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A STUDY OF THE EFFECT OF MARKET ORIENTATION ON MALAYSIAN AUTOMOTIVE INDUSTRY SUPPLY CHAIN PERFORMANCE

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ABSTRACT

The liberation of world trade has significantly reduced Malaysian government protectionism of its national automotive industry. Local manufacturers have to strive for excellence in order to be able to compete in a business world that is dominated by a few big players. They cannot compete without excellent organizational behavior and culture. One of the important aspects of organizational culture and behavior is market orientation. A company's ability to win orders depends on how much it and the other companies in the supply chain are able to understand, translate and act upon customer requirements. This study is devoted to analyzing the relationship between market orientation, supply chain management, and the supply chain performance of all the industry's supply chain players. It also examines the mediating effect of supply chain management. Data were collected from manufacturers and suppliers in the automotive industry in Malaysia through questionnaires. Structural Equation Modeling (PLS-SEM) was employed to test the above relationship. The results indicate that supply chain management mediates the relationship between market orientation and supply chain performance. However, they also show that the relationship between market orientation and supply chain performance is insignificant. This finding has a major implication for policymakers and manufacturers, as will be discussed in this paper.

Keywords: Automotive industry; Market orientation; Supply chain management; Supply chain performance

1. INTRODUCTION

As a small developing country with a small market, Malaysia's decision to produce its own cars is a bold step with a huge challenge ahead. The industry has to face giant multinational car producers and deal with large multinational component suppliers. Not many countries in the world have their own national automotive initiatives or have the policies to support the local automotive industry. Even the United Kingdom has abolished the assistance provided to locally-owned automotive producers. India and China have big domestic markets for their national automobile industries, but a small country like Malaysia has to depend on the export market to survive and flourish in the automotive global value chain (GVC). National car manufacturers cannot rely on government protection for long. Since the establishment of Proton

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in October 1982, the government has substantially protected the local industry with high import tariffs and duty on imported foreign cars. During the first few years after the launching of the first national car, Proton, the import tariffs on complete built- up (CBU) passenger vehicle were 90 to 200 percent (Segawa et al., 2014). The tariff increased to 140 to 300 per cent in 1997. In addition two local content requirement policies (LCRPs) that have been introduced in 1980s and 1990s (i.e. the Mandatory Deletion Program (MDP) in 1980 and the Local Material Content Program (LMCP) in 1992) have successfully reduced the import of foreign automotive components (Segawa et al., 2014).

However, under pressure from the World Trade Organization (WTO), Malaysia has been forced to reduce its protectionism. As a result, the Malaysian government has since phased out the LCRP, MDP and the LMCP. Not only in Malaysia, but the automotive industry in the whole of Southeast Asia has also pursued the same action since the late 1980s (Segawa et al., 2014). After being protected for a relatively long time (in fact the government is still protecting the industry in some ways), are the national automotive manufacturers ready to compete in the more liberal and open market and to face the tremendous challenge of competing with the major multinational vehicle assemblers and suppliers? A study by Mashahadi and Mohayidin (2015) indicates that even before the implementation of the Asian Free Trade Agreement (AFTA), there was a clear trend in Malaysia to prefer imported cars. Based on their findings, the national automotive manufacturers should continuously respond to market needs and preferences to win customer orders.

In response to the findings of Mashahadi and Mohayidin (2015), this paper examines one the fundamental aspects of the competition in the field, the level of market orientation (MO) among the players in the industry's supply chain, in the sense of their commitment to understanding and fulfilling customer needs and requirements. A company's ability to win orders depends on how much it understands customer requirements and is able to deploy information in various company functions in order to meet these requirements. However, in a modern competitive world, a company cannot excel alone, since it depends on the other players in the supply chain (Quang et al., 2016). All the companies in the chain need to be market-oriented. Poor market orientation among them leads to their inability to determine end market demands. This results in what has been termed as the 'bullwhip effect' (Wisner et al., 2014), which is defined as "demand distortion" as it moves upstream in the supply chain. This is due to the inconsistency of orders, which may be higher than sales (Lee & Billington 1992). In addition, the bullwhip effect will have adverse effects on the companies in the supply chain. For example, a manufacturer that only pays attention to its immediate order will be distorted by higher demand. Considerable additional costs will be incurred due to the unplanned procure of raw materials, insufficient capacity planning and utilization, inefficiency over time, and additional transportation costs. Other than the issue of collaboration, the other main reason for the distortion in market demand information is due to the level of market orientation of the firms or companies in the supply chain (Min et al., 2005).

