

Critical Elements of Supplier Development in the Malaysian Automobile Industry: Parts and Components Procurement and Supplier Development Practice at Proton

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Abstract

Supplier development is defined as any effort of a buying firm with regard to its supplier to increase the performance and/or capabilities of the supplier to meet the buying firm's supply needs. The procurement practice of the buyer is critical and acts as a window to nurture the supplier development effort, it is also crucial in determining the type of relationship that the company has with its suppliers. This paper examines the procurement practice at PROTON for parts and component inputs at the domestic level. To improve the existing buyer-supplier relationships it is first necessary to review the procurement practices of the firm. The effort to improve the relationship will usually include key suppliers as joint problem solvers utilising problem-solving models the firm's attitude towards suppliers may change from confrontational to one of trust and partnership. However, the improvements and solutions for the problems rely not only on the buyers' side, but also on the suppliers' side. This paper (1) discusses the importance of supplier development, (2) reviews literature to identify potential critical elements of supplier development, and (3) discusses the procurement practice at PROTON-the first national carmaker in the Malaysian automotive industry.

1 Introduction

In today's competitive business climate, buying firms increasingly rely on their suppliers to deliver technologically advanced, defect-free products, in a timely, and cost effective manner. Yet too often suppliers lack the ability to perform adequately in one or more of these areas (Morgan, 1993). If the product or service provided by a supplier is deficient in some respect, the buying firm faces the decision of whether to look for an alternative source of supply, or work with the suppliers to remedy any short-

comings. Due to the uncertainty concerning locating a better source, and the high cost of searching for and evaluating new suppliers, firms may choose to continue to work with their present suppliers to improve performance. In recent years car suppliers have been influenced by a profound and on-going reorganization process (Lamming, 1993), which involved them in decisional activities concerning final products. The active involvement of suppliers in the car industry took place step-by-step: from logistic integration to just in time, and product development (Lamming, 1993).

The automotive industry has been an important industry in the economic development of Malaysia. Initially, motor vehicle assembly plants were set up to provide employment and to reduce imports of completely built up (CBU) vehicles. Gradually, the components parts industry was developed to cater for the requirements of the replacement market and later to increase the local content of locally assembled vehicles. The implementation of the National Car Project undertaken by Perusahaan Otomobil Nasional Bhd. (PROTON) was another step towards the development of an integrated motor vehicle industry with special emphasis on manufacture of component parts, while the launch of PROTON Waja, with a locally designed model in 2000, was a technological breakthrough for the sector. This project is expected to provide a base for the development of engineering and support services, which are required to support the nation's industrialization program. Thus, PROTON is perceived to play a crucial role in the development of local suppliers-those that supply parts and components to this national carmaker. It is important to examine the procurement practice aspect in order to provide a critical view on how procurement affects the relationships between the carmaker and its suppliers.

2 The Purpose and Description of the Paper

This paper focuses on the relationship between PROTON (Perusahaan Otomobil Nasional or National Automobile Industry)¹ and its vendors². Studying the procurement practices at PROTON from its local suppliers offers a more appreciable explanation about the actual practices and how this practice could contribute to suppliers' development efforts as well as nurture a closer relationship between the automaker and the suppliers. The aim of this paper is to examine the buyer-supplier relationship between the automaker (PROTON) and the local suppliers of the automobile parts and components (vendors), and to see how the procurement practices of the automaker affect the buyer-supplier relationship (the relationship between PROTON and its local vendors).

The field survey was conducted in April 2001 and March-April 2002. PROTON shall henceforth be referred to as the "automaker." The parts and procurement practice of this automaker was chosen and assumed appropriate for the study for two main reasons: First, PROTON is the first automaker in Malaysia (established in 1983) and presently has the largest production capacity³ in the Malaysian market. Second, the Malaysian national automaker has set the ambitious goal of becoming a globally successful Malaysian automotive engineering and manufacturing company through customer orientation and producing competitively priced and innovative products. PROTON has also been successfully nurturing many local vendors. The number of vendors has grown from 17 in 1985 to 198 in 2000. With a considerable capacity for production and an assumed role in nurturing and upgrading local suppliers technologically, it would be logical to assume that considerable effort would be allocated to developing the capability of local suppliers through outsourcing or procurement practices. The suppliers in the study are the automobile parts and component manufacturers supplying to PROTON, also referred to as vendors. Therefore, the scope of this paper is the local Malaysian automobile⁴ parts and components indus-

try relating to automobile parts and components that are supplied to PROTON by local suppliers.

2.1 The Purpose of the Paper

This article will: (1) Examine the role of procurement and purchasing and the importance of supplier development; (2) Review relevant literature to identify potential critical elements of supplier development, and (3) Examine the procurement practices and supplier development efforts of a buyer-firm (the automaker) and how this affected their suppliers. The survey data used in this paper is supplier development from the Malaysian parts and components industry perspective.

2.2 Description of the Study

This study was conducted in Malaysia based on a questionnaire survey, interviews and observations with the Malaysian car manufacturer-PROTON and its immediate suppliers. Two field surveys were conducted in Malaysia in 2001 and 2002. From the first survey (2001), the author observed that PROTON provided technical assistance to suppliers due to its outsourcing practices. Thus, the second survey (2002) was conducted to extract more comprehensive information from both PROTON personnel and the vendors. Questionnaires were delivered to 74 suppliers categorized as Small and Medium-sized Industries (SMIs)⁵. The list was provided by the PROTON Vendors Association, which was published in the PROTON Vendors' Directory 2000/2001. The distribution covered suppliers from all the relevant industries in the automobile industry: Metal-28 suppliers, Rubber-12 suppliers, Plastics-12 suppliers, Electronics-2 suppliers, Electrical-3 suppliers and the Others category- 17 suppliers. Of the 74 surveys mailed, 29 usable surveys from the suppliers' were received for a response rate of 39.2 % (Metal-16 suppliers, Rubber-1 suppliers, Plastics-7 suppliers, Electronics-1 supplier, Electrical-2 suppliers and the Others category-2 suppliers). The response rate from SMI suppliers was 15 or 20 per cent. Given the positions of the respondents from this industry (most of them are executive directors, directors, general managers, deputy general managers, R&D managers, sales managers, parts and procurement managers, production managers, and the like), and the consequent demands of their positions, the response rate is considered reasonable.

Interviews were conducted with PROTON personnel and also supported by a set of questions. The main questions for PROTON covered several topics, including the supplier selection process, characteristics of the purchased items, the nature of the buyer's relationship with the supplier, and assistance rendered to suppliers. The main questions for the suppliers were designed to reveal the general characteristics of their relationship with PROTON, the sources of technology improvement, technical linkages, effective two-way, multi-functional communication, and other patterns in the buyer-supplier relationship.

As for PROTON, an unstructured questionnaire and interviews were utilized to complement the structured questionnaire given to the suppliers in order to gain an additional understanding of the procurement practices and their effects on the suppliers' technological development. The objective was to trace the trends of the automaker-supplier relationship between PROTON and its vendors. The first step of this study entailed visiting PROTON and 12 vendors (those who were willing to be interviewed). It is also important to note here that the Japanese practice of strong, long-term and close inter-firm relationships was observed to have been adopted and widely practiced between PROTON and its vendors, particularly inter-organization relations (Florida and Kenny, 1991) Japanese-style partnerships (Dyers and Ouchi, 1993; Sako, 1992), and obligational-based contractual relations (Sako).

