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# Enhancing the Competitiveness of Auto-Parts Enterprises: The Case of Proton's Suppliers

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***Abstract***: The launch of the national car project provided greater opportunities for local enterprises to be involved in the auto-parts making industry. However, the unprecedented pace of globalization, trade liberalization and capital movement in recent times has posed great challenges for local enterprises, particularly auto-parts suppliers to compete in the open market. Public-private partnership would be one of the ways to mitigate the unexpected impact of globalization. This effort would be more effective if factors contributing to firm competitiveness are known in advance. This paper provides empirical insights into factors affecting the competitive position of auto-parts suppliers operating in Malaysia. This paper furnishes useful guidelines for the firms in order to remain competitive in the open market mechanism and for better public-private partnership in the automobile industry. A multiple regression analysis of primary data showed that two internal factors – quality and ownership structure, pose significant influence on the competitive position of auto-parts enterprises. Hence, any public-private partnership drive to develop the sector, especially the small and medium enterprises (SMEs), should be devoted to these two assets.

***Keywords***: competitiveness, proton, auto-parts, suppliers, Malaysia

***JEL classifications***: L25, L26, L52, L53

## 1. Introduction

Local enterprises in Malaysia enjoyed significant opportunities to be involved in the auto-parts making industry when the first national car project (Proton) was launched in 1983. As one of the heavy industrial projects identified by the Malaysian government, the automotive industry was given a major thrust for upgrading local capabilities in auto-parts making. In order to expedite the process of developing manufacturing capabilities of local firms, especially the small and medium enterprises (SMEs), the Proton Component Scheme was introduced in 1988. This programme was aimed at providing sufficient room for local enterprises to supply parts and components as well as to render supporting services to auto-makers, particularly Proton. Suppliers under the

programme were eligible for financial facilities either to purchase intermediate and capital goods, acquire technology or improve product quality. At the same time, the government also offered lucrative fiscal incentives and provided various forms of protection such as local content policy and tariff and non-tariff barriers for the suppliers. This undivided support by the government went on without any distraction for more than a decade.

However, the unprecedented pace of globalization, trade liberalization and capital movement in the later years profoundly changed the rules of the game and posed serious challenges for local enterprises to compete in an open market. For example, the inbound and outbound FDI stocks have augmented in nearly every country and increased more rapidly than that of world production or world trade (Acs and Preston, 1997). In the automobile industry, the removal of trade barriers through the Asean Free Trade Area (AFTA) and bilateral agreements would also change the rule of the game. As reported in bilaterals.org (2005), the Free Trade Agreement (FTA) between Japan and Malaysia was signed in May 2005. With this pact, it was agreed that Japan enhances the competitiveness of the Malaysian automobile and auto-parts industry. While Malaysia in turn, removes tariffs on Japanese cars for a period of 10 years (tariffs will become obsolete by 2015). For an immediate effect, Malaysia has concurred to eliminate tariffs on completely-knocked-downs (CKDs) kits imported by Japanese auto-assemblers operating on her shore. All this development is good news for foreign firms as they have their competitive advantages in automotive and auto-parts production, but not for local firms, particularly the SMEs.

As such, a deeper public-private partnership (PPP) would be one of the ways to mitigate the unexpected impact of these international developments. Broad and indiscriminate support by the government to the suppliers as provided in the past may no longer be suitable and applicable in the present competitive environment. Alternatively, more specific public-private collaboration should be in place so that the suppliers would be able to compete with global competitors in the auto-parts market. However, before this strategic move could be initiated, factors contributing to firm competitiveness should be identified first. Surprisingly, there are few studies on the competitiveness of auto-parts suppliers in Malaysia. This paper examines empirically the factors affecting the competitive position of auto-parts enterprises operating in Malaysia.

## 2. Profile of Malaysian SMEs

SMEs have been given considerable attention by the Malaysian government since the economic recession in the 1980s. The Industrial Master Plan (1986-1995) for the first time acknowledged that prolonged heavy dependence

on large foreign investment was not right for further development of the industrial sector. As a way out, domestic capital formation through local SMEs was promoted as a buffer zone for the economy, especially during recession. Moreover, SMEs were seen as a potential engine of economic growth in line with the distribution strategy of the New Economic Policy. This clear policy direction has provided room for the development of SMEs which were previously neglected. Local SMEs in various economic activities have been mushrooming since then. In 2005, there were more than 500,000 SMEs in all economic sectors; they accounted for more than 90 per cent of the total establishment (Table 1). The output value of the sector also increased substantially from RM51.5 billion in 1996 to RM81.9 billion in 2005. A similar trend can also be observed for added value which augmented from RM10.1 billion to RM16.6 in the same period (see Table 2).

Performance of SMEs in some relative indicators is yet to be favourable. It is recorded that the share of SMEs in total output and total value added increased slightly between 1996 and 2005. However, until recently, the share of SMEs in both indicators was below 30 per cent. This lack of competitive position of SMEs *vis-à-vis* their large counterparts could be associated with the low level of technology and human capital owned by the sector. As a result of the competitive disadvantages in these two factors, SMEs are less innovative which in turn retards the value creation in their production.