Market orientation is defined by Kohli and Jaworski (1990) as "the organization-wide generation of market intelligence pertaining to customers, competitors, and forces affecting them, internal dissemination of the intelligence, and reactive as well as proactive responsiveness to the intelligence". Firms that are highly market-oriented have the ability to provide firms with important information to help them to become more competitive in the market (Noble et al., 2002; Kirca et al., 2005). MO is also regarded as a strategic ability that results from a firm's continuous improvement process, starting from its customer responsiveness capabilities and customer sensing (Zamani et al., 2017).

Other than the definition by Kohli and Jaworski (1990), another one that is widely used in the literature is that of Narver and Slater (1990). They define MO as "the culture that most effectively and efficiently creates the behaviors for the creation of superior value for buyers", and that it "consists of three behavioral components – customer orientation, competitor orientation, and inter-functional coordination – and two decision criteria – long-term focus and profitability". The first of these definitions stresses that MO is behavioral, while the latter states that it is a cultural aspect. However, there is no contradiction between them, since the latter will also lead to employee commitment to fulfilling customer requirements. In general, market orientation is regarded as generating and disseminating market intelligence, and working on the intelligence by related departments. This paper inclines to use Kohli and Jaworski's (1990) definition of market orientation, since it has fewer issues in operationalizing the term.

An empirical study has been conducted on local car manufacturers and manufacturers of components and parts. The study analyzes the level of market orientation and its relationship with the companies' supply chain performance. Supply chain management (SCM) has been used as the mediator between the dependent and independent variables. SCM allows the process of information sharing between its members, at tactical, operational and strategic levels, including information from the market (MO). For example, the valuable information for market-based activities which is provided by buyers can be shared directly with suppliers. This will help companies to improve forecasting, replenishment and collaborative planning (CPFR) decisions. SCM also mediates the information, improving production and delivery information decisions. This allows partners or players to collaboratively manage the flow of decision-based activities so that they can be used to improve the quality of the decisions made by the company (Lee & Billington, 1992; Lee et al., 1997) Therefore, this study proposes that there is a strong and positive relationship between market orientation, supply chain management and supply chain performance (MO, SCM & SCP).

Figure 1 Relationship of MO, SCM, and SCP

Two hypotheses have been derived from the above relationship:

H1: There is a relationship between MO and SCP

H2: SCM mediates the relationship between MO and SCP

2. METHODS

Since this research required a large number of respondents, a quantitative study was employed. The aim was to investigate the relationship between variables with the purpose of explaining and predicting this relationship through the testing of the hypotheses using statistical techniques. It is descriptive and cross-sectional in nature.

2.1. Sample Size

This study employed data from automotive manufacturing firms in Malaysia. In the study, the target population represents the automotive industry in Malaysia, including the manufacturers and suppliers of local and international brands. A total of 690 companies registered with MATRADE (Malaysia External Trade Development Corporation, 2010) were selected. The list of manufacturing companies in Malaysia was accessed via the directory of the Federation of Malaysia Manufacturers (Federation of Malaysian Manufacturers, 2013). The respondents are the managers and executives, together with full time technical, management and highly skilled

employees who had been employed for more than six months by the company and were attached to the operations side of the manufacturing function, such as in the quality, production, maintenance or engineering departments. These groups were chosen because: (1) they were considered to be key employees in the manufacturing operation, and thus would be most familiar with the core elements of their plants; and (2) their job tasks are critical to the performance of any manufacturing plant (Wong & Wong, 2007).

