FACTORS INFLUENCING INDUSTRIAL PURCHASING INTENTION TOWARDS MALAYSIAN MADE PRODUCTION EQUIPMENT IN PENANG

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FAKTOR-FAKTOR MEMPENGARUHI NIAT PEMBELIAN TERHADAP PERALATAN INDUSTRI DI PULAU PINANG

ABSTRAK

Tujuan penyelikan ini dijalankan adalah untuk meneliti kaitan antara faktor “Teknologi mesin”, “daya tarikan istilah komersial” serta “sifat-sifat sosial pembekal” terhadap niat pembelian peralatan pengeluaran buatan Malaysia di Pulau Pinang.

Kajian adalah dilakukan terhadap individual dari kumpulan yang membeli peralatan pengeluaran. Saiz sampel meliputi 50 responden di kilang electrik dan elektronik Pulau Pinang disebabkan populasi yang sedia ada adalah terhad.

Soalselidik diedarkan melalui kaedah bola salji kepada pembekal supaya mereka menyampaikannya ke pelanggan-pelanggan mereka dan rakan-rakan sekerja, yang terlibat dalam pembelian peralatan pengeluaran di kilang electrik dan elektronik di Pulau Pinang.Responden diminta menilai faktor-faktor yang mempengaruhi niat pembelian mereka terhadap peralatan pengeluaran buatan Malaysia melalui soalselidik.

Pelbagai kaedah uji SPSS telah digunakan untuk menganalisa data. Ia mendapati bahawa "Teknologi mesin" mempunyai pengaruh yang kuat terhadap peralatan pengeluaran buatan Malaysia di Pulau Pinang. Ia diikuti dengan "Istilah daya tarikan komersial" yang mempunyai pengaruh yang kurang dan "Sifat-sifat sosial pembekal" tidak mempunyai kesan terhadap peralatan pengeluaran buatan Malaysia di Pulau Pinang.

FACTORS INFLUENCING THE INDUSTRIAL PURCHASING INTENTION TOWARDS INDUSTRIAL EQUIPMENT IN PENANG

ABSTRACT

The purpose of this study to examine the relationship between factors; “Technology of machine”, “Commercial term attractiveness” and “Supplier social attributes” with “Purchase intention of Malaysian made production equipment” in Penang.

The individual electric and electronic factories production equipment purchasing team members were the respondents of this study. The sample size comprises 50 respondents in Penang due to limited population available.

Questionnaire were distributed using snow ball method to current working suppliers so that they would reach their customers and the customer’s colleagues, which is involve in purchasing production equipment in electric and electronic factories in Penang. Respondent were asked to rate the factors that affect their purchase intention of equipment through questionnaire.

Various test method of SPSS were used to analysis the data. It was found that “Technology of Machine” has strong influence towards Malaysian made production equipment in Penang. It was follow by “Commercial term attractiveness” which has less influence and “Supplier’s social attributes” has no effect towards Malaysian made production equipment in Penang.

CHAPTER 1

INTRODUCTION

1.0 Introduction

There is several definition of industrial purchasing behavior. The easy understandable definition would be "...the study of exchange process between organization purchasing for resale or for their own production process" (McCarthy, 1994).

Another definition would be the systematic model building, data gathering, analyses and interpretation for the purpose of improved decision-making in the marketing of organizational goods and services.

Equipment is a necessary item of tangible and durable property (other than land or buildings) which is useful to carry out the operations of a business. Some examples are machines or tools using to produce, process, assemble and test electronics and electrical products, which use the automation, sensor, pneumatic, computers or robot technology.

Machines are the capital of the company and one of the high spending items in the procurement system. It is durable and its value depreciates over time. It is expensive and involves long time of study and invention. It is consider a more complex and risky purchase compare to the other purchase.

This study will look into the industrial purchasing of capital equipment involves the purchase of machines that use to process the input material in order to produce, process, assemble or test the output products for the factory. Examples of the machines are Printed Circuit Board Assembly (PCBA) machine, LED test handler machine, lapping machine, milling machine, tapping machine, grinding machine, cutting machine, sorting machine, stamping machine, plastic injection machine, punching machine, testing machine and many other machine that serve the needs to process and produce in a factory.

Some of the machines are customize to customer's requirements. It is normally involve automation, sensor, pneumatic, computers or robot related technology. It takes longer process to review machine's purchase compare to other standard part because it involve the long-term capacity planning of the factory. Therefore the purchase decision of machines has to be carefully carried out due to its high spending, technology and durability.