Employment in SMEs also increased marginally in the period 1996-2005, whilst the share of SMEs in total employment rose from 29.6 per cent to 31.1 per cent in the same decade (see Table 2). This achievement, however, accounted for less than one-third of the total manufacturing employment. Although SMEs are normally labour intensive in their operation, their smallness makes them impossible to hire a sizeable number of labour force per unit of establishment.

Table 1: Share of SMEs in Total Establishment by Economic Activities, 2005

| Economic Sector | No. of Establishments | SMEs | % of SMEs |
|---|---|---|---|
| Manufacturing | 39,219 | 37,866 | 96.6 |
| Services | 119,980 | 118,662 | 98.9 |
| Retail, Wholesale and Restaurant | 312,245 | 311,234 | 99.7 |
| Finance | 19,291 | 19,108 | 99.1 |
| Agriculture | 32,397 | 29,985 | 92.6 |
| Total | 523,132 | 516,855 | 98.8 |

Source: http://www.smidec.gov.my/index.jsp (3 December, 2008).

Table 2: Contribution of Manufacturing SMEs to the Malaysian Economy (1996, 2005)

| Economic Indicators | 1996 | 2005 |
|---|---|---|
| Total Output | | |
| Value (RM billion) | 51.5 | 81.9 |
| Share of SMEs (%) | 22.1 | 29.6 |
| Added Value | | |
| Value (RM billion) | 10.1 | 16.6 |
| Share of SMEs (%) | 19.5 | 25.9 |
| Employment | | |
| Number | 329,848 | 394,670 |
| Share of SMEs (%) | 29.6 | 31.1 |

Source: http://www.smidec.gov.my/index.jsp (3 December, 2008).

With respect to marketing, SMEs tend to sell their products in the local market due to their resource constraints in terms of finance, information, management capacity (Buckley, 1989) and external barriers, including market imperfections and regulations (Acs *et al*., 1997). In line with these setbacks and constraints, the Malaysian SMEs are not spared from this curse. Export-oriented SMEs in the manufacturing sector (defined as the firms exporting at least 50% of their total production) were 0.3 per cent only; whilst 0.2 per cent each were in the services and the agriculture sector (Aris, 2006). The export share of Malaysian SMEs in total exports is 20 per cent lower than the other developing economies, such as the Philippines, Hong Kong and Taiwan (SMIDEC, 2002).

The development of SMEs in the auto-parts industry has become noticeable for the last two decades. Between 1993 and 2005 alone, the number of auto-parts enterprises increased about six-fold to 590 in 2005 (see Table 3), of which half were SMEs. The other performance indicators (output value, employment and trade) were also on the rise during the decade. Despite the positive development in exports, auto-parts imports grew at an accelerated rate, resulting to ballooning of trade deficits, particularly between 2000 and 2005. This indicates how the open market mechanism has made competition in the local auto-parts market become stiffer. This may bring about negative implications for competitiveness of auto-parts suppliers, particularly SMEs, operating in the home country. Looking from/at the other side of the coin, however, the expanding domestic and export markets of auto-parts may provide larger market opportunities for SMEs should they adopt right measures to compete in the global market. This measure might be adopted through a more specialized private-public partnership which is the focus of this study.

Table 3: Development of the Auto-parts Industry, 1993-2005

| Year | 1993 | 1996 | 2000 | 2005 |
|---|---|---|---|---|
| Number of Enterprises | 100 | 162 | 168* | 590+ |
| Output Value (RM million) | 1,867 | 2,681 | 2,669* | 5,190 |
| Employment | 13,762 | 16,131 | 20,349 | 29,861 |
| Export (RM million) | n.d. | 511.7 | 1,018.5 | 2,140.3 |
| Import (RM million) | n.d. | 1,254.5 | 1,520.9 | 4,401.3 |
| Trade Balance (RM million) | n.d. | (742.8) | (502.40) | (2,261.00) |

Notes: * Figures for 1999.
+ The total number of auto-parts suppliers (both local and foreign). Recent report by MIDA shows a drop to 350 (www.mida.gov.my). This discrepancy, according to the former president of Proton Vendor's Association was due to the method of inclusion (590 suppliers included minor suppliers who produced small parts, such as screw, bolt, mat, etc., whereas 350 referred to major component suppliers only).
n.d. Data not available; figures in parentheses refer to deficits.
Sources: Wad (2005), Malaysia (2006).

## 3. Theoretical Framework

Competitiveness is multi-dimensional and a relative concept which can be applied to three different levels of analysis – the individual firm, industry, and country (Nelson, 1992; Ambastha and Momaya, 2004). At the firm-level analysis, Ramasamy (1995) perceives competitiveness as the ability of a firm to augment market share, profit and growth in added value and to remain competitive in the long run. In fact, many studies treat competitiveness and performance as an inseparable construct (see for example McNamee *et al*., 1999; Ambastha and Momaya, 2004; Garrigos-Simon *et al*., 2005). More precisely, Man *et al*. (2002: 126) states that "competitiveness is ultimately concerned with the long-term performance of the subject related to its competitors."

