STRATEGIC CAPBALITY OF MANUFACTURING FIRM: VALIDITY CONFIRMATION OF MEASUREMENT MODEL

Azim Md. Shamimul
shamimul@oyagsb.uum.edu.my

Haim Hilman
hilman@uum.edu.my

Abdullahi Hassan Gorondutse
abdullahi@uum.edu.my

School of Business Management, University Utara Malaysia
06010 Sintok, Kedah Malaysia

Abstract

Aim of this study is to provide the empirical investigation of the strategic capability, sourcing strategy and firm performance construct of and scale validity of the manufacturing firms in Bangladesh. Validity of these constructs were investigated by confirmatory factor analysis. A sample of 330 manufacturing firms from Bangladesh were analyzed to determine validity of the measurement model. Partial Least Squares (PLS) tool was used to evaluate the validity and scale of strategic capability, sourcing strategy and firm performance. We have found all the indicators of the constructs of the study attain the minimum threshold value. In addition, predictive relevance found of the measurement model.

Keywords: Sourcing Strategy, Competitive Strategy, Sourcing Relationship Quality, Firm Performance, Manufacturing Firm.

2016 GBSE Journal

INTRODUCTION

Firms in the manufacturing sectors are facing the most inevitable challenge to decide whether products to make through internal effort, or solicit from outside independent suppliers (buy) with a high degree of economies-of-scale to enhance efficiency and productivity (Espino-Rodríguez & Lai, 2014; Hilman & Mohamed, 2011; Lafontaine & Slade, 2007). Efficiency and productivity thru reducing costs, maintain high quality, flexibility, improved delivery dependability, and prompt quick response enable a manufacturing firm to achieve competitiveness and performance (Su & Gargeya, 2012).

To achieve better performance through sourcing a firm might opt to make or buy of sourcing strategy. Implement sourcing strategy or to get the better benefit and to achieve performance a firm requires specific capabilities (Barney et al., 2011; Wang et al., 2015) which have not

investigated. Previous studies not exploit or explore process capability as a strategic factor for manufacturing firms to coordinate interdependent activities and optimize operations with suppliers when a firm adopts buy strategy (Barney et al., 2011; Tang & Rai 2014; Tang & Rai, 2012, Wang et al., 2015).

Especially in the context of Bangladesh as an emerging country, most of the studies only focus on garments manufacturing. Therefore, this study focused on manufacturing sector regardless of any specific industry. We thus, developed a set/bundle of capabilities to match with sourcing strategy through which a firm can perform better than before. In this study we have empirically investigated the strategic capability's scales and validate through confirmatory factory analysis.

THEORITICAL BACKGROUND

Strategic capability viewed as a resource of firm, deploying and integrating bundle of resources a firm can achieve better performance ever than before. This point of view leads us to conceptualize and give the theoretical base from the resource based view (RBV) of the firm. RBV has been used as a theoretical base in previous literature and argues that to create value and to be competitive a firm must should exploit its collection of resources (Allred, Fawcett, Wallin & Magnan, 2011; Penrose, 1959; Rubin, 1973; Wernerfelt, 1984).

The more valuable and rare the resources, the greater the advantage the firm may obtain (Allred *et al*., 2011; Dierickx & Cool, 1989). Barney (1991) and Allred *et al*., (2011) distinguished that a firm's combination of unique resources leads to stable and achievable firm performance because resources of a firms are heterogeneously distributed. Therefore, a firm when deploy its bundle of resources in accordance with its static position then it is hard to imitate by other firms and focal firm enjoy competitive advantage in market place. This view of firm RBV expanded to focus on how a firm integrates it resources and deploys its resources in accordance with (Mahoney & Pandain, 1992; Priem & Butler, 2001) strategy.

Transaction Cost Economics
According to Williamson (1985), Transaction Cost Economics (TCE) focuses on transactions and the costs incurred via completing transactions by one institutional mode rather than another. The transaction either make or buy a product, is the unit of analysis in TCE, and the means of affecting the transaction is the principal outcome of interest (Tadelis & Williamson, 2012).