Based on Krejcie and Morgan (1970), a minimum sample of 248 is appropriate for a population of 690–700. However, due to the expectation of a low response rate, which is common among Malaysian manufacturers, as found in previous studies (Jusoh, 2007), it was decided to implement oversampling. Therefore, after factoring in a 50% increase, the number of questionnaires distributed was 330. Out of these, 108 (32.72%) were returned. However, eight incomplete questionnaires were excluded, leaving 100 useable ones. The respond rate is in line with Nordin et al. (2010) from the perspective of the Malaysian automotive industry.

Based on the results, most of the respondents (31%) were managers, followed by purchasing executives (24%), sales and marketing executives (21%), others (17%), production executives (4%) and plant managers (3%). Furthermore, 47% of the respondents were from the production department, 35% from the purchasing department, with the remainder from logistics and other departments. The majority (31%) had been working in the company for between 2–5 years, 27% for between 11–15 years, with only 3% who had worked there for more than 20 years. Finally, the results show that more than 80% (47% production and 35% purchasing) of the respondents were aware of the industry supply chain. This fulfilled the requirement to be chosen as a respondent.

2.2. Measurement

All items in the survey questions used a Likert scale of a seven points. The scale range from from 1 being strongly disagree, to 7 being strongly agree.. Market orientation which follow the the definition set by Kohli and Jaworski (1990) was measured by 17 items consisting of three dimensions: intelligence generation, intelligence dissemination and response to intelligence. Supply chain management is conceptualized as "the systemic and strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purpose of improving the long-term performance of individual companies and the supply chain as a whole" (Mentzer et al., 2001). 30 items measure the agreement on the supply chain vision and goals, information sharing, risk and reward sharing, cooperation, integration, relationship building and agreement on supply chain leadership. Supply chain performance is conceptualized as the process of quantifying the effectiveness and efficiency of the supply chain, specifically measuring quality, timeliness, flexibility and cost (Whitten et al., 2012) through eleven items.

2.3. Validity and Reliability of Measures

Reliability and validity were assessed through the examination of the reliability of individual measurement items, the convergent validity, and the discriminant validity. The result showed convergent validity with composite reliability higher than 0.70, and all items loaded strongly and significantly on their respective factors (above 0.70). The average variance extracted for all of the latent factors surpassed the respective squared correlation between factors which proved the discriminant has been achieved. All of the above results showed that the reliability and the validity of the measurement have been achieved.

3. RESULTS AND DISCUSSION

Partial Least Square (PLS) technique were employed to confirm the proposed research model. The method has been chosen since it works with the relatively small sample size (Hair et al., 2011; Hair et al., 2014). In addition, this method was able to estimate complex cause-effect relationship models with latent variables (Henseler et al., 2009). Furthermore, the bootstrapping procedures has been employed to evaluate the significance of the various path coefficients. The bootstrapping sample has been set to 5000 sub-samples to determine the significance of each path.

3.1. Results

In total, around 58% of the variance in supply chain performance could be explained by the model. This indicates the usefulness and fit of the research model.

The result in Table 1 indicates a no direct effect of the market orientation on the supply chain performance. However, the result from bootstrapping method (Table 2) showed that the SCM mediates the relationship between MO and supply chain performance ($b = 0.204$, $p<.05$). Hence hypothesis (H1) was not supported and Hypothesis 2 (H2) was supported.