Kumar and Chadee (2002) stress that (export) profitability and market share remain the ultimate indicators of firm competitiveness in the global market. To Gorynia (2001), the basic measures of the competitive position of a firm are its market share and financial condition. Ambastha and Momaya (2004) assert that many scholars have seen productivity as a good surrogate and indicator of long-term competitiveness of a firm. There are a number of well-developed models or frameworks for explaining firm competitiveness.

Competitive performance to Gorynia (2001) is similar to competitive position – the results of the market or consumer assessment on the products

or services offered by the firm. IMDWEF (1993) presents a global competitive formula with which world competitiveness is dependent on, that is, competitive assets and competitive process. Assets, either inherited or created (firm structure, finance, technology, people, brand, reputation, culture, systems, infrastructure) are transformed through various processes such as; quality, speed, customization, service, strategy, innovations, marketing, and management (IMDWEF, 1993; Ambastha and Momaya, 2004) to achieve economic returns from sales to customers (DC, 2001) or transactions in the market.

Human resources and technology are core assets for a firm to be competitive. Barney (1991) in the resource-based view refers to human capital resources, among others, as experience, training activities and insight of individual employees and managers in a firm. Ferligoj *et al*. (1997) argue that skills of employees and innovativeness may contribute positively to competitive advantages of a firm. Technology, on the other hand, normally refers to know-how which may come in many forms, including product, process, management as well as communication and information technologies (ICTs) (Kumar and Chadee, 2002) and contribute positively to competitive advantages.

Firm ownership is another important asset for a firm. According to Douma *et al*. (2003), ownership structure is one of the firm-specific assets that exert most influence on firm performance because a different identity, focus and endowment among different owners determine relative power, incentives and the ability to monitor managers; and different owners with different goals may lead to different influences on firm performance. According to Randøy and Goel (2003) there are three forms of ownership structure namely; family ownership, blockholder ownership and foreign ownership. They argue that firms should opt for ownership structures which enable corporate management to obtain the full potential of corporate assets.

Innovation is a process of idea creation, the development of an invention and ultimately the introduction of a new product, process or service to the market (Thornhill, 2006). Innovation may also involve managerial techniques which see the increased popularity of total quality, just in time and lean production, simultaneous engineering and co-design, employee's involvement, total productive maintenance, and continuous improvement (Caridi, 1997). The importance of innovation is described by Roberts and Amit (2003) as a means leading to a competitive advantage and superior profitability. With innovation, quality of products could be enhanced which in turn contributes to firm performance and ultimately to a firm's competitive advantage (Garvin, 1987; Forker *et al*., 1996).

Competitive potential as proposed by Buckley *et al*. (1988) corresponds to competitive assets and competitive process in the framework of IMDWEF

(1993). As can be drawn from Gorynia (2001), competitive potential in a narrow sense refers to all the resources at a firm's disposal, whilst in a broader definition, it includes all the competitive assets and competitive processes (corporate culture, firm structure, strategic vision, unique behaviour) which belong to a firm.

Despite their usefulness in explaining firm competitiveness, the frameworks proposed by Buckley *et al*. (1988), IMDWEF (1993) and Gorynia (2001) seem to overlook the potential role of external factors. In addition to these frameworks, many other studies also attribute more to internal factors or firms' characteristics and actions (resource, capabilities and strategies) as the real sources of competitiveness because the external or environmental factors are presumed uniform for all competing firms (see Prahalad and Hamel, 1990; Ambastha and Momaya, 2004). This assumption actually defies reality because firms can actively interact with the environment to improve their competitive advantage. In order for a firm to compete successfully in the market, both internal and external sources such as; factor conditions, demand conditions, related and supporting industries as well as firm strategy, structure and rivalry should be taken into accounts (Porter, 1990). This is especially true for SMEs which are resource constrained and hence they need to depend on knowledge rejuvenation to survive and keep growing (Guardo and Valentini, 2007).

Networking is one of the external factors to a firm (Jarillo, 1989). It refers to a set of relations, or ties among actors of either individuals or organizations (Powell and Smith-Doerr, 1994) to pursue their congruence of economic goals. Network theory suggests that the ability of a firm to gain access to many kinds of resources – money, materials, clients and technical staff services (Van de Ven *et al*., 1979) beyond their control, either through formal or informal networks (Kingsley and Malecki, 2004) can contribute to the success of the firm (Zhao and Aram, 1995).

Acknowledging the diverse theoretical perspectives above, this study applied an integrated framework to explain firm competitiveness. This approach is adopted because firms do not compete with themselves in the same industry, but they do with a certain number of rivals in the market and at the same time they have to engage with the environment where they operate. Thus, this study has taken into account both internal and external factors to explain firm competitiveness as operationalized in the following section.

## 4. Research Methods

To identify the factors that affect competitive position of auto-parts enterprises operating in Malaysia, this study employed a multiple regression analysis to estimate a firm's competitive model as proposed in the immediate

sub-section. This section discusses the variable measurements and the sources of data used in the study.