TCE suggests that the costs and difficulties associated with market transactions sometimes favour hierarchies (make) and sometimes favor markets (buy). Based on TCE, manufacturing firm makes decision either to produce a product through market based contract if this transaction cost is lower than producing internally (Jaklič *et al.*, 2012; Mohiuddin & Su, 2013). Therefore, based on the TCE assumption and theoretical basis the proposed model of this study is below in Figure 1.
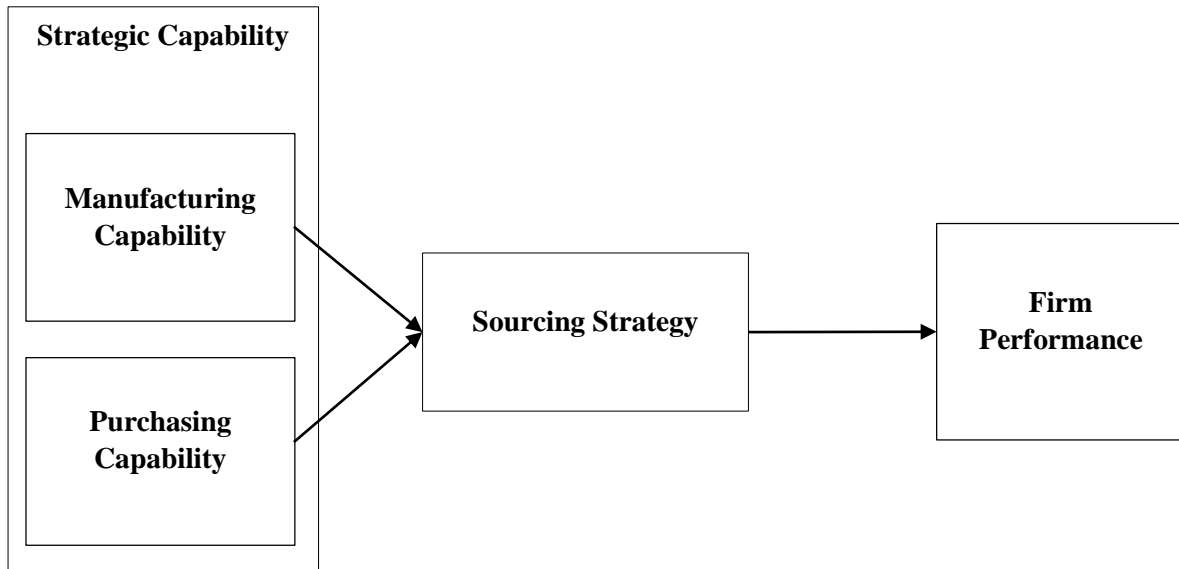
Figure 1. Proposed Model.

Firm Performance

Firm performance in this study conceptualize as the outcome of the expected strategy and strategic capability of manufacturing firms in Bangladesh. Folan, Browne and Jagdev, (2007) proposed that a firm's business performance is the outcome of its strategic choices. Firm performance is an ongoing researcher's debatable area to determine which of the measurement reflect better performance of a firm either financial or non-financial (Ahmad, Wilson, & Kummerow, 2011). Whereas, some researchers focused on both financial and non-final measurement which lead to the overall firm's performance. Performance measures provide a set of mutually reinforcing signals that direct managers' attention to the important strategic areas that translate to organizational performance outcomes (Dixon *et al.*, 1990). Firm performance, however, a firm's final outcome where a firm's want to reach and successfully achieve its goals and to remain competitive (Yamin *et al.*, 1999; Li *et al.*, 2006).

Strategic Capability

Strategic capability defined as a set of capabilities of a firm to meet objectives of firms and attain competitive advantage over rival. Over years, management scholars and practitioners are giving their effort to identify a set/bundle of competencies which can secure competitive advantage and differentiate the performance of the firm (Dyer & Singh, 1998; Prahalad & Hamel, 1990; Rumelt, Schendel, & Teece, 1991; Stalk, Evans, & Schulman, 1992).

Manufacturing capabilities refer to the abilities of firms in the manufacturing system of mass production, materials purchase, inventory control, capacity management, process management, and product quality management to compete on basic dimensions such as quality, cost, flexibility, and time (Safizadeh et al., 2000). Managers frequently omit a firms' manufacturing capability as an important aspect in building competitive advantage (Gao, & Tian, 2014; Mukerji, Fantazy, Kumar, & Kumar, 2010).

