinants and moderators. Academy of Management Journal, 34(3), 555-590.

Damanpour, F., Evan, W.M. (1984), Organizational innovation and performance: The problem of "organizational lag". Administrative Science Quarterly, 29(3), 392-409.

Damanpour, F., Gopalakrishnan, S. (1998), Theories of organizational structure and innovation adoption: The role of environmental change.

Journal of Engineering and Technology Management, 15(1), 1-24.

Damanpour, F., Gopalakrishnan, S. (2001), The dynamics of the adoption of product and process innovations in organizations. Journal of Management Studies, 38(1), 45-65.

Damanpour, F., Schneider, M. (2006), Phases of the adoption of innovation in organizations: Effects of environment, organization and top managers. British Journal of Management, 17(3), 215-236.

Gholami, R., Sulaiman, A.B., Ramayah, T., Molla, A. (2013), Senior managers' perception on green information systems (IS) adoption and environmental performance: Results from a field survey. Information and Management, 50, 431-438.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. (2010), Multivariate Data Analysis: A Global Perspective. 7th ed. New Jersey: Pearson Education Inc.

Hair, J.F., Hult, G.T.M., Ringle, C.M., Sarstedt, M. (2014), A Primer on Partial Least Squares Structural Equation Modelling (PLS-SEM). Thousand Oaks, California: SAGE Publications, Inc.

Hair, J.F., Sarstedt, M., Hopkins, L., Kuppelwieser, V.G. (2014), Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. European Business Review, 26(2), 106-121.

Hult, G.T.M., Hurley, R.F., Knight, G.A. (2004), Innovativeness: Its antecedents and impact on business performance. Industrial Marketing Management, 33(5), 429-438.

Keskin, H. (2006), Market orientation, learning orientation, and innovation capabilities in SMEs: An extended model. European Journal of Innovation Management, 9(4), 396-417.

Kitapci, H., Aydin, B., Celik, V. (2012), The effects of organizational learning capacity and innovativeness on financial performance: An empirical study. African Journal of Business Management, 6(6), 2332-2341.

Lee, C., Lee, K., Pennings, J.M. (2001), Internal capabilities, external networks, and performance: A study on technology-based ventures. Strategic Management Journal, 22(6-7), 615-640.

Lee, J.S., Hsieh, C.J. (2010), A research in relating entrepreneurship, marketing capability, innovative capability and sustained competitive advantage. Journal of Business and Economics Research, 8(9), 109-120.

Madrid-Guijarro, A., Auken, H., García-Pérez-de-Lema, D. (2007), An analysis of factors impacting performance of Spanish manufacturing firms. Journal of Small Business and Entrepreneurship, 20(4), 369-386.

March, J.G., Sutton, R.I. (1997), Organizational performance as a dependent variable. Organization Science, 8(6), 698-706.

McDermott, C.M., Prajogo, D.I. (2012), Service innovation and performance in SMEs. International Journal of Operations and Production Management, 32(2), 216-237.

NSDC. (2012a), SME Annual Report 2011/12: Redefining the Future. Available from: http://www.smecorp.gov.my/v4/node/2946. [Last retrieved on 2013 Jan 30].

NSDC. (2012b), SME Masterplan 2012-2020: Catalysing Growth and Income. Available from: http://www.smecorp.gov.my/vn2/node/190. [Last retrieved on 2015 Apr 27].

Rai, A., Patnayakuni, R., Seth, N.D. (2006), Firm performance impacts of digitally enabled supply chain integration capabilities. MIS Quarterly, 30(2), 225-246.

Rhee, J., Park, T., Lee, D.H. (2010), Drivers of innovativeness and performance for innovative SMEs in South Korea: Mediation ofl earning orientation. Technovation, 30, 65-75.

Ringle, C.M., Sarstedt, M., Straub, D.W. (2012), A critical look at the use of PLS-SEM in MIS quarterly. MIS Quarterly, 36(1), iii-xiv.

Ringle, C.M., Wende, S., Will, A. (2005), SmartPLS 2.0.M3. Hamburg: SmartPLS. Available from: http://www.smartpls.de.

Rosenbusch, N., Brinckmann, J., Bausch, A. (2011), Is innovation always

beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. Journal of Business Venturing, 26(4), 441-457.

SME Corp. Malaysia. (2012), Permohonan Untuk Mendapatkan Senarai Syarikat Dalam Industri Kecil dan Sederhana (IKS). Available from: http://www.message posted to nazlina@uum.edu.my. [Last retrieved on 2012 May 22].

Wolff, J.A., Pett, T.L. (2006), Small-firm performance: Modeling the role of product and process improvements. Journal of Small Business Management, 44(2), 268-284.

Zhou, K.Z., Gao, G.Y., Yang, Z., Zhou, N. (2005), Developing strategic orientation in China: Antecedents and consequences of market and innovation orientations. Journal of Business Research, 58(8), 1049-1058.