### *4.1 Variables and Measurement*

Following Gorynia (2001), competitive position is taken as a dependent variable. This study adopts turnover and productivity as dependent variables, measured in growth terms for the period 2003-2005. Since the data for profit were incomplete and seriously skewed even after a natural logarithmic transformation was carried out, turnover was used to gauge a firm's financial position.

This study hypothesize that the competitive position of a firm lies in its various competitive advantages - the independent variables. However, due to a small sample size, a detailed decomposition of the sources of competitive advantages is impossible to be undertaken by this study. While the model focuses on the predictors of interest and key control variables, certain variables were either dropped, or grouped into a broader concept. Human resources and technology were combined and referred to as core assets as they can represent knowledge to a firm. In this study, human resources were categorized into three dimensions (experienced management, skilled employees as well as human resource development and learning culture), whilst technology comprised four dimensions (production, process, management and ICTs). The respondents were asked to indicate the extent of their agreement or disagreement over the core assets on a six-point Likert scale (ranging from "strongly disagree" = 1 to "strongly agree" = 6) relative to their nearest competitors in the region. Coefficient alpha for the seven-item asset dimension was 0.76.

In line with Randøy and Goel (2003), this study expects that the presence of foreign ownership in a firm would lead to better corporate governance and hence competitive position of the firm. This variable was measured in dummy terms (1 = firms with foreign shareholdings and 0 = otherwise. Only the firm with at least 10 per cent of the ordinary shares owned by foreign investors was considered as a firm with foreign shareholdings (OECD, 1999).

Two variables representing competitive process in this study are innovation and quality. Five items of innovation pertinent to process, product, management and ICT were proposed to the respondents. With respect to quality, six items proposed were product reliability, product durability, product conformance, product design, pre-sale customer service and support, and responsiveness to customers. Definition for each of these variables was drawn from Curkovic *et al*. (2000) and provided in the questionnaire. In each case, the respondents were asked to indicate their competitive advantages (either in innovation or quality) on a six-point scale (ranging from "strongly disagree" = 1 to "strongly agree" = 6) relative to their major competitors

in the ASEAN region. The coefficient Alphas produced were 0.73 for the innovation dimension and 0.82 for the quality dimension.

For networking, the respondents were asked to indicate the strength of their formal and informal networks with customers, other suppliers, distributors, financiers, support agencies and the members of trade association. The scale given ranged from "strongly disagree" (= 1) to "strongly agree" (= 6). The coefficient alpha for this networking dimension was 0.87.

Many studies forewarn the potentially strong influence of some variables, including firm age and size on various performance indicators (Randøy and Goel, 2003; Wynarczyk and Watson, 2005). Since the interest of this study is on the influence of competitive advantages on a firm´s competitive position, the potential moderating effect of firm age and size is minimized by incorporating these two as control variables in the model. These factors were measured by number of years in operation and number of full-time employees respectively.

### *4.2 Data Source*

The unit of analysis in this study is auto-parts enterprises which supply their products, mainly to auto-makers or auto-assemblers operating in Malaysia. These respondents may vary in terms of size and ownership structure. With respect to size, this study defines an SME as an enterprise employing up to 150 full time employees; a large enterprise is referred to as an enterprise engaging more than 150 full time workers. There were about 350 auto-parts making enterprises (www.mida.gov.my/) of which about 35 per cent were members of Proton Vendor's Association. These suppliers were located predominantly in the Klang Valley (Selangor and Kuala Lumpur), Negeri Sembilan and Penang while the rest were scattered all over Peninsular Malaysia.

Employing a directory provided by the Proton Vendor's Association, almost all the auto-parts enterprises (more than 120) listed in this directory were contacted in order to get their consent and commitment to participating in the study. After obtaining their positive responses, a self-administered questionnaire was sent to each of them. This questionnaire was designed to solicit information on competitive position and competitive advantages of the auto-parts enterprises. About 33 per cent or 38 respondents returned the questionnaire. Some of them returned the questionnaire only after a few follow-up calls and visits were made.

### *4.3 Results and Discussion*

The auto-parts making is a capital intensive industry which requires a large amount of investment for every unit of output. Therefore, it is not surprising when this study found that the large enterprises formed 61.5 per cent of the

sample; and the remaining 38.5 per cent were SMEs. A large percentage of the sample respondents (69.4 per cent) were fully owned by locals, whilst 30.6 per cent of them had foreign equity ownership. On average, the auto-parts suppliers provided a good number of jobs (mean, 267.08 as in Table 4), particularly to local people (Author's interview, 2006). As shown in Table 4, total sales per firm was encouraging (mean turnover, 48.69), but profit margin was rather small (mean, 2.80). This small profit margin may be attributed to the nature of the industry itself. This knowledge-based industry incurs high fixed and variable costs for the players to keep pace with up-to-date technologies, to outsource engineered materials and to hire the best brains at all levels.