3 The Role of Procurement and Purchasing

Procurement practice in this paper refers to the acquiring of inputs-parts and components-by PROTON through local outsourcing activities.⁶ For this paper, supplier development is defined as any effort by the a buying firm towards its supplier(s) to increase the performance and/or capabilities of the supplier and meet the buying firm's short and/or long-term supply needs. This definition does not restrict the scope of the varied activities that may be part of a supplier development program; however, it does intend to exclude development of a new source of supply, which is labeled in the literature as "reverse marketing" (Leenders and Blenkhorn, 1988). Supplier development may take place on a one-to-one basis between a buying firm (in this paper the automaker (PROTON)) and one or more of its suppliers, or it may be a more "global" effort and take place between a large customer firm and a group of its immediate suppliers. Hines (1994) describes this latter approach in his book on "Kyoryoku kai", or supplier associations, which is the method used by many Japanese firms.

Procurement or outsourcing which is also known as the purchasing department has a crucial role in determining the type of relationship that the company will have with its suppliers. In dynamic markets, companies need to evolve from traditional to strategic purchasing (Cammish and M. Keough, 1991). Strategic purchasing might imply standardization of components, delivery time and levels of inventory. These efforts will usually include key suppliers as joint problem solvers and for this problem-solving model to work the company's attitude towards the suppliers' needs to be one of trust and partnership. "Procurement practices and culture, more than anything else in an organization, set the tone and exert a great deal of influence on the buyer-supplier relationship. In order to begin to build or improve the existing buyer-supplier relationship, one must first review procurement practices of a company. Good procurement practices, though practiced by very few companies, where the buyer and supplier companies trust each other to a point where the structure of the buyer and supplier cost are shared and discussed are ideal or "win-win approach" (Mehta, 2000). Fostering and developing the buyer-supplier relationship is very important. The best procurement practice requests working closely with all the parties in the supply chain (Birch, 2001). Interestingly, Birch also touches on the issues in managing the relationship of buyers and suppliers or what he terms as "supplier relationship management", although this has a negative connotation, assuming any problem lies solely with the supplier and thus improvement only needs to be made by the supplier. In reality, the improvement and solutions to the problems depend on the contributions from both buyer and supplier.

The Japanese strategic industrial sourcing model is associated with passing the responsibility for design and manufacture to the first tier suppliers. To do this, a company must have a very clear, long term strategy on what it should be retaining control over designing and making, and what it can outsource to suppliers (Rees, 1996). There are many benefits to outsourcing such as allowing the company to focus on their core competence (what they are good at), reducing and controlling operating costs and having access to world-class capabilities. Outsourcing, however, also has considerable risks such as high dependence on suppliers, potential non-performance of suppliers and the danger of the suppliers' situation changing in the future—for example, a supplier gets into financial difficulties (Bragg, 1988).

4 The Importance of Supplier Development

Supplier development is a formal operation undertaken to elevate supplier performance and capabilities (Hahn et al. 1990; Hines, 1994; Hartley and Choi, 1996). Supplier development activities vary widely, and may include supplier evaluation, feedback of supplier performance, raising performance expectations, education and training for supplier personnel, supplier recognition, placement of engineering and other buyer personnel at the suppliers' premises, and direct capital investments by the buying firm in the suppliers' firm. The purpose of the effort may range from remedial, for example, training of a suppliers' personnel in statistical process control to help the supplier achieve the desired quality levels; to strategic purpose, where the buyer has competitive priorities that can be met only through dramatic improvements in suppliers' capabilities.

Critics of the supplier development concept might argue that buyers can prompt increases in supplier performance by threatening to take their business elsewhere. However, while this tactic may yield short-term benefits, it may not contribute to a long-term improvement in the buying firm's supply base. Thus, when a buyer firm desires a significant improvement in the capabilities of its supply base, it must effectively communicate its needs and be willing to participate in the improvement process. Such a stance more aptly describes a typical Japanese buyer-supplier relationship than a typical American or European buyer-supplier relationship (Lamming, 1993).

In every day business transactions, not only are goods and services exchanged for payment, but information is also exchanged. However, in longer-term relationships there may be people exchanged, such as guest engineers, who will help out the other party. This may even be a buyer's engineer who is helping to develop the supplier's capability in a new process, or with the manufacture of a new product. Lamming (1993) termed the relationship between the supplier and the buyer as a "quasi-organization" with its own culture, behavior and style of operating. His study was based on the automotive industry and illustrates the transition of relationships in that industry. The phases are traditional, stress, resolved and partnership. The subsequent fifth phase is the lean supply model and he suggests that this is the way relationships should be developed. Saunders (1994) describes two types of buyer-supplier relationship—the adversarial model and the partnership model. The adversarial model is characterized by its "arms-length nature" and formal paper work communication, and is seen as a short term, competitive sourcing approach that could lead to frequent changes in suppliers. The lifecycle model of the buyer-supplier relationship assumes that the relationship will develop and change over time. If this assumption is accepted, then the management of the relationship must also be in accordance with the different states of the life cycle.

Supplier development is important from at least three perspectives: (1) a purchasing perspective, (2) a corporate perspective, and, (3) more generally, a national perspective. First, one of the purchasing function's basic objectives is to "develop effective and reliable sources of supply" (Dobbler and Burt, 1996). As today's firms concentrate on their core competence, they increasingly rely on suppliers' efforts to meet ever-increasing competition. To meet these challenges the capabilities and responsiveness of the firm's supply base must be equal to, or better than, those experienced by the buying firm's competitors. A proactive buyer firm will not only evaluate suppliers, but will actively facilitate the improvement process.

An example from the Malaysian automobile industry illustrates that PROTON (Malaysia's first car maker) currently imposes a price cut of 3 per cent yearly on all parts and components supplied by its

vendors and the price is being cut automatically every year. Their suppliers are local firms, many of whom have long-term contracts with PROTON and some of them described themselves as “partners”- particularly those who were appointed by PROTON itself as first tier parts manufacturers since the development of the Waja 1.6 litre model in 1998. In the author’s opinion, these relationships are not partnerships; as the demands for price cuts indicates a reactive stance to a highly competitive market, and could alienate suppliers. Instead of demanding price cuts, the author suggests that PROTON may be able to simultaneously meet supply objectives and cut costs through a supplier development program that requires a joint effort from both the buying firm and the suppliers and both parties could share the suppliers subsequent cost savings. Such a collaborative effort could help to ensure that: ((1) Suppliers remain economically viable;(2) Buying firms remain competitive; and (3) The buyer-supplier relationship remains intact.

Second, the supplier development effort can help the firm to meet its strategic objectives as proposed by Watts et al. (1992) *Purchasing has the primary responsibility of linking suppliers’ capabilities with the internal requirements specified by corporate and manufacturing strategies*. The trade literature has recently focused on the need for manufacturers to drastically reduce product development cycle times in order to compete globally (Port et al., 1990). The concept of concurrent engineering or bilateral design calls for the participation of suppliers in product development in order to reduce these cycle times (O’Neal, 1993; Hines, 1994; Nishiguchi, 1994). However, a supply base with capability deficiencies may be unable to contribute adequately to the product development process. In Malaysia, PROTON has appointed about 20 suppliers to be the first tier and they are able to produce sub-assembly components or sub-system components rather than supplying single parts. Another example, Motorola, will not allow its suppliers to participate in concurrent engineering activities unless they are first able to meet stringent quality standards. However, both buyers in this example (PROTON & Motorola) help suppliers meet these quality standards through supplier development efforts that include quality audits and engineering assistance (Port et. al., 1990). Thus, a proactive buyers support may advance the competitive strategies of the firm.

Third, there is some concern that the development of the performance and capabilities of domestic suppliers by the buying firm could benefit not only suppliers and their buyer firm, but also the country as a whole. Thus, supplier development is an important issue for firms that are striving to maintain the quality gains made in the 1980s while cutting costs to remain competitive in the 1990s. It may also represent an interaction between buying firm and suppliers that fosters a more co-operative, less hierarchical buyer-supplier relationship.