1.1 Background of the Study

According to investPenang 2009 (a non-profit entity of the State Government with the sole purpose of promoting investments within Penang) the electronics industries first set foot in Penang in the early 1970s. Today, the pioneer multinational manufacturing are not only still operating in Penang but are continuously expanding and enhancing their operations in Penang. Presently, Penang does not only excel in manufacturing, assembly and test operations but also shines as a design and development hub, especially in hardware design.

The nearly 40 years of track record in electronics industry has also contributed to the development of world class local suppliers with capabilities in automation systems, precision

engineering and software development. Therefore it is good opportunity for local supporting equipment company to support the growing manufacturing industries.

Industrial procurement can be observed in Penang – a suitable demographic to carry out research of industrial procurement behavior. Penang consist biggest foreign electric and electronics manufacturing investment in northern Malaysia – the offshore manufacturing from various country such as US, Japan, Taiwan, Singapore, Germany as well as local itself.

The electronics industry in Penang covering several of electronics products such as Computer components (Intel & Seagate), PCBA contract manufacturing (Jabil & Flextronics), Communication devices (Motorola), Scientific instrument (Agilent), Tools (Robber Bosch), Electronic fittings and appliances (Phillips) and etc. Industrial procurement officers gathered here to perform their daily procurement activities for the use of their own factories base on the manufacturing needs and management operating procedure.

In manufacturing capital expenditure, (besides land and building which are localized) equipment is one of the components in capital expenditure that takes up big spending. It is very important because the expenditure of machines is about 40% of the capital expenditure (Asian sources electronic components, 2006).

Under the 3rd Industrial Master Plan (IMP3- covers the period of 2006 – 2020) has set target of direct foreign investment for manufacturing sector are expected to reach RM412.2 billion. It is a huge amount and opportunity for local equipment vendor if they are able to capture the needs of the production equipment of manufacturing sector, about RM164.88 billion forecasted sales.

1.2 Problem Statement

1.2.1 The Local equipment vendor is suffering

The degree linkage between FTZ firms and the domestic economy, through the purchase domestically – produces raw material and capital equipment, has been disappointing (Linda Lim & Pang Eng Fong, 1991). Although the originally designed to generate local linkage, Malaysia's newly established heavy industries heavily import-dependent and their creation required heavy external borrowing which has imposed on onerous debt burden on the country, especially with the appreciation of the yen." The study indicated the issue of highly dependability of the foreign investment industry to the imported equipment but not to local equipment vendor.

The local equipment vendors have the geographical advantage compare to foreign supplier but still sales are flowing out to the foreign counties. Price may not be the single factor of their decision; unique products may not be their single factor of their decision, good relationship may not be their single factor of decision, good salesman may not be their single factor of decision.

According to Small and Medium Enterprise Corporation Malaysia (SME Corp. Malaysia) 2009, one of the equipment maker in Penang, MMS Ventures Bhd (which makes LED test handlers for the automotive and digital audio-visual industries) plans to move on to another product after seeing a 50% drop in business in the first nine months of the year 2009 due to the slowdown in global demand. The managing director T.K. Sia said the company stressed the need for the group to go overseas, as the domestic market for its products had shrunk by over 20% this year, compared with 2008. This has reflected the issue of sales shrinking of the local equipment business of the local vendors.

ATS Systemisation Bhd managing director Beh Lai Lien told StarBiz (The Star, November 2, 2009) that the group planned diversifies their automated equipments products for other industries such as food and medical sectors besides the electronics and electrical industry. Beh noted that the business for the electronics and electrical industry had also picked up but the problem is that automated equipment manufacturers here supply low-value automated parts and components to the industry.

1.2.2 The Opportunity Available

If the local equipment vendors unable to capture the sales by knowing the industrial purchasing behavior, this huge amount is going to flow out of Malaysia especially back to their origin country of the foreign investment manufacturing. It is a loss of opportunity for the equipment vendor because Malaysia is having the demographic advantage in supporting them and the local equipment vendors should understand the priority of the industrial purchasing.