A frequency analysis also found that a majority of the respondents (87.2 per cent) were non- exporters as their products strictly catered for the domestic market; only 12.8 of the sample were exporters. This finding reveals that the players of the auto-parts industry, regardless of their firm size, are inward looking. Heavy protection provided by the government since the inception of the automotive project contributed to a comfort-zone mentality among the auto-parts enterprises. They hardly had any initiative to venture out into the global market by improving their competitive advantages in terms of product quantity, quality, delivery and prices. As a result of this attitude, the enterprises failed to compete at least on the regional market.

The sole focus on the domestic market seems to defy reality. The recent changes in PROTON's strategy regarding components sourcing should be of utmost concern for locally-owned auto-parts suppliers. With the adoption of the modular system, PROTON, instead of depending on single sourcing and giving priority to local suppliers has turned to dual sourcing and to global auto-parts suppliers as one of the crucial strategies in cost-cutting initiatives and improving competitiveness in the market. This development may affect

Table 4: Descriptive Statistics

| Variables | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Turnover (RM million*) | 38 | 3.0 | 155.00 | 48.69 | 41.49 |
| Number of employees | 38 | 14 | 1778 | 267.08 | 315.77 |
| Net profit before tax (RM million*) | 25 | -2.12 | 15.06 | 2.80 | 4.22 |
| Labour productivity (turnover per employee, RM million) | 38 | 0.02 | 1.62 | 0.31 | 0.36 |

Note: * RM3.80 = US$1.00 (2004).
Source: The sample survey (2006); Proton Vendor's Directory (2005).

Table 5: Independent-samples T-test of Mean Differences

| Variables | SME | LE | t | FWNFO | FWFO | t |
|---|---|---|---|---|---|---|
| Turnover | 17.76 (14) | 66.72 (24) | -4.24*** | 41.00 (24) | 67.46 (11) | -1.81* |
| Labour Productivity | 0.42 (14) | 0.24 (24) | 1.24 | 0.17 (24) | 0.54 (11) | -2.23** |
| Core Assets | 26.85 (13) | 27.14 (22) | -0.27 | 26.30 (23) | 29.00 (9) | -2.23** |
| Innovation | 9.14 (14) | 9.88 (24) | -1.52 | 9.33 (24) | 10.27 (11) | -1.78* |
| Quality | 28.54 (13) | 29.65 (23) | -0.90 | 28.78 (23) | 30.20 (10) | -1.06 |
| Networks | 50.79 (14) | 59.79 (24) | -2.627** | 55.33 (24) | 59.55 (11) | -1.05 |

Notes: SME – small and medium enterprises; LE – large enterprises; FWNFO – firms with no foreign ownership; and FWFO – firms with foreign ownership; ***, **, and * are significant at the $p < 0.01$, $p < 0.05$, and $p < 0.10$ level respectively.
Source: Author's survey (2006).

the manufacturer's competitive position in terms of shrinking their financial position and if this remains unchecked, their competitive capacity and presence would wither from the market space.

As shown in Table 5, the competitiveness level between smaller auto-parts suppliers (SMEs) and larger suppliers (LEs), except for the turnover and networks variables, is not significantly different in many competitive indicators. This does not mean that firm size is not important for determining firm competitiveness when more competitive variables are taken into account as will be shown in the later part of this paper. In contrast, Table 5 reveals that the competitiveness between auto-parts enterprises with foreign ownership (FWFO) and the enterprises without the foreign resource (FWNFO) is significantly different in most of the competitive indicators.

Due to the important issue of firm competitiveness, deeper investigation into factors determining competitiveness of a firm becomes crucial. Using an Ordinary Least Squares Method (OLS), Table 6 provides valuable information on determinants of firm competitiveness. All the variables, except for Ownership, are reported in log form because prior assessment and test for a normality assumption found that the continuous dependent and independent variables needed a natural logarithmic transformation to overcome the strongly skewed data as recommended by Tabachnick and Fidell (2007). The log form according to Wijewardena and Tibbits (1999) may produce a better fit over the linear form. The ownership variable remains in a dummy form.

Table 6: Influence of Various Factors on Firm's Competitive Position

| Variables | ln (Turnover) | ln (Productivity) |
|---|---|---|
| ln (Core Assets) | 0.31 | -0.03 |
| | (0.02) | (-0.02) |
| Ownership | 0.60* | 0.60* |
| | (1.78) | (1.78) |
| ln (Innovation) | 1.28 | -1.28 |
| | (1.26) | (-1.26) |
| ln (Quality) | 4.01*** | 4.01*** |
| | (2.71) | (2.71) |
| ln (Networks) | 0.43 | 0.43 |
| | (1.43) | (1.43) |
| ln (Age) | 0.32 | 0.32 |
| | (0.75) | (0.75) |
| ln (Size) | 0.58*** | -0.42*** |
| | (3.87) | (-2.85) |
| Constant | -10.81** | -10.81** |
| | (-2.33) | (-2.57) |
| $R^2$ | 0.58 | 0.48 |
| *F*-ratio | 5.18*** | 3.812*** |

Notes: ***, ** and * are significant at the 0.01, 0.05 and 0.10 confidence level respectively. Figures in parentheses are *t*-ratios.
Source: Estimated from the sample data.