5 Critical Elements of Supplier Development

Table 1 summarizes key articles and books that directly and exclusively address supplier development. A review of Table 1 indicates that existing/current research in supplier development primarily uses a case study approach. While case studies provide in-depth information on a small sample of firms, generalizability to a population of firms is limited.

In addition to the books and articles in Table 1, there are a number of words that address supplier development in the course of their discussion about topics such as industrial sourcing, buyer-supplier relationships and the automotive industry. These include Burt (1984), Womack et al. (1990), Smitka (1991), Burt and Doyle (1993), Lamming (1993), Nishiguchi (1994), and Lamming and Cox (1995).

A review of the writings in Table 1 resulted in the identification of several elements that appear to be

critical to the success of the supplier development effort and has been observed to be practiced through procurement by PROTON. These include the carmakers willingness to assist, the effective two-way communication, supplier evaluation practice, and a long-term perspective. These critical elements will be examined in the next section.

Table 1 Previous Supplier Development Articles and Books

Author	Contribution	Comment
Case Studies		
Leenders (1966) ^a	Discussed developing a new source of supply	Case study of Canadian manufacturer
Leenders and Blenkhorn (1988)	Argued that firms can meet ambitious supply objectives by working closely with existing suppliers and by creating new, competent suppliers, a concept they called reverse marketing.	Prescriptive; nine case studies
Hahn et al (1989)	Described Hyundai's three phases of supplier development: development of new sources, expansion of suppliers' capacity and improving suppliers' performance.	Case study of Hyundai Motor Company
Surveys	Contribution	Comment
Lascelles and Dale (1989)	Identified and discussed barriers to supplier development. Barriers included poor communication, supplier complacency, and lack of buyer credibility. Approached supplier development from a quality improvement perspective.	Survey data of 300 UK-based suppliers of three UK auto companies.
Monczka et al (1993)	Identified trend of increased reliance on suppliers. Described aggressive supply base initiatives to increase supplier performance.	Survey questionnaire and Delphi study. Non-random sample of purchasing executives from leading edge firms.
Watts and Hahn (1993)	Described latest supplier development practices. Supplier development done primarily by larger firms. Firms used supplier development for short-term gain: that is, to improve the purchased product rather than to increase suppliers' capabilities.	Survey of 81 buying firms from various industries in the USA.
Conceptual and prescriptive	Contribution	Comment
Hahn et al (1990)	Modeled the supplier development process. Provided matrix to identify where supplier development effort should be concentrated.	Conceptual prescriptive

^aAlthough the Leenders (1966) and Leenders and Blenkhorn (1988) publications are specifically about developing a new source of supply, much of the content is applicable to increasing the capabilities of an existing supplier.

6 Discussion

6.1 Procurement Practice of PROTON

The information from the interviews conducted with PROTON personnel revealed that, from the automaker's perspective, local suppliers currently face problems related to two main areas: (1) Lack of design capability, and (2) Un-competitive costs. The main causes leading to the former problem are lacks in the following areas: design engineering capability, application method for process and production technology, planning and management, particularly in production and process-management, experi-

ence, lower “catching up” capability and the like. The second key problem is due to suppliers having to make high royalty payments for technical assistance, insufficient machinery and tools and having to depend on services provided outside of their own company, which leads to high overhead costs and uncompetitive cost proposals to PROTON.

The outcome of all this is a negative effect on PROTON’s new products because PROTON needs vendors to give the best proposals in terms of component design with the most competitive pricing structure. This will, in turn, ensure PROTON meets the customer’s expectations in terms of design, looks (styling), time frame (delivery time, and product development), model range and on-the-road price. The poor performance of the suppliers also takes its toll on the buyer-supplier relationship. The forceful negotiating tactics, lack of trust and violation of contracts (in terms of delivery and quality) are characteristics of adversarial relationships. This adversarial relationship will not bring any benefit to either the automaker or the supplier.

In order to understand the situation, one would ask how a firm, or in this case the automaker, goes about ensuring that the required standards for parts and components from outsourced local suppliers will be met. According to Hahn et al. (1990) “the basic objective of the purchasing function is to secure competent supply sources that will provide an uninterrupted flow of required material at a reasonable cost. This involves first the selection of competent suppliers in terms of technology, quality, delivery, and cost capabilities, and second, it requires working with them to upgrade their capabilities”. A supplier development program, then, can be defined as any systematic organizational effort to create and maintain a network of competent suppliers.

Based on the surveys conducted in 2002, this study constructed a general structure of procurement practices that shaped the inter-firm relationship between PROTON and its suppliers (Figure 1).

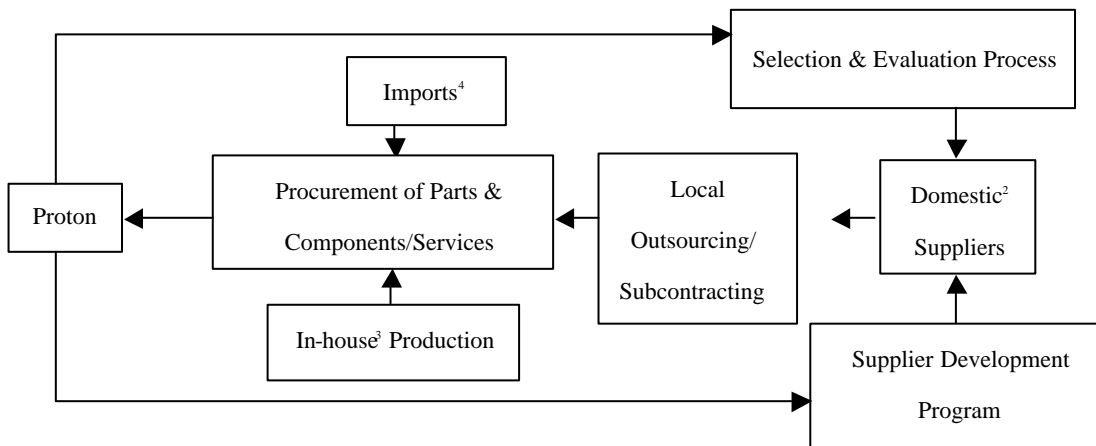


Figure 1: PROTON’s Purchasing Function (Procurement) to Secure Competent Supply Sources.

Source: Author

Notes (1)Domestic procurement: Flywheel, engine brake, water pump, transmission casing, state motor, alternator, wire harness, disc brake, booster, EHCU, steering column, etc. (2)Domestic suppliers: PROTON’s associate companies (affiliate & subsidiary companies), independent suppliers (local companies-both first & second tiers; and foreign affiliates/subsidiary companies in Malaysia.(3)In-house Production: produced by PROTON. (4)Imports: Outsourced from Foreign Vendors (Robert Bosch of Germany, Mitsubishi & its vendors from Japan, Singapore, Thailand, etc.)

Generally, the automaker can acquire the necessary inputs through three different activities imports,

in-house manufacturing vertical integration, or subcontracting out outsourcing. This paper emphasizes the third channel, i.e. to subcontract outsource from domestic suppliers through a subcontracting relationship. A subcontracting relationship exists when a firm (in this case, the automaker) places an order with another firm (supplier) for the manufacture of parts, components, sub-assemblies, and services to be incorporated into a full product, which the buyer markets itself (car). The scope of the subcontracting here is focused on industrial subcontracting. Industrial subcontracting is defined as the provision, by one firm to another firm, of relatively specialized inputs (car parts and components based on certain makes and models), which are distinguished from inputs of a standard kind such as raw materials or electrical power, which are incorporated into the final products of the buying firm⁷.