1.3 Understand the Industrial Buying Behavior

The equipment purchase is a budgeted item according to the company long term capacity plan therefore the industrial buying decision often involves more than 1 person (Wind, 1971). Besides studying the potential's customer's company profile (Letchumanan, 2001), the local equipment vendors definitely interested to know their buying behavior. The local equipment supplier needs to know the priority requirements of the Penang manufacturing industries purchasing team in order to capture the sales opportunity available.

1.4 Significance of Study

The empirical model of industrial purchasing behavior (Dzever 1995, 1996) identified 3 dimensions of organizational purchasing behavior (technical, commercial and social), which significantly applied to the purchase intention of machining tools and components in Asia Pacific.

This model was adapted to the production equipment in Malaysia context as Malaysia located in Asia Pacific and machining tools and production equipments are under one family umbrella. This study adapted three dimensions from Sam Dzever, more specifically to "Technology of machine", "Commercial term attractiveness" and "Supplier social attributes".

There was no similar study carried out on industrial purchase behavior of machine/ production equipment in Malaysia before. All of the industrial purchase behavior was done in other countries or other commodity, not machine.

Based on this model, the supplier is able to check the priority factor of this manufacturing purchasing team in making their buying decision among technical, commercial and social. This study is going to find out the most important factor among them and therefore the marketing team is able to formularize the correct marketing strategy based on the result.

Besides, the sales person performance was added as the moderator variables to win the purchase intention of the buyers. This is referring to Maznah (2008) found that Salesperson behavior performance such as technical knowhow; adaptive selling skill and sales presentation skill are significantly influencing the customer loyalty/ repurchase intention of computer related products in Malaysia.

However, practically this study is very useful for marketing personnel, especially to the local equipment vendor who is serving Penang developing industry which come foreign investment and local itself. It was chosen equipment purchase because it is a must for each factory and it is the big spenders, which is estimated RM164.88 billion under IMP3. They are the capital to every factory.

From this study, they are able to know the buyer's needs by priority. Thus, the local equipment marketing personnel are able to sharpen their saw of marketing strategies; focus to the important factors that affecting the factories buyer's purchase decision. This helps them to capture the sales, avoiding the capital expense flow out to other countries.

Besides, it also contributes to Model of Industrial Purchasing Theory by further test and study on the significance in Malaysian production equipment context.

1.5 Research Objectives

Therefore, this study attempts to accomplish four main objectives as follows:

1. To determine whether "Technology of Machine" will have any influence on "Purchase Intention of Malaysian made production equipment".
2. To determine whether "Commercial term Attractiveness" will have any influence on "Purchase Intention of Malaysian made production equipment".
3. To determine whether "Supplier's Social Attributes" will have any influence on "Purchase Intention of Malaysian made production equipment".

4. To determine whether “Salesperson Behavior Performance” moderates the relationship between “technology of machine, commercial term attractiveness and supplier social attributes” and “Purchase Intention of Malaysia made Production Equipment”.

1.6 Research Question

This study tries to answer the following research questions:

1. Does “Technology of machine” factor influence the “Purchase Intention of Malaysia made Production Equipment”.

2. Does “Commercial term attractiveness” factor influence the “Purchase Intention of Malaysia made Production Equipment”.

3. Does “Supplier Social Attributes” factor influence the “Purchase Intention of Equipment”.

4. Does “Salesperson Behavior Performance” moderate the “Purchase Intention of Equipment”.

1.7 Definition of Variables

The briefed definition of the variables are describe for easy understand of the variables in the study.

1. Purchase intention: Behavioral Intention is defined as a mental state that reflects a person’s plan to engage in some action within a specific period of time. Intention is thus assume to be the immediate antecedent of behavior (Miller, Glawter, & Pribram, 1960).

Applying to the term of this study; purchase intention as a person's plan to engage in some action within a specified period of time and the probability that he or she will perform a behavior.

2. Technology of Machine: is defined as an explicit set of requirements to be satisfied by the material or products. Example: machine technical capability, machine operation friendly. In 1937, the American sociologist Read Bain wrote, "technology includes all tools, machines, utensils, weapons, instruments, housing, clothing, communicating and transporting devices and the skills by which we produce and use them" (Read Bain, 1937).

   Therefore Technology of machine can be defined as includes all tools, machines, utensils, weapons, instruments, housing, clothing, communicating and transporting devices and the skills by which we produce and use them changes the direction of a force, or changes the strength of a force, in order to perform a task, generally involving work done on a load.