As expected, the influence of firm size on the competitive position of the auto-parts suppliers for all the indicators (turnover and productivity) is highly significant at the 0.01 confidence level. However, based on the values and signs of the coefficients, the influence of firm size differs from one variable to another. The positive sign of firm size indicates that turnover increases with the increase in size, whilst the negative sign shows productivity increases with the decrease in firm size. The result of the former is not difficult to understand since larger firms are better able to employ more skillful managers and employees and obtain more efficient production facilities (Sandesara, 1966). They are also able to exploit economies of scale and scope, and to formalize procedures which make their operations more efficient thereby enjoying superior performance relative to smaller firms (Penrose, 1959).

A possible explanation for the negative relationship between firm size and productivity is the stronger positive effect of foreign ownership on labour productivity of SMEs relative to LEs as found by Aitken and Harrison (1999)

in their study on industrial plants in Venezuela. This may be related to the fact that foreign owners find it relatively easier to manage smaller firms (Yudaeva *et al*., 2003) than the larger ones.

The effect of foreign ownership on competitive position of the auto-parts suppliers is also notable. Foreign ownership correlates positively and significantly with turnover and productivity. This positive impact of foreign ownership on the competitive position of the auto-parts suppliers is consistent with the findings by Rosli and Kari (2008) and Rasiah and Kumar (2008). Rosli and Kari (2008) found that the performance of the local auto-parts suppliers was less favourable than that of the foreign counterparts both in economic and financial variables since the latter had better access to superior resources in terms of knowledge, expertise and technology. Rasiah and Kumar (2008) in their study in India found that foreign firms, through various ways and means, give positive impact on productivity and export performance of the firms in the home country.

The coefficient for quality is positive and highly significant, either at the 0.01 or 0.05 confidence level, indicating that a competitive advantage in product and service quality lead to a positive effect on a firm's competitive position. The six dimensions of quality which should be given serious attention are product reliability, product durability, product conformance, product design, pre-sale customer service and support, and responsiveness to customers. The importance of quality on competitive position of a firm is consistent with Curkovic *et al*.'s (2000) findings on the performance of auto-parts suppliers in the U.S. Moreover, as the costs of purchasing, keeping and maintaining automobiles are considerably high depending on the models and technology, consumers cannot tolerate poor quality of auto-parts and poor response to their complaints or requests. Likewise, the automakers cannot compromise on quality because poor quality of auto-parts assembled in an automobile can reflect the overall quality of their organizations.

Quality is also part of international standard requirements imposed by advanced countries in light of growing environmental concerns in the recent period. For instance, the European Union has decided to impose recyclability requirements for parts and components by the end of 2006, Euro-5 for motor vehicles (stricter emissions limits on vehicles powered by petrol or diesel engines) by 2008 and greater use of bio-degradable parts and materials in the manufacture of vehicles (Malaysia, 2006).

## 5. Conclusion

This paper provides useful insights into the competitiveness of auto-parts enterprises. The empirical results in this paper support the hypothesis that a firm's competitive advantage determines its competitive position in the

marketplace. However, only internal (firm size, firm ownership and quality) and not external factors helped the auto-parts suppliers to consolidate their competitive position in the market. This finding makes the frameworks proposed by Buckley *et al*. (1988), IMDWEF (1993) and Gorynia (2001) more convincing in that internal factors (resource and process) are the real sources of firm competitiveness.

With heavy challenges confronting the auto-parts industry and suppliers, the results of this study also provide some managerial implications. As competitive advantage derived from quality becomes essential to a firm's competitive position, auto-parts enterprises should give considerable attention to the improvement of the quality of their products and services. Another dimension of competitive advantage which should be given due attention by local auto-parts suppliers is joint-ownership with foreign entrepreneurs. As the auto-parts manufacturing industry requires state-of-the-art knowledge, expertise and technology, the presence of foreign interest in a firm will help the firm to improve its competitive advantage. This should be the best option for local suppliers who lack internal resources and capabilities to improve their competitive position in the local and global markets. Moreover, the enterprises operating in a knowledge-driven auto-parts industry can no longer depend on traditional sources of organizational financing, such as from personal savings, family, friends or even benevolent capitalists, but they require investors who have superior knowledge in the industry. Realizing the intense competition in the global market and the concentration of auto-parts upstream activities in advanced economies, Thun (2001) asserts that two alternative strategies remain for local auto-parts supplier firms. First, the local firms should join forces with global suppliers through mergers, joint ventures and strategic alliances; or second, they should at least become lower-tier suppliers to global suppliers.

From the public-private partnership perspective, this paper provides useful direction for future collaboration between the public and the private sector in the auto-parts manufacturing industry. As identified by the government, among other challenges facing the auto-parts enterprises are lack of economies of scale, overdependence on domestic market, inadequate indigenous technology development, limited in-house research and development, lack of design and testing capabilities and facilities, inability to comply with international standards, shortage of skilled workforce, and poor industry linkages (Malaysia, 2006). This study shows that any partnership should be more focused and devoted to two important internal-related factors – quality and ownership – so that auto-parts firms, especially the SMEs, could be more competitive in the market.