Table 1 Direct relationship results

Relation	Std. Beta	Std. Error	t-value	Decision
MO > SCP	-0.122	0.180	0.67	Not supported

Table 2 Mediation calculation

Path	Indirect effect	T value	95%UL	P value
MO>SCM>SCP	0.204	2.17	0.388	0.043

3.2. Discussion

The findings of the study are not in line with previous findings, which have suggested positive effects of market orientation on business profitability (Kohli & Jaworski, 1990; Lee & Billington, 1992; Deshpandé & Farley, 1998); on company performance (Kohli & Jaworski, 1990); and on operational performance, such as delivery, cost, productivity and product quality (Lee & Billington, 1992.). Because of its potential effect on performance, market orientation plays a key role in the formation of business strategy (Zamani et al., 2017). However, this study obtained an insignificant result on the relation between MO and SCP. This contradictory result can probably be explained by the factor explained below.

According to Otsuka and Natsuda (2016), the low performance of the automotive industry is related to the national automotive policy. The policies which are intended to protect domestic producers from international competition and to favour the *bumiputera* (native of a country) firms seem to have adverse impacts on productivity. Wad and Govindaraju (2011) made a similar observation; the Malaysian automotive industry has successfully created sales, production, local employment and local content, but has not been able to develop international competitiveness. This can be attributed to: (a) the lack of political promotion for a high challenge-high support environment; (b) low technological and marketing capabilities; and (c) limited participation in the global value chain. The protectionism has developed cultural and behavioral complacency among the players, as evidenced in this study.

4. CONCLUSION

Although the results of the study show an insignificant relationship between MO and SCP, in themselves they are significant for policymakers and the industry. The study has potentially revealed the level of the embedded behavior and culture of the players in the national automotive industry. Since the government still has considerable interest in the local automotive industry, the results of the study may alarm the authorities; besides emphasizing technology-related issues, they also need to scrutinize the strategic behavior or orientation issues and to foster a strong market orientation among the players in the industry. Although the industry is gradually becoming more independent, little is known about the culture and behavior of the companies within it. To be able to survive and compete in the global market, policymakers and companies need to inculcate a strong market orientation among workers in the organizations. For future study, the first proposition is to include firm performance as a dependent variable. This is to ensure that supply chain performance will lead to better firm performance. The second is to acknowledge the effect of environmental uncertainty and hence to include it as a moderator. The rapid changes in the technological advancement of products and processes in the automotive industry, and the increase in customer preferences, foster environmental turbulence or uncertainty. Hence it is important to include environmental uncertainty in future studies.

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6. REFERENCES

Deshpandé, R., Farley, J.U., 1998. Measuring Market Orientation: Generalization and Synthesis. *Journal of Market-focused Management*, Volume, 2(3), pp. 213–232

Federation of Malaysian Manufacturers, 2013. *Federation of Malaysian Manufacturers (FMM) Directory*, 44th ed. Kuala Lumpur

Hair Jr, 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*, Volume 26(2), pp. 106–121

Hair Jr, J.F., Ringle, C.M., Sarstedt, M., 2011. PLS-SEM: Indeed a Silver Bullet. *Journal of Marketing theory and Practice*, Volume, 19(2), pp. 139–151

Henseler, J., Ringle, C.M., Sinkovics, R.R., 2009. The Use of Partial Least Squares Path Modeling in International Marketing. *In*: Advances in International Marketing, Adv. Int. Mark, Volume 20, pp. 277–319. Bingley: Emerald Group Publishing Ltd

Jusoh, R., 2007. The Use of Multiple Performance Measures among the Balanced Scorecard Adopters and Non-adopters: Evidence from the Malaysian Manufacturers. *In:* International Conference on Global Research in Business and Economics, 27-29 December 2007, Bangkok, Thailand

Kirca, A.H., Jayachandran, S., Bearden, W.O., 2005. Market Orientation: A Meta-analytic Review and Assessment of Its Antecedents and Impact on Performance. *Journal of Marketing*, Volume, 69(2), pp. 24–41

Kohli, A.K., Jaworski, B.J., 1990. Market Orientation: The Construct, Research Propositions, and Managerial Implications. *The Journal of Marketing*, Volume 54, pp. 1–18

Krejcie, R.V., Morgan, D.W., 1970. Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, Volume, 30(3), pp. 607–610