A purchasing capability of the firm conceptualize in this study as a process capability that leverage process alignment of purchasing of the firm, specifically ability to coordinate

106

interdependent activities and optimize purchasing activities with its supplier's/buyer's firms On the other hand, firms need to have the competences and skills for partnering flexibility which is defined as their ability to adjust its supplier portfolio according to its product line (Wu et al., 2010; Gunasekaran & Spalanzani, 2012; Shapiro & Varian, 1999). Previous research as suggest that constantly effort on improving processes would increase efficiency, reduces costs, and usually results better performance (Lee et al., 2015; Hammer & Stanton, 1999; Tang & Rai, 2014). Based on the discussion therefore, we have developed the following hypotheses:

H1: Manufacturing capability of the manufacturing firms in Bangladesh has effect on sourcing strategy and firm performance.

H2: Purchasing capability of the manufacturing firms in Bangladesh has effect on sourcing strategy and firm performance.

Sourcing Strategy

Sourcing is a useful way to adapt the firm's boundaries by restructuring its activities in order to stimulate the growth of its core business (Bustinza, Arias-Aranda, & Gutierrez-Gutierrez, 2010). Sourcing is not simply a purchasing decision also represents the fundamental decision to reject to do an activity in-house (make) and look for outside to optimize productivity and increase performance of a firm (Größler *et al*., 2013; Hilman & Mohamed, 2011; Quinn, 1999). Based on Transaction Cost Economics (TCE), manufacturing firm makes decision either to produce a product through market based contract if this transaction cost is lower than producing internally (Jaklič *et al.*, 2012; Mohiuddin & Su, 2013). This choice of cost leads a firm to consider sourcing as a strategic forefront of modern practice to compete in industry to achieve better performance and secure competitive advantage (Weele & Raaij, 2014).

H3: Sourcing strategy in Bangladeshi manufacturing firms has positive effect on firm performance

METHOD

This quantitative cross-sectional study was conducted in manufacturing sector in Bangladesh. This study deployed survey approach and developed the instruments used in previous studies to measure the variables in this study. Each items of the instruments were measured on a seven-point Likert scale which are ranging from strongly disagree (1) to strongly agree (7). Strategic capability operationalizes as the combination of manufacturing capability and purchasing capability. Manufacturing capability measured by 5 items and purchasing capability measured by 5 items; were adapted and adopted from the Hsiao and Chen (2013) and Kocabasoglu and Suresh (2006). Sourcing strategy was measured by 12 items which were adapted and adopted from Kotabe and Omura, (1989). Firm performance was measured by 7 items (Venkatraman & Ramanujam, 1986; Lee & Miller, 1996; Kaplan & Norton, 1996).

After developing the questionnaire from the previous studies face and construct validity assessment was conducted. Questionnaire was sent to two strategic management professors to critique and check ambiguity, clarity, and suitability of the items used to operationalize each construct (DeVellis, 2016). Their assessment leaded to the further modification of the items to measure the construct.

Data were collected for this quantitative research to test the hypothesis of the causal effect of the exogenous latent constructs on endogenous latent constructs (Sekaran & Bougie, 2013).

Initial number of sample was 381 manufacturing firms in Bangladesh which was determined according to Krejcie and Morgan (1970). The study used systematic random sampling technique to select each element of sample to distribute the questionnaire. In the systematic sampling technique equal-probability method is used to pick the sample unit (Black, 2010).

The completed and modified final version of survey questionnaires were sent to the manufacturing firm's key person (such as CEO, general manager, CFO, and/owner) who has overall strategic information about the firm and respective performance. To test hypotheses testing and analyzing Partial Least Squares(PLS) path modeling technique with SmartPLS 3.2.6 tools. Several previous studies argued the suitability of using PLS over other co-variance based analysis tool, and suggested that PLS is less restrictive, small sample size applicable, distributional assumption, and gives advantage if model is complex (Chaouali, Yahia, & Souiden, 2016; Hair et al., 2014; Ringle et al., 2012).

RESULTS

This study seeks to provide a measurement validity of the proposed model. To achieve the goals, we measured the scaled developed in this study based on previous literature. To assess the validity of the measurement model we used the confirmatory factor analysis technique. Analysis was carried out by using SmartPLS 3.