Despite the important contribution of this paper to the literature and practitioners, it does not run away from some limitations. Due to a small

sample size, it is impossible to see different competitive positions across firm size and ownership. Future studies can replicate the methods used in this study, but a larger sample size should be employed to examine differences in competitive positions across firm size and ownership so that the influence of core assets (human resource and technology) and innovation on firm's competitive position would be detailed out. Longitudinal instead of cross-sectional data should also be used in future studies to identify the impact of networking on firm's competitive position because there will always be time delay between the cause (networking activity) and the effects (the resultant performance) of the networks (see Watson, 2007). Future studies should also consider entrepreneurial competencies in the model since a large majority of auto-parts suppliers were registered as private and not public limited companies. It is strongly believed that individual entrepreneurs play a leading role in decision making and hence determine competitiveness in such private companies.

## References

Acs, Z.J. and Preston, L. (1997) "Small and Medium-sized Enterprises, Technology, and Globalization: Introduction to a Special Issue on Small and Medium-sized Enterprises in the Global Economy", *Small Business Economics*, 9(1): 1-6.

Acs, Z.J., Morck R., Shaver, J.M. and Yeung, B. (1997) "The Internationalization of Small and Medium-sized Enterprises: A Policy Perspective", *Small Business Economics*, 9(1): 7–20.

Aitken, B.J. and Harrison, A.E. (1999) "Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela", *The American Economic Review*, 89(3): 605-618.

Ambastha, A. and Momaya, K. (2004) "Competitiveness of Firms: Review of Theory, Frameworks, and Models", *Singapore Management Review*, 26(1): 45-61.

Aris, N.M. (2006) "SMEs: Building Blocks for Economic Growth", National Statistics Conference, Department of Statistics, Malaysia, 4-5 September, retrieved on 8 September 2009 from http://www.digitalibrary.my/dmdocuments/malaysiakini/266_22Hjh_Normah.pdf.

Barney, J. (1991) "Firm Resource and Sustained Competitive Advantage", *Journal of Management*, 17(1): 99-120.

Buckley, P.J. (1989) "Foreign Direct Investment by Small and Medium Sized Enterprises: The Theoretical Background", *Small Business Economics*, 1(2): 89-100.

Buckley, P.J., Pass, C.L. and Prescott, K. (1988) "Measures of International Competitiveness: A Critical Survey", *Journal of Marketing Management*, 4(2): 175-200.

Caridi, A. (1997) "Profile Analysis in Automotive Component Industry: A New Methodology to Analyze a Firm's Competitiveness", *Advance in Competitiveness Research*, 5(1): 4-31.

Curkovic, S., Vickery, S.K. and Droge, C. (2000) "An Empirical Analysis of the Competitive Dimensions of Quality Performance in the Automotive Supply

Industry", *International Journal of Operation & Production Management*, 20(3): 386-403.
DC (2001) *Destination Competitiveness: Development of a Model with Application to Australia and the Republic of Korea*, Australian Government Report, October.
Douma, R., George, R. and Kabir, R. (2003) "Foreign and Domestic Ownership, Business Groups and Firm Performance: Evidence from a Large Emerging Market", paper presented at the Corporate Governance Program, Initiative for Policy Dialogue.
Ferligoj, A., Prasnikar, J. and Jordan, V. (1997) "Competitive Advantage and Human Resource Management in SMEs in a Transnational Economy", *Small Business Economics*, 9: 503-514.
Forker, L.B., Vickery, S.K. and Droge, C.L. (1996) "The Contribution of Quality to Business Performance", *International Journal of Operations & Production Management*, 16(8): 44-62.
Garrigos-Simon, F.J., Marques, D. and Narangajavana, Y. (2005) "Competitive Strategies and Performance in Spanish Hospitality Firms", *International Journal of Contemporary Hospitality Management*, 17(1): 22-38.
Garvin, D.A. (1987) "Competing on the Eight Dimensions of Quality", *Harvard Business Review*, 65(6): 101-109.
Gorynia, M. (2001) "The Competitiveness of Polish Firms and the European Union Enlargement", *The Poznan University of Economics*, 1(1), retrieved on 26 January 2007) form http://www.puereview.ae.poznan.p1/2001v1n1/01-1-gorynia.pdf.
Guardo, C.D. and Valentini, G. (2007) "Taking Active Advantage of MNCs' Presence", *Small Business Economics*, 28(1): 55-68.
IMDWEF (1993) *The World Competitiveness Report 1993*, Laussane, Switzerland: Institute of Management Development and World Economic Forum.
Jarillo, C.J. (1989) "Entrepreneurship and Growth: The Strategic Use of External Resources", *Journal of Business Venturing*, 4(2): 133-147.
Kingsley, G. and Malecki, E.J. (2004) "Networking for Competitiveness", *Small Business Economics*, 23(1): 71-84.
Kumar, R. and Chadee, D. (2002) "International Competitiveness of Asian Firms: An Analytical Framework", *ERD Working Paper Series*, No. 4, Asian Development Bank, Manila.
Malaysia (2006) *Third Industrial Master Plan 2006-2020*, Kuala Lumpur: MITI.
Man, T.W.Y., Lau, T. and Chan, K.F. (2002) "The Competitiveness of Small and Medium Enterprises: A Conceptualization with Focus on Entrepreneurial Competencies", *Journal of Small Business Venturing*, 17(2): 123-142.
McNamee, P., Greenan, K.N. and McFerran, B. (1999) "The Competitive Analysis Model: A New Approach to Strategic Development for Small Businesses", *Benchmarking: An International Journal*, 6(2): 125-146.
Nelson, R. (1992) "Recent Writing on Competitiveness: Boxing the Compass", *California Management Review*, 34(2): 127-137.
OECD (1999) *OECD Benchmark Definition of Foreign Direct Investment*, Third Edition, retrieved on 2 October 2009 from http://www.oecd.org/dataoecd/10/16/2090148.pdf.
Penrose, E.T. (1959) *The Theory of the Growth of the Firm*, Oxford: Basil Blackwell.