The inputs, which the buyer purchases from the suppliers or vendors are car parts, components or services. The inputs are not finished parts that can be bought on the open market and so the buyer has to place an order in advance with the suppliers to produce parts and components to meet the specification required. Therefore, it can be said that the buyer and automaker have a continuing relationship under the subcontracting agreement, which may be backed by a formal contract, or trust, or both. Then the process continues, the buyer bears the transaction costs of finding a supplier who specializes in the specific process required and then negotiates details of quality, cost and delivery of said parts and components (QCD).

The buyer expects that the vendor will supply parts and components in accordance with requirements and will be able to improve its productivity and utilize cost reductions over time. In order to ensure that the supplier or vendor can achieve the buyers requirements, the buyer (or automaker) has to render some assistance to the supplier and this could happen through information exchange and loaning of machines, tooling, financial, expertise, dispatching engineers, and the like. Additionally, the stable nature of the transaction between the two parties will encourage the suppliers to invest in assets with a specific purpose, for example a mould and die machine, CAD/CAM (Computer aided design/computer aided manufacturing) equipment, and the like, as well as to improve its productivity through various measures such as Kaizen (a Japanese term which generally refers to continuous improvement), VA/VE (value added/value engineering activities), and improving the product cycle lead time.

In order to build or to improve the existing buyer-supplier relationship between the automaker and the suppliers, one must first review the procurement practices of the company. This paper perceives that the problems raised by the automaker could be mitigated if the procurement practices: (1) Could change from an adversarial model to more of a partnership model, and (2) The procurement practices were able to induce a closer relationship between the two parties.

Through the recurrent transactions between the buyer and suppliers, not only are goods and services exchanged for payment, but information is also being exchanged between the two parties. In longer-term relationships there may also be people exchange such as guest engineers, who will help out the other party. This relationship would build a so-called "quasi-organization" with its own cultural behavior and style of operating. There are two kinds of possible relationship between the final assemblers and suppliers, arms-length contractual relationship (ACR) and obligatory contractual relationship (OCR) (Sako, 1992). In arms-length and short-term relationships, the buyer gets its resources through an open tender bidding system. The relationship is over when the tender is over. There are no joint products or parts development processes between buyer and suppliers. In an obligatory contractual relationship, the buyer and suppliers have a tendency toward a long-term relationship. There are joint products and parts development between the two parties-the buyer and the supplier. One supplier supplies one component.

There may be two, but no more than three suppliers. Orders are placed by commissioning rather than by tender. The buyer and suppliers solve problems together. Electronic and verbal communications are widely used, instead of formal black and white paperwork/contract documents.

6.2 Domestic Procurement Practice and Vendors' Development Efforts at PROTON

PROTON acquires parts and components through three different activities imports, in-house production, and local outsourcing. The two main choices for procurement activities are to import or to procure domestically. Domestic procurement can be divided into two practices, i.e., (1) in-house production and (2) outsourcing through subcontracting relationships. The decision is not only based on commercial considerations but technological competency. This discussion will only examine the practices of procurement activities through the local suppliers. Commercially, the buyer would procure inputs from the cheapest and most reliable source. In other words, the alternative that provides the lowest price plus transaction costs to PROTON will be selected.

With regards to procuring parts domestically, PROTON finds itself faced with the decision of whether to undertake a particular activity in-house or to outsource from its local vendors. Procurement activities could also affect the benefits for the local vendors. The decision to produce in-house or outsource domestically will depend on the comparative costs and benefits of the alternatives. PROTON outsourced most of the non-body, engine and transmission parts domestically. **Table 2**, shows the current three major items from each group of parts and components that are currently outsourced by PROTON domestically.

Table 2 Major Parts Procured Domestically by PROTON

Type	Parts and Components
1. Engine	Flywheel, Engine Brake, Water pump
2. Power Transmission	Transmission casing
3. Electric & Electronic	Starter motor, Alternator, Wire harness
4. Brake	Disc brake, Booster, EHCU
5. Suspension & Steering	Steering column, Rack & pinion, Steering wheel
6. Wheels	Tyre, Steel Wheel, Alloy Rim
7. Body	Door sash, Fuel Filler Door, Door Hinges
8. Direct Consumable	Sealant, Paint, Grease
9. Accessory	Air Conditioner, Radio, Reverse Sensor

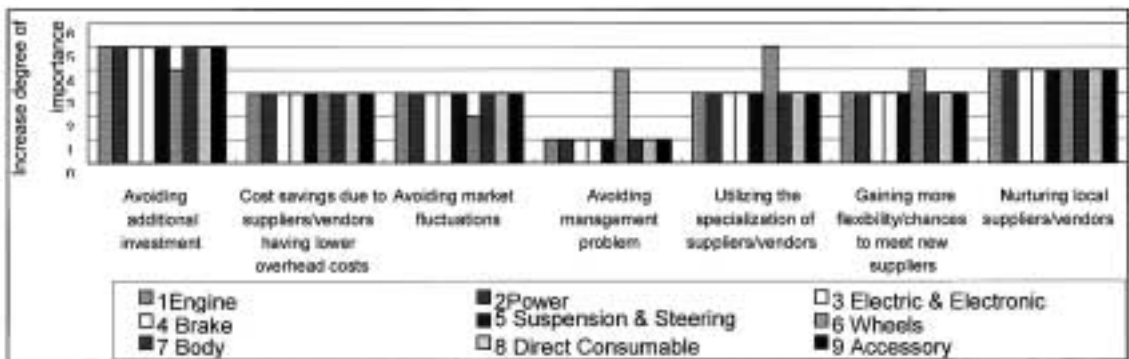
Note: The survey requested PROTON to list up only three major items which it procured domestically from each group, Source: Field Survey 2002.

Some parts that were imported in previous years can now be procured domestically. For example, local vendors presently supply the parts and components under the engine, power transmission, brake system, suspension and steering system headings above. The significance of this change is that with the increasing volume produced by PROTON, the number of parts and components outsourced was also increased. In order to avoid paying relatively high costs for imported critical parts and components, PROTON increasingly has shifted from imported to domestic sources. As the demands from PROTON increased, particularly for critical parts and components, local suppliers were encouraged to plan and

make investments to produce these parts. As they were showing good results in terms of cost and quality, PROTON gradually outsourced more from them and also rendered assistance to improve the capability of the local vendors. As these products need high levels of capital investment and are highly capitalized, PROTON implemented the “No replacement for investment” policy. This means that once particular vendors invested capital to produce specific parts, PROTON would not change to other vendors or sources. It is important to note that, developing a new product locally requires a lengthy period of product development. While it depends on the type of product and the complexity of the technology applied, basic production will take about eighteen months, and almost four years is needed for high technology products. Given this situation, one can easily understand why PROTON tries to avoid making new investments in producing these parts and components.

From the interview conducted with the Suppliers Sourcing and Technology (SST) department of PROTON, it seems that PROTON is very careful about placing its additional investment. With almost all types of parts and components, PROTON prefers to outsource domestically in order to reduce costs. This is common practice in PROTON corporate policy which looks into commercial advantages particularly related to cost reduction. Additional investment could lead to the increase in the overhead costs. Most of the automobile parts and components are customized items specific to the models. PROTON car production is also very limited, averaging about 125,000 units across all models produced in a month (PROTON’s Vendors Briefing, April 2002). With this volume, it is not impossible that the costs are rather high because some types of parts and components, for example those related to the transmission system as well as highly capitalized components could not achieve economies of scale. Still, PROTON has to purchase these from domestic sources due to the localization requirement program encouraged by the government.

Therefore, this additional investment cost is shifted to the vendors, as they already possess lower overhead costs and their own expertise. At the same time PROTON is willing to assist them in order to ensure quality and price and particularly, to comply with all the requirements. **Figure 2** provides the reasons for domestic procurement by the carmaker.



Source: Field survey 2002.