3. Commercial term attractiveness is defined as the characteristic and code of commerce that attempting for acquiring goods or services to accomplish the goals of the company A term used to refer to any party or organization involved in producing, transporting, or merchandising a commodity.

4. Supplier's Social Attributes: is defined as "attributes that relating to society or its organi-zation" characteristic of suppliers' interaction of people and company with each other (Earl R. Babbie, 2009).

5. Salesperson Behavior Performance: is defines as: “Indicates how well salespeople perform various activities when carrying out their job responsibilities” (Bebakus, 1996) This aspect of salesperson behavior is related to various skills and activities that are important to fulfilling the responsibilities of the sales job. This may include sales performance such as: adaptive selling, sales presentations, sales planning, and sales support activities (Maznah, 2008)

1.8 Summary and Organization of Remaining Chapters

This paper is structure into 3 chapters. Chapter 1 covers the background of the study, problem statement, significance of the study, research objectives, research questions and definition of variables.

Chapter 2 will provide the overview of the literature on purchase intention, technical, commercial, social and sales person behavior. Chapter 3 will reviews the theoretical framework, hypothesis, and research methodology of the research.

Chapter 4 will covers the analysis and results of the study base on SPSS output. The significance of the study will be revealed here. Chapter 5 will provide discussion and conclusion of the study includes the implication of this study to the society and suggestion for future research.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter begins with the evolution of consumer behavior theory to the industrial purchasing theory. It follows by the past research of industrial purchasing theories and models. It also review the model that use in this study – the empirical model of industrial purchasing behavior (Dzever et al., 1995, 1996) Subsequently, it discussed the definition and dimension of the various components of the study.

2.1 Evolution of Consumer Behavior Theory

The Behavioral Perspective Model explained the basic consumer choice. There are 3 kinds of effective consequence of consumer behavior (Gordon, 1993). They are Hedonic reinforcement, Informational reinforcement, and Aversive reinforcement. Hedonic reinforcement refers to the satisfaction of owning and consuming the economic goods. Information reinforcement refers to the social status of the consumption and Aversive reinforcement is the cost in economic ways of the consuming.

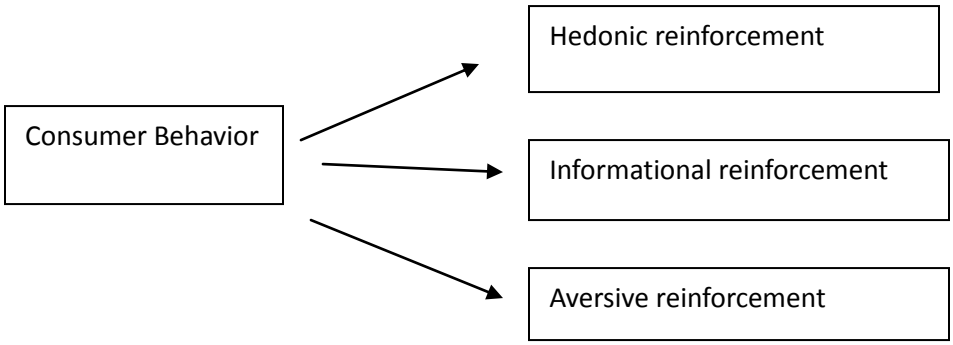

Figure 2.1: Behavioral Perspective Model

The previous study found that most important demographic dimensions of the consumer behaviors are: Age, Gender, Family Structure, Social Class and Income, Race & Ethnicity, Geography and also Lifestyle in consumer buying behavior. (Michael R. Solomon, 2007)

Researchers tried to apply consumers' behaviors (without modification) on industrial behavior and they found they are different. The buying is base on the company/ industrial involve more complicated factors. It needs to be considered more extensively and the process of analysis takes longer time (Mullins & Walker Jr., 2010) For example, the industrial buying behavior is very much different in term of Price elasticity, Lager quantity, Geographically concentrated market demographics and Closer buyer seller relationship. Thus the consumer behavior cannot be applied on the industrial behavior.

2.2 The Industrial/ Organization Purchasing Theory

2.2.1 Industrial Purchasing Behavior – for Independent Variables

The past research of industrial purchasing behaviors has focused on 3 main factors, which are Vendor variables, Product Variables and Purchaser Variables.