Earlier to proceed with validating the measurement model of the study; we presented the descriptive and demographic of the respondents, in Table 1. We distributed 762 survey questionnaire among manufacturing firms in Bangladesh out of which 330 complete and usable questionnaires returned and this represents 43.31%.

Two large portions are Garments manufacturing industry represents 36.37% and F&B 23.64%. Size of the manufacturing firms differs; we have found that the largest portion of the respondent are with the 101 to 200 employee which represents the 29.4%.

We have presented the result of descriptive analysis of the study variables in Table 2; we had performed descriptive analysis to summarize and explain the main features of the constructs from the respondent's point of view. Descriptive statistics of the constructs we conducted due to know the fact that dimensions explained through mean, standard deviation and variance suggested by Sekaran & Bougie (2013). We have found the minimum response from respondent was 1 and maximum 7. Mean value of all constructs of the study are more than 5.

Table 1.
Demographic Statistics of the Study

Title	Frequency	Percentage
Industry		
Garments Manufacturing	121	36.67
Electrical & Electronics	48	14.54
Leather	46	13.94
Food and beverage	78	23.64
Others	37	21.21
Number of Employee		
Less than 50	32	9.7
51-100	21	6.4
101-200	97	29.4
201-400	96	29.1
401-600	59	17.9
601-1000	19	5.8
More than 1000	6	1.8

Table 2
Descriptive Result of Study Variables

Name of the Construct	Sample (n)	Minimum	Maximum	Mean ($\overline{x}$)	Standard Dev. ($\sigma_{\overline{x}}$)
Manufacturing Capability	330	1	7	5.42	1.26
Purchasing capability	330	1	7	5.37	1.01
Sourcing Strategy	330	1	7	5.44	1.16
Firm Performance	330	1	7	5.71	1.03

Measurement Model

We ensured convergent validity of to show that the constructs' measures which should theoretically be related to each other are actually found related in such manner after the analysis. To validated measurement of the study we confirmed the convergent validity and discriminant validity. Hair et al. (2010) suggested three types of estimations to confirm/validate convergent validity of measurement model; factor loadings, composite reliability (CR), and average variance extracted (AVE). Align with this suggestion we conducted factor analysis of constructs presented in Figure 2.; all of the item loadings are examined and a loading value of 0.50 or more is suggested as acceptable in the literature of multivariate analysis (Fornell & Larcker, 1981; Hair et al., 2010).

Consequently, we analyzed composite reliability, and AVE of manufacturing capability, purchasing capability, sourcing strategy and firm performance; shown in Table 3. We have found composite reliability (CR) of manufacturing capability 0.924 and AVE 0.709,

purchasing capability CR 0.870 and AVE 0.646, sourcing strategy CR 0.996 and AVE 0.955 and firm performance CR 0.948 and AVE 0.722.

All the constructs manufacturing capability, purchasing capability, sourcing strategy and firm performance values of CR and AVE are higher than the ideal value CR 0.7 and the average variance extracted (AVE) 0.5 suggested by (Fornell & Larcker, 1981; Hair, Black, Babin, Anderson, & Tatham, 2006). It shows the convergent validity of model we proposed in this study. Next step is to confirm discriminant validity of proposed model.
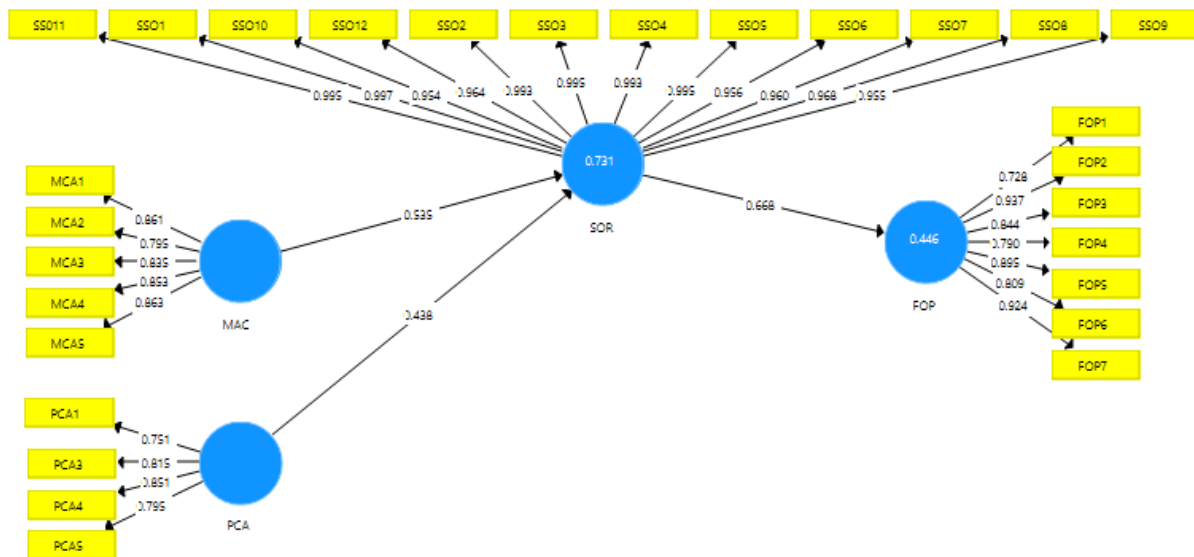