Figure 2 Reasons for Domestic Procurement

PROTON gives high priority to additional investment for almost all categories of parts and components outsourced except for wheels. Proton has also actually increased its domestic outsourcing to avoid market fluctuations due to the foreign exchange rates, particularly the Japanese yen, since 1985 after the

Plaza Accord. Locally outsourced parts increased from 228 in 1985 to 4,677 in 2000. The number of local suppliers also increased from 17 in 1985 to 198 in 2000. Government policy concerning parts localization namely the Mandatory Deletion Program (MDP) and Local Material Content Program (LMCP), have also encouraged this increase⁸.

6.3 Market Dependency and the Growth of Local Vendors

Additionally, the results of the survey show that about 53 percent of the total respondents (n=29) agreed that they are dependent on PROTON's orders to gain a stable market even through the profits are low. About 36 percent of the respondents agreed that they gain a stable market as well as a profit from the orders they get from PROTON (Fig. 3 and Table 3). This fact supports the significance and contribution of domestic procurement by PROTON to the growth of local suppliers. This figure is very significant given that PROTON has nurtured local vendors since its establishment.

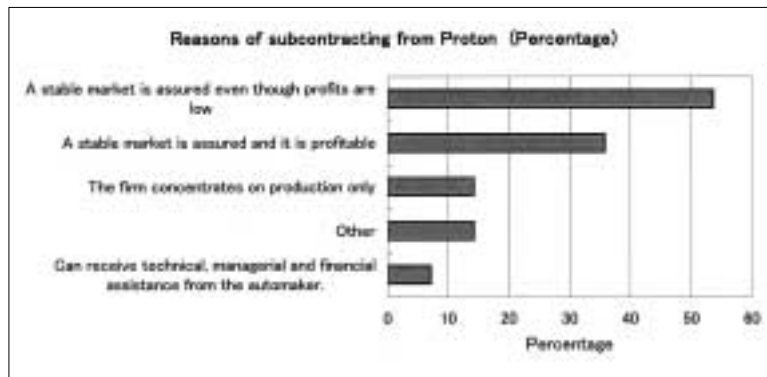


Figure 3 Market Dependencies of Local Suppliers on PROTON

Table 3 Localization of Parts & Components (Local Outsourcing)

Year	No. Of Suppliers	No. Of Local Parts
1985	17	228
1986	33	325
1987	40	398
1988	46	525
1989	67	901
1990	78	1014
1991	99	1177
1992	106	1316
1993	125	2899
1994	128	3444
1995	138	3828
1996	151	4076
*1997	176	4187
1998	187	4225
1999	182	4378
2000	198	4667

Source: Interview with PROTON, 2002

6.4 Suppliers' Selection and Evaluation Process

It was also observed that PROTON has to be very careful in the selection of vendors and must control the quality of their vendors in order to maintain high quality. Vendors undergo a very harsh scrutinization process before being appointed as suppliers. PROTON gets to know the suppliers through its own search process and the suppliers also introduce themselves to PROTON. Some may approach PROTON through the Vendors Development Department of the Ministry of Entrepreneurs Development (MED) or the PROTON Vendors Association (PVA) may introduce them, but this is less common. Thus, vendors have to be aware of, and familiar with, all the requirements of PROTON before being appointed. Selection and vendor development is a time-consuming processes taking almost thirteen months before they start the first trial production, followed by mass production. The typical lead-time from the pre-selection of a vendor to the mass production stage is between 15 and 27 months.

Within this production period, vendors receive assistance from PROTON in terms of (1) Financial assistance- providing soft loans to start the production, as well as commercial loans for other purposes including purchasing of machinery, advances against payments and the like; (2) Technical assistance in terms of automation and modernization of machinery, upgrading of tooling and equipment, facilitating technical agreements, and the like; (3) Other related assistance including technical or product management, financial management, information technology system, and the like. These are the types of assistance rendered to those suppliers that have been selected and appointed by PROTON. For those who approached PROTON directly from the beginning, they have to present themselves and their products, which might not necessarily match the parts required by PROTON. Those suppliers usually have good performance records, sufficient machinery, and experience in the production of that particular product, good financial status and are technologically competent.

PROTON prefers to use standard criteria as devices in the selection of vendors. PROTON listed the criteria according to its preferences as shown in **Table 4**.

Table 4 Criteria Commonly Used in the Selection of Suppliers

-
1. Technology (including tooling, design and development planning, and technology support);
 2. QCD (Quality, Cost, Delivery);
 3. Suppliers reputation (including mass production capability, ISO standards possessed, financial and management (strength));
 4. Degree to build-team relationship, and
 5. Overall value improvement (including R&D capability, and VA/VE practices).
-

Source: Field Survey 2001, 2002

Criterion numbers 1, 2 and 3 were given top priority and categorized as "Usually practiced" by PROTON (51-90 per cent of the time). While factors numbered 4 and 5 were categorized as "Occasionally practiced" (21-50 percent of the time). From the beginning PROTON has given much attention to QCD matters. The author asked PROTON which factor receives the most weight among the three factors i.e., QCD, trust and technology and QCD was selected as the top priority when making a deal with suppliers. This priority was interpreted in the Supplier Chain Strategy Policy at PROTON as: (1) Intense competition-4 suppliers per part group; (2) Encourage new capable players; (3) Export 20-30% of production; (4) 3 years contract with a minimum of 3 percent per annum cost reduction (currently practiced by PROTON) on a year-on-year basis; (5) Encourage establishment of an R&D center; (6) Innovation that gives

a competitive edge is rewarded. With the tight selection process and the strong emphasis on QCD, suppliers would learn that they have to be competitive. Through the recurrent relationship they are exposed to and get to know the practices and procurement procedures of PROTON. They should not only comply with all of the standard requirements, but indirectly these practices and PROTON standard requirements could be the best aspects of an indirect lesson for organizational learning as well help in winning contracts in order to remain in business.

Although supplier selection and evaluation information is useful for supplier selection and supply base reduction decisions, it is also an important information input for supplier development. Supplier evaluation, or grading, may thus be a part of a supplier development effort and should be a prerequisite to more extensive supplier development activity. However, supplier evaluation and selection in and of itself is not supplier development. Supplier evaluation may be deemed necessary to the supplier development effort, but unless additional steps are taken, for example communicating the results of an evaluation and providing training to a supplier's employees, no supplier development has occurred. Thus, supplier evaluation can help identify where supplier development activities should be concentrated (Hahn et al. 1990) and can provide a benchmark to evaluate the outcomes derived from supplier development activities (Hines, 1994). So, observation recorded that PROTON needed to convey the standards for supplier's selection and evaluation directly to vendors. The current practice is that PROTON displays the monthly ranking of suppliers on a notice board in PROTON's office using limited criteria such as late deliveries and defect rates. PROTON needs to extensively incorporate this current practice into any means of communication with vendors (for example through a monthly briefing).

6.5 The Benefits Acquired Through the Long-term Relationship

PROTON has been working towards a close long-term relationship with its vendors. For example, today the same supplier supplies tires as ten years ago, (DIMB and Goodyear (M) Bhd.). The same thing is true of brakes and clutch pedals, (supplied by Tracoma Sdn.Bhd.). In term of closeness, every month there is a visit by PROTON staff, which is a social and working visit, including plant and production auditing, besides providing information on changes of model and delivery schedules. This is confirmed by the responses of various vendors who claimed that:

They are very helpful in the development of new products. They give technical know-how in solving mould problems, and normally we have joint investigations into any defect. (PVD Manager, Tracoma Sdn.Bhd.)

We ourselves often go to PROTON, and they come to us once every 6 months for stock auditing, but they also pay public relations visits to us once a week (OE Manager, Dunlop Industries Malaysia, (DIMB)).