Examples of the vendor variables are dependability, service, technical ability, financial strength, geographical location and reciprocity history. Product variables identified as price, quality and type of purchase. Purchaser variables normally identified as type of purchase, size, motives, decision-making formality, risk preference, past experience, choice process and role factors (Sam Dzever, Pascale G. Quester & Slyvie Chetty, 2001).

Vendor variables	Dependability, service, technical ability, financial strength, geographical location and reciprocity history.
Product variables	Price, quality and type of purchase.
Purchaser variables	Type of purchase, size, motives, decision-making formality, risk preference, past experience, choice process and role factors.

Table 2.1 Past research of industrial purchasing behavior

An empirical model of industrial purchasing behavior (Dzever at al., 1995, 1996) identified 3 dimensions of organizational purchasing behavior (technical, commercial and social) towards machining tools and components in Asia Pacific. The 3 dimensions of organizational purchasing behavior was in line with postulations suggested by Dadfar that the organization purchasing behavior can be better understand if we look into the 3 dimension of Technical, Commercial and Social and study the relation between them. (Daftar, 1990)

Robinson buy class models are one of the Consumer Behavior theory that suggested few type of purchase situation such as straight re-buy, modified re-buy, and new product purchase. Besides, according to this theory, industrial purchasing is a process that goes through several phases such as need identification, alternative solution identification, alternative solution evaluation, and finally a purchase decision (Robinson, Faris & Wind, 1967).

Besides, researchers also supported purchase decision effected by organization, psychological and social factors (Webster and Wind, 1972). Theories believed decision making units (DMU) is not only purchasing department but mutual agreements between few departments such as purchasing, R&D and accounting. Webster and Winds (1972) specify the roles to users, influencers, deciders, buyers, and gatekeeper as a typical combination of decision-making unit. Sheth (1973) focused on conflict resolution aspect – the join decision making for industrial purchases. It makes some improvement by doing better forecasting of the purchase behavior

possibility but making the purchase behavior model more complex.

Other similar theory such as transaction-based theory focused on few "task variables" such as price, quantity, quality, service and delivery and support purchase decision was based on logical analysis of the task variables (Bonoma, 1997).

Recent researchers have emphasized on "relation based models" compared to "transaction based models". They explore relationship factors such as trust commitment, loyalty and customer's satisfaction. Kettnbaum and Hsieh (1983) found that historical record such as number of previous purchase, previous inquiry, previous experience of the suppliers company and products, previous experience with supplier's competitors, and other factors such as timing, company size, appropriateness, the suitable of product of the application and importance of the prospect and demonstration performance are ten factors to confirm a purchase order. It is an early model of "sales lead modeling".

Jolson (1998) argued that a "sales lead factor" must be able to satisfy prospect desire or need, the prospect is willing to buy and prospect has ability to buy. The lead determines by company initiate or prospect initiate; seller knowledge of the prospect's level of desire and prospects receptivity.

Donath (1995) determined five principal of lead quality, which is the prospect desire, need, resources, timing and decision authority. However some secondary criteria also under consideration such as prospect's accessibility, transaction history, sourcing policy, key account profile and relationship with the distributors.

Hornstein (2005) claims the leads by three factors: need, timing and budget. He also stated the choice of IV influenced by experience. Anyhow the model was not tested by

supportive data and no reference provided.

Grandy (2005) argued the lead factor for purchasing new heating and cooling equipment contributed by the age of equipment and desire of prospect talk to the sales personnel/ consultant but there is no supportive data in Grandy's research.

Coe (2007) tested prospect's need, discomfort level, timing, authority and budget contributed to the lead factor. Again there is no data and reference provided in this study.

Brown (2009) explored the scoring and divided business-to-business sales leads. There is no theory to support and validate these factors but only some common used lead characteristic such as project is funded, good project lead, availability that meets the project needs, urgency of project, info of the project, vendor relationship, vendor's competition, project contact person's authority and source of lead.

2.2.1.1 The Sales Lead Characterization theory

This is a theory to measure the probability how industrial converted from an observable behavior. There are eight dimension determine industrial sales enable sales and marketing access that lead to a confirm booking. It determined the industrial purchase character base on educated guess- sales personnel experience, gut feel, and sales literature that he/she read (Hornstein, 2005; Jolson, 1998; Beam, 2006). These guesses not always correct. Therefore it observes weaknesses and gaps in the past.