Lee, H.L., Billington, C., 1992. Managing Supply Chain Inventory: Pitfalls and Opportunities. *Sloan Management Review*, Volume 33(3), pp. 65–73

Lee, H.L., Padmanabhan, V., Whang, S., 1997. Information Distortion in a Supply Chain: The Bullwhip Effect. *Management Science*, Volume 43(4), pp. 546–558

Malaysia External Trade Development Corporation (MATRADE), 2010. *Malaysia Products Directory*. Available Online at http://www.matrade.gov.my/en/malaysia-products-directory-matrade

Mashahadi, F., Mohayidin, M.G., 2015. Consumers' Buying Behaviour towards Local and Imported Cars: An Outlook After the Implementation of ASEAN Free Trade Agreement (Afta) in Malaysia. *OUM International Journal of Business and Management*, Volume 1(1), pp. 44–54

Mentzer, J.T., DeWitt, W., Keebler, J.S., Min, S., Nix, N.W., Smith, C.D., Zacharia, Z.G., 2001. Defining Supply Chain Management. *Journal of Business logistics*, Volume 22(2), pp. 1–25

Min, S., Roath, A.S., Daugherty, P.J., Genchev, S.E., Chen, H., Arndt, A.D., Richey, R.G., 2005. Supply Chain Collaboration: What's Happening?. *The International Journal of Logistics Management*, Volume 16(2), pp. 237–256

Narver, J.C., Slater, S.F., 1990. The Effect of a Market Orientation on Business Profitability. *The Journal of Marketing*, Volume 54(4), pp. 20–35

Noble, C.H., Sinha, R.K., Kumar, A., 2002. Market Orientation and Alternative Strategic Orientations: A Longitudinal Assessment of Performance Implications. *Journal of Marketing*, Volume 66(4), pp. 25–39

Nordin, N., Deros, B.M., Wahab, D.A., 2010. A Survey on Lean Manufacturing Implementation in Malaysian Automotive Industry. *International Journal of Innovation, Management and Technology*, Volume 1(4), pp. 374–380

Otsuka, K., Natsuda, K., 2016. The Determinants of Total Factor Productivity in the Malaysian Automotive Industry: Are Government Policies Upgrading Technological Capacity? *The Singapore Economic Review*, Volume 61(04), p. 1550046

Quang, H.T., Sampaio, P., Carvalho, M.S., Fernandes, A.C., Binh An, D.T., Vilhenac, E., 2016. An Extensive Structural Model of Supply Chain Quality Management and Firm Performance. *International Journal of Quality & Reliability Management*, Volume 33(4), pp. 444–464

Segawa, N., Natsuda, K., Thoburn, J., 2014. Affirmative Action and Economic Liberalisation: the Dilemmas of the Malaysian Automotive Industry. *Asian Studies Review*, Volume 38(3), pp. 422–441

Wad, P., Govindaraju, V.C., 2011. Automotive Industry in Malaysia: An Assessment of Its Development. *International Journal of Automotive Technology and Management*, Volume 11(2), pp. 152–171

Wisner, J.D., Tan, K.C., Leong, G.K., 2014. *Principles of Supply Chain Management: A Balanced Approach*. USA: Cengage Learning

Whitten, G.D., Green, K.W., Zelbst, P.J., 2012. Triple-A Supply Chain Performance. *International Journal of Operations & Production Management*, Volume 32(1), pp. 28–48

Wong, W.P., Wong, K.Y., 2007. Supply Chain Performance Measurement System using DEA Modeling. *Industrial Management & Data Systems*, Volume 107(3), pp. 361–381

Zamani, S.N.M., Abdul-Talib, A.N., Ashari, H., 2017. The Strategic Fit of Multiple Strategic Orientations and New Product Development Performance in Malaysian Manufacturing Firms. *Journal for Studies in Management and Planning*, Volume 3(1), pp. 87–101