PROTON sends its staff to nurture their social and public relationships with vendors on a periodic basis. The same practice takes place at Mitsubishi Motor Corporation, whose R&D staff were engineers and technician borrowed from Mitsubishi Electric and Mitsubishi Heavy Industries (Fruin, 1992, p157). According to the PVA (PROTON Vendors Association) President, continuous assistance is given by PROTON to its newly created vendors in all areas, right from sourcing, production, quality audit, maintenance, engineering work, and personnel, to securing long-term markets and offshore market penetration, and giving advance information to vendors on long range product plans. There are also special services such as acting as co-coordinators for QCD. PROTON also acts as an advocate or adviser to PVA, as a matchmaker from introduction through to implementation of the matchmaking program and as an

initiator for the government technical assistance scheme.

The results of the field survey attest to the practice of long-term relationship building between PROTON and its suppliers and to the fact that on-going or long-term relationship could reduce transaction costs, which are the costs of registration on price and the cost of controlling the suppliers' quality and delivery. Moreover, PROTON still states that long-term relationships and regular orders make them more flexible than trying to specify a complicated contract would be. PROTON is very sure that through this kind of relationship it could save the money and time needed to investigate and screen the new supplier candidates. It could also reduce the costs of controlling the suppliers in terms of QCD. Through these relationships PROTON is familiar with the supplier; and dares to provide them with assistance in order to improve quality, reduce costs, improve efficiency in delivery and assist their development technically. Supplier development in long-term relationships involves risks for both the buyer and the supplier, in that both must be willing to invest resources and time in dedicated assets, for example purchasing a big die and mould machine, CAD/CAM equipment, and the like for a pay-off that may only occur over a relatively long time period.

The interesting point is that the long-term relationship makes PROTON more willing to provide assistance to its suppliers in order to improve the quality of parts and to reduce the cost of production. Evidence of a long-term perspective is that commitment cannot be sustained without undertaking genuine risks. This research found that PROTON asked for cost reductions of about 3 to 5 per cent annually. The present practice shows that PROTON is cutting the price 3 to 5 per cent per year automatically. **Table 5** shows the list of PROTON's agreements on each aspect derived from long-term relationships.

Table 5 Sources of PROTON's Agreement in Each Aspect Derived From Long-term Relationship

-
1. Can save time and money in investigating and screening the new supplier candidate
 2. Contributes to reducing the costs of controlling suppliers in terms of quality, price and delivery (QCD)
 3. Makes PROTON familiar with the supplier and dare to provide assistance in order to improve quality, reducing costs, improve efficiency in delivery & assist their development of technological capabilities
 4. Makes it possible to establish more flexible purchasing systems than specified by a complicated contract
 5. Can save the time and cost of finding a new supplier
 6. Can make solving problems easier when a supplier cannot satisfy the requirements of the carmaker
-

Source: Field Study 2001, 2002

Long-term relationships are also very significant in developing further efforts in technology transfer through intra-firm and inter-firm relationships between PROTON and vendors. Rashid (2002) found that inter-firm relationships is more prevalent in nurturing the technology transfer between PROTON and its vendors. PROTON is observed to be more willing to provide some types of assistance in order to improve the cost and production of the parts and components it procures by improving productivity as well as requesting the suppliers to reduce the price to increase and maintain competitiveness. The willingness of PROTON in terms of cooperation and collaboration in R&D is observed to be higher towards these groups: (1) PROTON's associate vendors-PROTON has equity and as listed as its direct supplier, (defined as an intra-firm relationship), and (2) Non-associate vendor-PROTON has no equity (defined as

inter-firm relationship) is listed as its direct supplier, and is supported by PROTON technologically. This is because PROTON is presently developing its new models of passenger cars. These new models are still in the development stage and will increase the utilization of local contents as the volumes and models increase.

In addition to this, all of PROTON's associate vendors and non-associate vendors are direct suppliers to PROTON. The research found that 90 percent of the respondents depend about 90 percent to 100 percent in terms of annual sales on PROTON. By cooperating with them in terms of product development and R&D collaboration, PROTON is strengthening its own suppliers. This is a good sign for the partnership model. As for non-associate vendors, almost eighty percent of them were nurtured by PROTON through its Vendors Development System started in 1988. In addition to that, since 1999 PROTON has appointed about that twenty new vendors and most of them were from non-associate vendors. This is because PROTON has about twenty six associate vendors and only about six or eight of them are parts and components makers, the rest of them are car distributors or joint venture firms in other countries such as PROTON subsidiaries in Europe and North America. PROTON is not showing much consideration to independent vendors that are subsidiaries or affiliates of foreign firm although they are local Malaysian firms. This is because they have their own parent firm in which to conduct product development. Their local subsidiaries or affiliates are just a production plant in Malaysia catering for the local or regional ASEAN markets.

From the buyers' perspective, the survey revealed that, PROTON exhibited greater willingness to dispatch its manpower in order to solve production problems to all categories of vendors (including independent vendors in which PROTON has no equity and is not listed as a direct suppliers). PROTON was also observed to exhibit a comparatively greater level of willingness to its subsidiary/associate vendor's

Table 6 PROTON Executives (Engineering Staff) Transferred to Vendors

Company	Per cent of direct sales to PROTON	Per cent of shares owned by PROTON	Executives transferred from PROTON	Major Products
Hasu Ind. Sdn. Bhd.	60	Nil	3	Wire harness
Amalgamated Parts	60	Nil	5	Wire harness
Mfrs. Sdn. Bhd.	80	Nil	1	Head, clearance, RR comb lamps
Malaysian German Auto Equip. Sdn. Bhd.	100	Nil	3	Splash shield, Cover
Usra Industries Sdn. Bhd.	60	Nil	3	Fixture, Rein, I/panel, striker glove box, PP set
Metal Former Sdn. Bhd.	85	Nil	3	Tie Rod
TRW Steering & Suspension (M) Sdn. Bhd.	100	Nil	3	Exhaust manifold, Flywheels, Engine bracket
HICOM Engineering Sdn. Bhd.	80	Nil	30*	Plastic bumper, Radiator grille, I/Panel
Tong Yong Ind. Sdn. Bhd.	70	Nil	2	Run channel
APM Plastics Sdn. Bhd.	20	Nil	3	Body side molding
EP Polymers (M) Sdn. Bhd.	80	Nil	1	High mounted stop lamp, License plate lamp, Switches, etc.
Bertool (M) Sdn. Bhd.	100	Nil	2	Wheel nut
Average	74.5%		4.9	

Source: Personal communication, PROTON. April 2001 and April-May, 2002)

compared to the other two categories. To some extent PROTON transfers the production of certain parts and components to them after they are qualified and capable to produce it (the case of PHN, Rashid, (2002)). This willingness to assist is prevalent in plant establishment, providing raw materials, loaning machines, dispatching manpower, and product management. The other reason is PROTON outsourced most of its critical components (high-tech parts and components and critically important in the assembly of the engine and transmission, and classified as sub-assembly components) (**Table 6**).

According to the SST manager of PROTON, vendors are categorized into three groups: problematic, normal and excellent. The monitoring and visits are aimed particularly at the new and problematic ones. For those vendors, PROTON dispatches their staff: (1) on a weekly basis (2) on one-month stays at the vendor's plant, or (3) for a three-month stay. For example, PROTON dispatched their staff to these 15 vendors. Table 7 suggests an average of 3 staff (normally engineers) were dispatched to vendors to monitor and solve current problem. For example at Malaysian German Auto Sdn. Bhd., they found that water condensation in the rear lamps was due to a lack of pressure, inconsistent sealant, poor quality sealant, and a lack of testing points. There was one case where PROTON took over the whole operation of the vendor for three months, and returned it when the operation had been made efficient. As for HICOM Engineering, PROTON shifted the whole group of one production line to help this supplier to overcome its problem and stayed there almost one month.