The sales lead characterization theory proposed by Monat (2009). He did an improvement to the previous study - which did not have valid data and references. He argued that eight

determinants are effecting the customers purchase decision such as: Customers perception of risk, need/ desire, urgency, competition, service, quality, value, and ability to purchase. Monat tested many industrial customer applied these factors on different combination and weight. Few indicator shows the perception of risk are the previous experience with vendor, vendor reputation, lead from other customers, and the familiarity with the vendor.

According to Monat, the eight indicators that shows industrial purchase decision determinant are prospect's perception of risk, value/ price, company urgency and the ability vendor able to comply, better deal/ competition, company's needs and desire, quality, services and ability to purchase.

Different company is using different criteria and weight to make the industrial purchase decision. Model of Monat is a start of having better forecast. Therefore in each company / industry may develop its own criteria towards the purchase of specific commodity base on historical leads.

The good points of Monat model is with proper validation by 65% accuracy of turning predict into sales. It helps the sales manager to predict a good lead for the particular customers and how to work more efficiently to tackle the important leads that turn the forecast into sales.

In summary, Monat found that there is no fix sales lead factors that effecting industrial purchase decision, because lead factors of the company may defer company to company. Each company is having different management, which effected by their mother company management and working cultural of the company. Western company may prefer western company suppliers due to common understanding of the technical knowledge. Urgency also very not measurable because how urgent is urgent.

Besides different industry has different sales lead factors. It depends on their nature of business. For example, hotel industry has different sales lead factors compare to electronic industry. It is possible of Hotel industry more emphasis on the quality and good smell when they buying hand soap compare to Manufacturing industry more emphasis on price because they are buying hand soap for internal employee use only.

Besides, different country may also have different lead factor depends on their cultural and working style. There is no single set of lead factor that can suit all industry, cultural background, commodity and type of purchases.

Clearly there is a need to determine a model/ theory base on different industry, countries, commodity and type of purchase. Therefore in this study, it is not necessary that certain theory will work for production equipment purchase in context of Malaysia. As there is no study carried out before for production equipment purchase in Malaysia thus it adapted the previous study in other countries on similar commodity.

2.2.1.2 Relational Exchange

Robert (2011) investigated what pricing, purchasing, product defect and late deliveries are associated with the decision of small medium and large customers into enter closer supplier and customers relationship in order to get a better sale.

The research only focuses on single industry between the buyers of pulp, paperboard mills in control their process equipment supplier. The result shows there is a significant relationship between pricing, purchasing, product defect and late deliveries for the paper industry

but the level of associate is different between small, medium and big size industry.

The research is important to supplier in choosing the correct strategy when they want to build up relationship effectively with their customers. Robert mentioned that different size of customer base might have different weight on the four study factors, which is Pricing, Purchasing ordering efficiencies, Product defects and Late deliveries. For example, large company customers have better financial capability to keep stock therefore late deliveries may be not emphasis in their supplier's relationship.

For small size customers, who may not has strong financial background to keep stock; prompt delivery is always the main target of relationship building. The other two factors – Pricing and Product defect rate has the same trend when shifting from small to larger company.

Larger companies focus on resource improvement compare to smaller company. This research is more towards relationship as can be categorized as a part of social between supplier and buyer. Robert also pointed out that according to Cusumono & Takeishi's study that Japanese customer has closer relationship with their suppliers compare to US customers. Example, Japanese automation firms have fewer suppliers but more information exchange and joint product development.

Robert has reminded that different industry may have different pricing structure, purchasing efficiency level, product defect rate and delivery performance influence. Therefore this result is not universal to all industries and each industry need to be tested separately.

2.2.2 Theory of Sales person Behavior - for Moderating Factor

2.2.2.1 Maznah's Research Findings

Maznah (2008) found that Salesperson behavior performance such as technical knowhow; adaptive selling skill and sales presentation skill are significantly influencing the customer loyalty/ repurchase intention of computer related products in Malaysia. Thus this study adapted Sales person behavior as the moderating factor for purchase intention of Malaysian made production equipment.

2.2.2.2 Sales Success Theory

Sales success theory believed sales performance is affected by three basic factors, which are role conflict, role ambiguity and motivation (Bagozzi, 1980; Behran & Peerault 1982; Churchill, 1985).

Base on this theory, Lawrence (2000) argues the time measurement and the type of variable used to measure sales performance can impact the result of sales performance. The result shows they are not highly related among the time series and performance measure. The type of performance measure being used and when is that taken is significant in order to choose an independent variable. Several significant independent variables found is the frequent calls, role conflict and role ambiguity.