Figure 2. Factor loadings of constructs

Table 3
Convergent validity results

Study Variables	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Firm Performance	0.935	0.948	0.722
Manufacturing Capability	0.897	0.924	0.709
Purchasing Capability	0.817	0.879	0.646
Sourcing Strategy	0.996	0.996	0.955

Whereas, Fawcett et al. (2014) suggested discriminant validity exists when a construct has higher loading than any other constructs. Expected value for discriminant validity is 50% or more variance of indicators are accounted for, which means that the square root of AVE should be more than 0.50. Root squire of average variance extracted (AVE) is examined with correlations among the constructs of the study in line with suggestions made by Chin (2010), and Fornell and Larcker (1981). We have found that (in Table 4) manufacturing capability (0.842),

purchasing capability (0.804), sourcing strategy (0.977) and firm performance (0.850) constructs have attained recommended values of discriminate validity.

Table 4
Discriminant Validity

Construct	FOP	MAC	PCA	SOR
Firm Performance	0.850			
Manufacturing Capability	0.584	0.842		
Purchasing Capability	0.484	0.539	0.804	
Sourcing strategy	0.668	0.771	0.727	0.977

In addition, to confirm the validity of the measurement model of this study we accounted for the R^2 of two exogenous variables (sourcing strategy and firm performance) which are 0.731 and 0.446 and these values are large and satisfactory suggested by Cohen (1992). Moreover, effect size (f^2) of manufacturing capability and purchasing capability on sourcing strategy were 0.756 and 0.506 respectively. Effect size (f^2) of sourcing strategy on firm performance is 0.806. we proceeded with blindfolding analysis to determine predictive relevance (Q^2) of our measurement model and found that firm performance (0.298) and sourcing strategy (0.647). Therefore, we can conclude that predictive relevance of the model exists. Enough Q^2 predictive validity was obtained, as the dependent variable's validity was 0.310

CONCLUSION

Strategic capability is a critical success factor for most collaboration, but the literature offers little insight as to what types of capabilities that are needed as to ensure successful collaboration and enhance better performance (Barney, Ketchen, & Wright, 2011; Wang *et al*., 2015). Considering this gap, therefore, we proposed a strategic capability model based on the RBV and TCE that explain the capabilities of a firm and the sources of competitive advantage. To provide empirical justification we conducted survey and investigated through statistical analysis of measurement model. We have found validity of measurement of proposed model exist. Future studies can be conducted to provide empirical evidence of this measurement model by analyzing the effect of indigenous variables to exogenous.

REFERENCES

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.

Allred, C. R., Fawcett, S. E., Wallin, C., & Magnan, G. M. (2011). A dynamic collaboration capability as a source of competitive advantage. *Decision sciences*, *42*(1), 129-161.

Barney, J. B. (1991). Firm resource and sustained competitive advantage. *Journal of Management, 17*(1), 99–120.

Barney, J. B., Ketchen, D. J., & Wright, M. (2011). The future of resource-based theory revitalization or decline?. *Journal of management, 37*(5), 1299-1315.

Black, D. (2010). *The behavior of law*. Emerald Group Publishing.

Bustinza, O. F. D., & Arias-Aranda, L. Gutierrez-Gutierrez (2010). *Outsourcing, competitive capabilities and performance an empirical study in service firms*, 276-288.