6.6 Match-making Assistance

Vendors are also receiving assistance through the matchmaking program from reputable companies from overseas, mostly from the Mitsubishi Kashiwa-kai vendors (a consortium of vendors to Mitsubishi). As at December 2000, about 78 local vendors were involved in this program that was called Technical Assistance or TA. Through this TA, the overseas partner (mostly from Japan) provides technological assistance to produce a certain component for local suppliers and they have to pay royalties annually. Some of them have established a joint venture-particularly after a few years of receiving technical assistance. For example, Ingress Company, after 15 years of receiving technical assistance programs, then turned to a joint venture partnership with its partner, Katayama Kogyo of Japan to produce door sashes, bellows pipes and weather strips for new market in Thailand. The collaborative arrangements established are shown in **Table 7**.

Table 7 Collaborative Arrangements to Enhance Technology Transfer: Initiated Match-Making Programs Between Local Suppliers and Reputable Overseas Technical Collaborator

Source Country	Japan	Germany	Korea	Taiwan	France	Others	Total
Tech. Assistance	78	8	8	9	10	19	131
Joint Venture	34	3	6	4	-	10	56
Wholly Owned	13	3	-	-	-	10	23
Purchase Agreement	2	1	-	1	1	2	7
Total	127	15	14	14	11	41	222
Local Vendor	65	9	8	10	11	21	124

Source: Interview with PROTON, 2002

6.7 Effective Two-way, Multi-functional Communication

Presently, the cases of collaborative arrangements may decline due to the upgrading of the vendors' capabilities. But, a different pattern is taking place. The focus may also differ from previous practices. The result of this study shows that strict attention was paid to production matters. **Figure 4** shows that PROTON's engineers were most frequently dispatched to two main departments: the PVD (Procurement and Vendors Development) department, and the R&D and/or production department of vendors. This is because these entire departments carry out very important tasks related to production, quality control, procurement and purchasing, and the like. By doing so, PROTON could deal with managers and engineers really related to production, product improvement and product development, controlling and implementing mass production.

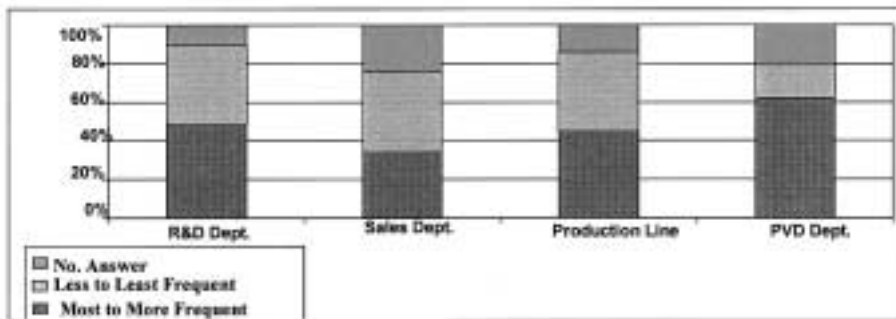
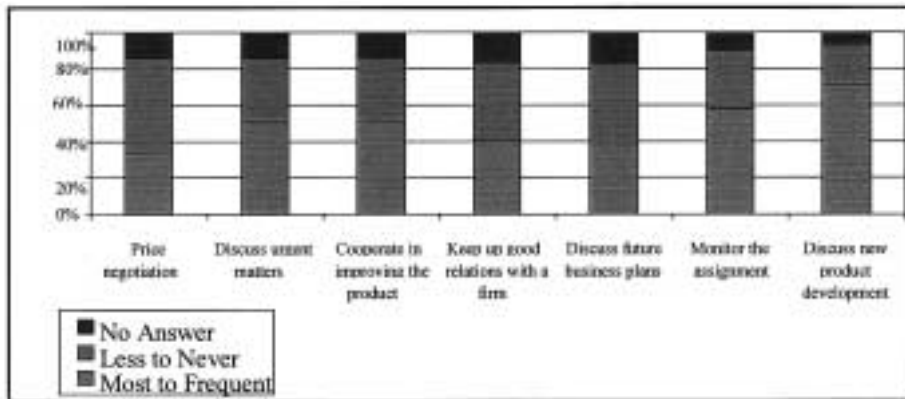


Figure 4 PROTON's Staff Visits to Vendors

The reasons for the visits vary from price negotiation to discussing new product development. As shown in **Figure 5**, the most frequent visit is new product development. This is a sign of the changing pattern in the buyer-supplier relationship observed in the Malaysian automobile industrial relationship, where automakers increasingly give suppliers more responsibilities with regard to the design, development and engineering of components. However, the place of the meeting is not limited to the suppliers' main plant but also held at the automaker's office and testing lab (the author had participated in a new product development/problem solving meeting between a press-stamping vendor, Tracoma and PROTON's engineer in the PROTON testing lab of the PROTON main plant in Shah Alam during the field survey in April 2002).

The visit to discuss new product development with supplier is aimed at better leverage between the suppliers' technological capabilities and expertise and product development efficiency and effectiveness. The main reason is that PROTON is currently increasing its production volumes and has started to develop various new models to be launched in 2003, 2004 and 2005 (It is not necessary to disclose the model names here).

The other two most frequent visits are spent on improving the product and problem solving. Product improvement is a time consuming activity including cost reduction activities, Kaizen activities, VA/VE (Value added/ Value engineering) activities and the like. In terms of efficiency, this visit may be able to directly encourage suppliers' involvement and that could lead to the reduction of development costs and the reduction of development lead-times. This would be achieved mainly by preventing, reducing or introducing design changes earlier by means of early and intensive communication with suppliers ("First



Source: Field survey 2001, 2002

Figure 5 Purposes of PROTON's Visits

time right development”). In terms of effectiveness, supplier involvement may lead to the reduction of product costs and an increase in product value. This can be achieved by mobilizing and leveraging supplier expertise regarding Design for Manufacturing (DFM), the quality and reliability of component design, alternative materials and possibilities for component standardization.

Out of the 29 respondents in this survey, 80 percent agreed that PROTON transferred production technology to them and about 63 percent agreed they received assistance with process technology. The significance of this result is that it shows that vendors or suppliers are still depending on PROTON's assistance and guidance in order to implement mass production-particularly the direct suppliers. As for the process innovation technology, it is a time-consuming process and not all the suppliers are able to successfully implement it within the short time frame. This process involves a continuous effort and improvement in cost reduction measure activities, for example kaizen, VA/VE activities, shorter production lead times, process engineering improvements and the like.

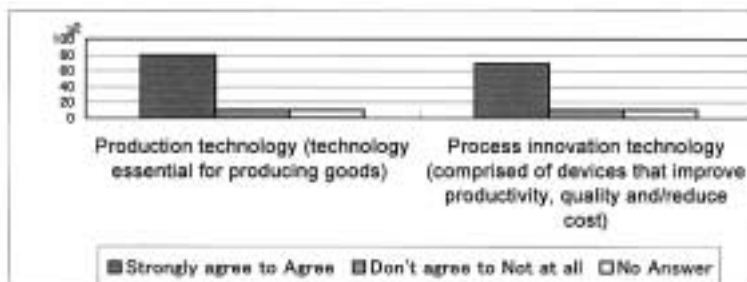


Figure 6 Type of Technology Transferred by PROTON

This study found that this is a new pattern of buyer-supplier relationship practice that is still a new trend observed in the Malaysian automobile industry, because it does not happen with all suppliers. However, this study showed that the factors behind the move relate to the shift in PROTON's new procurement policy. The shift is more towards a value-added approach from a single sourcing practice in

the 1985-1998 models towards the modular system and integrator in its new model the Waja in 1999-2003 and for the extension models of the Waja after 2003. Thus the number of suppliers will be decreased from 187 suppliers in 1998 to about 50-60 suppliers after 2003. With this small number of suppliers, PROTON will be able to communicate and cooperate with them effectively. Most of them are selected and appointed by PROTON to be first tier suppliers that are able to produce sub-assembly components. However, a further study is needed to provide a discussion on this progress in the automaker-supplier relationship in the Malaysian automobile industry.