For time series, independent variable of environment chronic change such as new competitor, territories and sales seasonality is found to be not strongly correlated with sales performance on same time series, but bring effect on long-term study. Besides, sales performance

scale has no sure which one is the best (salary increase) therefore it is not identify the effect toward the sales performance.

Some other sales performance theory such as sales force decision model (Craven, Woodruff & Stamper, 1972) also stated job factors like – nature of the job (transaction or relationship oriented) and the type of customers' call on and buying decision factors (individual or buying center).

In tractor market, Keith, Paul & Sam (2007) investigate the factor that affecting the purchase behavior of tractor in UK. 5 attributes were identified such as brand name, price proximity, and quality of dealer service and buyer's experience of the dealer. It's normal where lower price has better demand and revenue but the result shows price is not the most important factor. In tractor industry, branding is the most important factor follows by price and services. Therefore by having stronger brand name, higher price will be charge to ensure better revenue.

2.2.3 Summary of Research Findings

Table 2.2 summarize the study of industrial purchasing behavior that related to technology, commercial and social.

Technology			
Author (Year)	**Variable**	**Method**	**Findings**
Dzever (1995, 1996)	Technology, Commercial & Social	Organization	Factors that effecting machine tools and component purchase in Asia Pacific: Technology, follow by commercial and then social.

Kettnbaum and Hsieh (1983)	Previous purchase, previous inquiry, previous experience of the suppliers company and products, previous experience with supplier's competitors, timing, company size, appropriateness, the suitable of product of the application and importance of the prospect and demonstration performance	Organization	Ten factors to confirm a purchase order. Suitability of product application is one of the product features/ technology.
Commercial			
Author (Year)	**Variable**	**Method**	**Findings**
Dzever (1995, 1996)	Technology, Commercial & Social	Organization	Factors that effecting machine tools and component purchase in Asia Pacific: Technology, follow by commercial and then social.
Bonoma (1997)	Price, quantity, quality, service and delivery	Organization	Factors of logical analysis - task variables that effecting industrial purchase decision as most of them are Commercial term which is price, service and delivery.
Robert (2011)	Pricing, purchasing efficiency, product defect and late deliveries	Organization	In paper pulp industry, small company focus on prompt delivery lead time and big company emphasis on resource efficiency. Lead time is more important compare to pricing.
Social			
Author (Year)	**Variable**	**Method**	**Findings**
Dzever (1995, 1996)	Technology, Commercial & Social	Organization	Factors that effecting machine tools and component purchase in Asia Pacific: Technology, follow by commercial and then social.

Brown (2009)	Project is funded, good project lead, availability that meets the project needs, urgency of project, info of the project, vendor relationship, vendor's competition, project contact person's authority and source of lead.	Organization	Nine factors of business to business to leads to sales. Vendor relationship is one of the social factors.
Keith, Paul & Sam (2007)	Brand name, price proximity, and quality of dealer service and buyer's experience of the dealer.	Organization	Brand name that shows the company reputation is the most important factor compares to others factors in term of purchase tractors in UK.

Table 2.2: Summary of study related industrial purchasing behavior

2.3 The Industrial Decision Making Process

There are 5 steps of decision-making process – in purchasing new products (Mullins et al., 2010). The process of decision-making starts with recognition of problem or need. It starts with someone who has unsatisfied and need to improve psychological or social needs of the organization. It normally needed to improve the organization day-to-day production process or improvement of yield of the organization.

It follows by searching the information about the products and supplier. The users will start work with the buyers to determine the availability of products and suppliers in the market that can fulfill the needs. At step number three - follow the Evaluation and selection of supplier. At this step, all type factors need to be considered such as the 3 factors that discussed in this study – technical, commercial and social.

Thereafter at step number four, the supplier has been selected will be awarded with a purchase contract and the details of delivery will be specified by the buyers. The last step is

evaluation of the purchase & feedback –post sales. This input will be considered if there is any repeat order in the future.