Chaouali, W., Yahia, I. B., & Souiden, N. (2016). The interplay of counter-conformity motivation, social influence, and trust in customers' intention to adopt Internet banking services: The case of an emerging country. *Journal of Retailing and Consumer Services*, *28*, 209-218.

Chin, W. W. (2010). How to write up and report PLS analyses. In V.E. Vinzi, W.W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of Partial Least Squares, Springer Handbooks of Computational Statistics* (pp. 655-690). Springer-Verlag Berlin Heidelberg. doi 10.1007/978-3-540-32827-8_29.

Cohen, J. (1992). A power primer. *Psychological bulletin*, *112*(1), 155.

DeVellis, R. F. (2016). *Scale development: Theory and applications* (Vol. 26). Sage publications.

Dierickx, I., & Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, 35(12), 1504-1511.

Dixon, J. R., Nanni, A. J., & Vollmann, T. E. (1990). The new performance challenge. *Business One Irwin, Burr Ridge, IL.*

Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *The Academy of Management Review, 23*(4), 660–679.

Fawcett, S. E., Waller, M. A., Miller, J. W., Schwieterman, M. A., Hazen, B. T., & Overstreet, R. E. (2014). A trail guide to publishing success: tips on writing influential conceptual, qualitative, and survey research. *Journal of Business Logistics*, *35*(1), 1-16.

Folan, P., Browne, J., & Jagdev, H. (2007). Performance: Its meaning and content for today's business research. *Computers in industry*, *58*(7), 605-620.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of marketing research*, 382-388.

Gao, T., & Tian, Y. (2014). Mechanism of supply chain coordination based on dynamic capability framework-the mediating role of manufacturing capabilities. *Journal of Industrial Engineering and Management*, *7*(5), 1250-1267.

Größler, A., Timenes Laugen, B., Arkader, R., & Fleury, A. (2013). Differences in outsourcing strategies between firms in emerging and in developed markets. *International Journal of Operations & Production Management*, *33*(3), 296-321.

Gunasekaran, A., & Spalanzani, A. (2012). Sustainability of manufacturing and services: Investigations for research and applications. *International Journal of Production Economics*, *140*(1), 35-47.

Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). *Multivariate data analysis: A global perspective* (Vol. 7). Upper Saddle River, NJ: Pearson.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). Multivariate data analysis 6th Edition. *Pearson Prentice Hall. New Jersey. humans: Critique and reformulation. Journal of Abnormal Psychology*, *87*, 49-74.

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

Hammer, M., & Stanton, S. (1999). How process enterprises really work. *Harvard business review*, *77*, 108-120.

Hilman, H. (2009). Relationship of competitive strategy, strategic flexibility and sourcing strategy on organizational performance. *Unpublished PhD Dissertation*.

Hilman, H., & Mohamed, Z. A. (2011). Sourcing strategies, practices and effects on organisational performance. *Journal for Global Business Advancement*, *4*(1), 18-31.

Hsiao, Y. C., & Chen, C. J. (2013). Branding vs contract manufacturing: capability, strategy, and performance. *Journal of Business & Industrial Marketing*, *28*(4), 317-334.

Jaklič, A., Ćirjaković, J., & Chidlow, A. (2012). Exploring the effects of international sourcing on manufacturing versus service firms. *The Service Industries Journal, 32*(7), 1193-1207.

Kaplan, R. S., & Norton, D. P. (1996). *The balanced scorecard: translating strategy into action*. Harvard Business Press.

Kocabasoglu, C., & Suresh, N. C. (2006). Strategic sourcing: an empirical investigation of the concept and its practices in US manufacturing firms. *Journal of Supply Chain Management*, *42*(2), 4-16.

Kotabe, M., & Omura, G. S. (1989). Sourcing strategies of European and Japanese multinationals: a comparison. *Journal of International Business Studies*, 113-130.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement*, *30*(3), 607-610.

Lafontaine, F., & Slade, M. (2007). Vertical integration and firm boundaries: the evidence. *Journal of Economic Literature*, 629-685.

Lee, D., Rho, B. H., & Yoon, S. N. (2015). Effect of investments in manufacturing practices on process efficiency and organizational performance. *International Journal of Production Economics*, *162*, 45-54.