Prahalad, C.K. and Hamel, G. (1990) "The Core Competence of the Corporation", *Harvard Business Review*, 68: 79-91.

Porter, M. (1990) *The Competitive Advantage of Nations*, New York: Free Press, MacMillan.

Powell, W.W. and Smith-Doerr, L. (1994) "Networks and Economic Life", in Smelser, N.J. and Swedberg, R. (eds), *The Handbook of Economic Sociology*, New Jersey: Princeton University Press.

Ramasamy, H. (1995) "Productivity in the Age of Competitiveness: Focus on Manufacturing in Singapore", *Productivity in the Age of Competitiveness*, Tokyo: APO Monograph Series, Asian Productivity Organization.

Randøy, T. and Goel, S. (2003) "Ownership Structure, Founder Leadership, and Performance in Norwegian SMEs: Implications for Financing Entrepreneurial Opportunities", *Journal of Business Venturing*, 18(5): 619-637.

Rasiah, R. and Kumar, A. (2008) "Foreign Ownership, Technological Intensities and Economic Performance of Automotive Parts Firms in India", *Asia Pacific Business Review*, 14(1): 85-102.

Roberts, P.W., and Amit, R. (2003) "The Dynamics of Innovative Activity and Competitive Advantage: The Case of Australian Retail Banking, 1981 to 1995", *Organization Science*, 14(2): 107-122.

Rosli, M. and Kari, F. (2008) "Malaysia's National Automotive Policy and the Performance of Proton's Foreign and Local Vendors", *Asia Pacific Business Review*, 14(1): 103-118.

Rosli, M. (2006) "The Patterns of Subcontracting Arrangements in the Malaysian Automobile Industry", *Studies in Business and Economics*, 12(2): 31-46.

Sandesara, J.C. (1966) "Scale and Technology in India Industry", *Oxford Bulletin of Economics*, 28(3): 181-198.

SMIDEC (2002) *SMI Development Plan (2001–2005)*, Kuala Lumpur: Percetakan Nasional Malaysia Berhad.

Tabachnick, B.G. and Fidell, L.S. (2007) *Using Multivariate Statistics*, 5th ed., U.S.A: Pearson Education, Inc.

Thornhill, S. (2006) "Knowledge, Innovation and Firm Performance in High- and Low-Technology Regimes", *Journal of Business Venturing*, 21(5): 687-703.

Thun, E. (2001) "Growing Up and Moving Out: The Globalization of Traditional Industries in Taiwan (China)," *Globalization Study Working Paper*, No. 00-004, Cambridge, MA: Industrial Performance Center, Massachusetts Institute of Technology.

Van de Ven, A.H., Walkerand, G. and Liston J. (1979) "Coordination Patterns within an Interorganizational Network", *Human Relations*, 32(1): 19-36.

Wad, P. (2005) "The Development of Automotive Parts Suppliers in Korea and Malaysia: A Global Value Chain Perspective", *Asia Pacific Business Review*, 14(1): 47-64.

Watson, J. (2007) "Modeling the Relationship between Networking and Firm Performance," *Journal of Business Venturing*, 22(6): 852-874.

Wijewardena, H. and Tibbits, G.E. (1999) "Factors Contributing to the Growth of Small Manufacturing Firms: Data from Australia", *Journal of Small Business Management*, 37(2): 88-95.

Wynarczyk, P. and Watson, R. (2005) "Firm Growth and Supply Chain Partnership: An Empirical Analysis of U.K. SME Subcontractors", *Small Business Economics*, 24(1): 39-51.

Yudaeva, K., Kozlov, K., Melentieva, N., and Ponomareva, N. (2003) "Does Foreign Ownership Matter? The Russian Experience", *Economics of Transition*, 11(3): 383-409.

Zhao, L. and Aram, J.D. (1995) "Networking and Growth of Young Technology-intensive Ventures in China", *Journal of Business Venturing*, 10(5): 349-370.