Effective, two-way communication is characterized throughout the literature as essential to successful supplier development (Lascelles and Dale, 1989; Hahn et al. 1990; Newman and Rhee 1990; Galt and Dale, 1991). The Vendors Briefing is an official function held monthly at PROTON's main plant. In this briefing, vendors have the opportunity to assess various information on production, market planning, new technologies, future planning, changes of models, PROTON-specific requirements dedicated to certain urgent and important matters related to production, research and development and the like. Suppliers can also express their complaints, comments, and opinions related to production, contracts and agreements, as well as any disagreements and differences of opinion that they have and various questions in the dialogue. For every occasion at least one vendor will send two of their top management people. In this way they can communicate at the same level and this occasion is perceived as a top-to-top management dialogue.

In addition to the above practice, vendors also dispatch their managers and engineers on a daily basis to PROTON's main plant in order to discuss various topics particularly related to supply chain management, production, cost reductions, as well as problem solving, and tender and contract matters. **Figure 7** shows the average length of a meeting that takes place in PROTON's office between the vendors' managers/engineers and PROTON SST manager or executives is generally 1 to 2 hours.

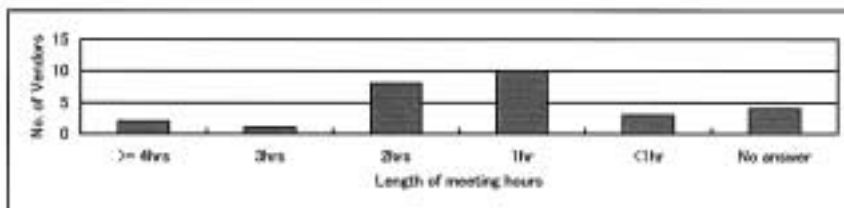


Figure 7 Average Meeting Hours Between PROTON and Vendors

7 Summary and Conclusion

The purpose of this paper was to investigate the procurement practices of PROTON and its efforts in supplier development through this practice. Supplier development represents an initiative by the buyer firm to increase the performance and/or capabilities of their suppliers. Supplier development is described as an integral part of many relationships between Japanese manufacturers and their suppliers (Hines, 1994b). The same practice was found to have been implemented by PROTON. However, the emphasis on price-cutting and unilateral implementation by PROTON represents the common practice of many US buying firms. For example, Lamming (1993, p215) noted that GM's 1992 demand to North American suppliers to reduce prices by at least 20 percent over four years bears "only a minimal rela-

tionship to supplier development”.

A supplier development effort represents an initiative by a buying firm that can help the firm to meet strategic organizational objectives. Buying firm that initiate supplier development efforts should recognize that special attention should be paid to the buyer-supplier relationship. Buying firms must be willing to invest in the relationship with a long-term perspective. The result of the survey in this paper suggests that effective two-way communication, long-term commitment, and on-going assistance as well as a collaborative posture may be critical to the success of the supplier development effort. Leenders and Blenkhorn (1988) suggested that suppliers are often only as good as they have to be and the buying firms often deserve what they get from suppliers because they have not asked for more. Expecting more from suppliers, communicating those expectations, and being willing to participate in a supplier development effort can buy firms hopes to develop supply bases that will help them compete in global markets.

The need to address the adoption of a better buyer-supplier relationship is perceived as an immediate concern that must be addressed by both PROTON and suppliers. In order to see a change in this relationship, the procurement practice is key and affects the types of supplier relationship. In contrast to arms-length supplier relations, a supplier partnership is characterized by joint decision making between the buyer firm and supplier. They make relation-specific investments such as sharing strategic planning and production information and utilizing each other's expertise in product and process design, thereby creating synergies between the buyer and suppliers firms. Whereas as a supplier's role in arms-length transactions is limited to supplying well-specified products under well-defined terms, the suppliers' role in the partnership is complex and multidimensional. Instead, the parties jointly negotiate the broader aspects of their respective roles and resolve contingencies and uncertainties as they arise.

However, the suppliers' internal forces and efforts to improve them are the most important factor in the supplier development discussion. Additional investment, particularly in soft technology accompanied by hard technology, would enhance their work towards increasing competitiveness. Technological internalization through continuous R&D, cost reduction activities and continuous VA/VE would be valued assets in order to retain the market. A new strategy such as finding a new partner for technology and a niche market should be sufficiently explored in order to penetrate in new niche market by opening and liberalized markets at both the regional and global market level.

Limitations

The following limitations should be kept in mind as the reader evaluates the results reported in this article. As stated in the “Description of the study” section, the respondent group was a convenience sample, not a random sample. In addition, non-respondent bias could conceivably exist, given the response rate of 29 percent. Although some phone calls took place to encourage non-respondents, the tight schedules of the respondents (most of them Executive Directors, Deputy Director/Managers, R&D Managers, Managing Directors and the like) certainly discouraged the achievement of a higher response rate.

An additional limitation is that, given the small number of respondents from the total number of suppliers for all car manufacturers and car assemblers in the Malaysian automobile industry, a new theoretical conclusion or hypothesis is not able to be drawn still, but this study is able to provide the case of PROTON exclusively as one of two car makers in the Malaysian automobile industry.

Notes

¹ PROTON was incorporated on May 7, 1983 to manufacture, assemble and sell motor vehicles and related products, including accessories, spare parts and other components. PROTON's shareholders at the end of December 2000 were: Petroleum Nasional Berhad 27.52 percent; Khazanah Nasional Berhad 18.04 per cent, Mitsubishi Corporation 8.03 per cent, Mitsubishi Motors Corporation 8.03 per cent and other local and foreign investors 38.38 per cent. PROTON's model line up including the Saga, Wira, Putra, Waja, and Perdana and the engine capacity varies from 1,000 cc. to 2,000 cc.

² "Vendors" is a Malaysian term for suppliers in general and the parts and components suppliers for PROTON.

³ PROTON domestic cars sales in 2000 were 132,700 (64 percent) and all others - (including Japanese cars, US and European cars) accounted for 75,100 (36 percent).

⁴ Automobile refers to passenger cars and excludes other types of vehicles such as commercial cars, buses and trucks.

⁵ SMI-small and medium-sized industries-are companies with 50 workers or less and annual sales of not more than RM 1 million; while medium-sized companies are companies that have less than 150 workers and annual sales of not more than RM2.5 million (1US\$ is equal to 3.8 Malaysian Ringgit (RM)).

⁶ In general, the automaker acquired its input-parts and components from two major sources i.e., Imports and local outsourcing. Local outsourcing is divided into two parts, i.e. in-house production or vertical integration, and sub-contracting or vertical disintegration. Some scholars such as Lall (1994), and Hill (1985) call this a "backward linkage."

⁷ Thoburn, J.T., and Takashima, Makoto. Industrial Subcontracting in UK and Japan, England, Avebury, 1991, p.1.

⁸ MDP only involved passenger cars above 1,851 c.c. and commercial cars above 2,500 GVW, while LMCP target are 30 percent in 1992 up to 60 percent in 1996 for passenger cars up to 1,850 c.c. and 20 percent in 1992 up to 45 percent in 1996 for passenger cars from 2,850 c.c. and commercial vehicles to 2,850 c.c.

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