Lee, J., & Miller, D. (1996). Strategy, environment and performance in two technological contexts: contingency theory in Korea. *Organization Studies*, *17*(5), 729-750.

Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S., & Rao, S. S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance. *Omega, 34*(2), 107-124.

Mahoney, J. T., & Pandian, J. R. (1992). The resource- based view within the conversation of strategic management. *Strategic management journal*, *13*(5), 363-380.

Mohiuddin, M., & Su, Z. (2013). Manufacturing small and medium size enterprise's offshore outsourcing and competitive advantage: An exploratory study on Canadian offshoring manufacturing SMEs. *Journal of Applied Business Research (JABR)*, *29*(4), 1111-1130.

Mukerji, B., Fantazy, K., Kumar, U & Kumar, V. (2010). The Impact of Various Dimensions of Manufacturing Capability on Commercialization Performance: Evidence from Canadian Manufacturing Sector. *Global Journal of Flexible Systems Management, 11*(3), 1-10.

Penrose, E. T. (1959). Profit sharing between producing countries and oil companies in the middle east. *The Economic Journal, 69*(274), 238-254.

Prahalad, C. K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review, 68*(3), 79–91.

Priem, R. L., & Butler, J. E. (2001). Is the resource-based "view" a useful perspective for strategic management research?. *Academy of management review*, *26*(1), 22-40.

Quinn, J. B. (1999). Strategic outsourcing: leveraging knowledge capabilities. *MIT Sloan Management Review*, *40*(4), 9.

Ringle, C. M., Sarstedt, M., & Straub, D. (2012). A critical look at the use of PLS-SEM in *MIS Quarterly*.

Rubin, P. H. (1973). The expansion of firms. *Journal of Political Economy*, *84*(4), 936-949.

Rumelt, R. P., Schendel, D., & Teece, D. J. (1991). Strategic management and economics. *Strategic Management Journal*, *12*(S2), 5–29.

Safizadeh, M. H., Ritzman, L. P., & Mallick, D. (2000). Revisiting alternative theoretical paradigms in manufacturing strategy. *Production and Operations Management*, *9*(2), 111-126.

Sekaran, U., & Bougie, R. (2013). *Research methods for business: A skill-building approach* .[e-book].

Shapiro, C., & Varian, H. R. (1999). The art of standards wars. *California management review*, *41*(2), 8-32.

Stalk, G., Evans, P., & Schulman, L. E. (1992). Competing on capabilities: The new rules of corporate strategy. *Harvard Business Review, 70*(2), 57-69.

Su, J., & Gargeya, V. B. (2012). Strategic sourcing, sourcing capability and firm performance in the US textile and apparel industry. *Strategic Outsourcing: An International Journal*, *5*(2), 145-165.

Tadelis, S., & Williamson, O. E. (2012). Transaction cost economics. *Available at SSRN 2020176*.

Tang, X., & Rai, A. (2012). The moderating effects of supplier portfolio characteristics on the competitive performance impacts of supplier-facing process capabilities. *Journal of Operations Management, 30*(1), 85-98.

Tang, X., & Rai, A. (2014). The moderating effects of supplier portfolio characteristics on the competitive performance impacts of supplier-facing process capabilities. *Quality control and applied statistics*, *58*(5), 453-454.

Venkatraman, N., & Ramanujam, V. (1986). Measurement of business performance in strategy research: A comparison of approaches. *Academy of management review*, *11*(4), 801-814.

Wang, G., Dou, W., Zhu, W., & Zhou, N. (2015). The effects of firm capabilities on external collaboration and performance: The moderating role of market turbulence. *Journal of Business Research*, *68*(9), 1928-1936.

Weele, A. J., & Raaij, E. M. (2014). The future of purchasing and supply management research: About relevance and rigor. *Journal of Supply Chain Management*, *50*(1), 56-72.

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, *5*(2), 171-180.

Williamson, O. E. (1989). Transaction cost economics. *Handbook of industrial organization*, *1*, 135-182.

Wu, S. J., Melnyk, S. A., & Flynn, B. B. (2010). Operational capabilities: The secret ingredient. *Decision Sciences, 41*(4), 721-754.

Yamin, S., Gunasekaran, A., & Mavondo, F. T. (1999). Relationship between generic strategies, competitive advantage and organizational performance: an empirical analysis. *Technovation, 19*(8), 507-518.