Figure 2.2: Five Steps of Decision-Making Process (Mullins & Walker JR, 2010)

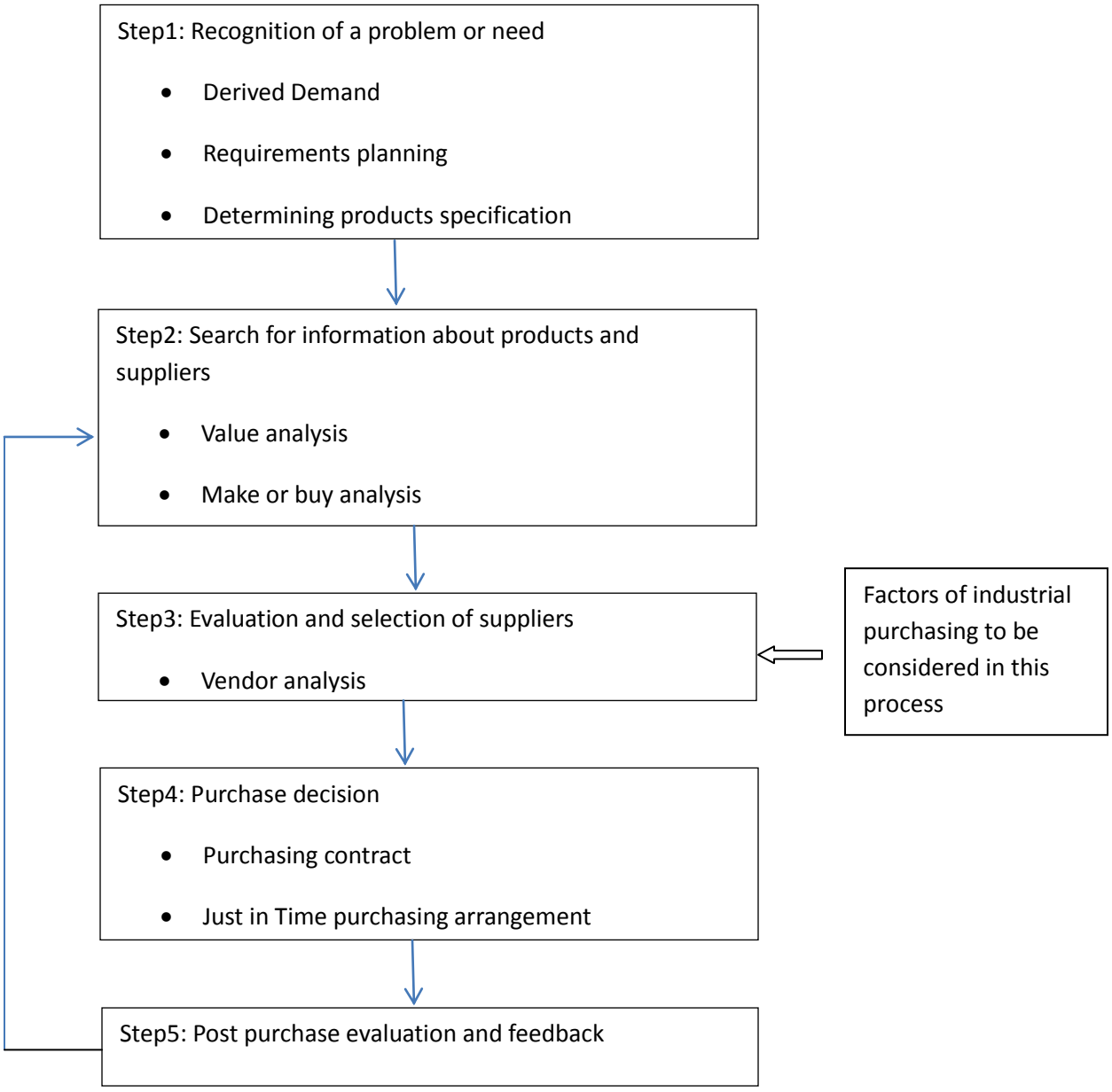

Figure 2.2 shows the five steps of industrial purchase decision-making process and when the "factors of industrial purchasing" is involve in step number three.

2.4 Categories and Description of Goods and Services bought by Organization

Procurement can be categorized into (i) direct procurement and (ii) indirect procurement. "Direct procurement" referring the buying raw materials- the unprocessed good that become a portion of the final product. They are major commodity products such as palm oil, steel, rubber etc. Some direct procurement also buying processed goods, example computer manufacturer, Dell is buying direct materials such as LCD monitor and cooling fan to be assembled together to become their final product – a set of desktop.

Category	Description	Example
	Direct	
Raw Material	Relatively unprocessed goods that become a portion of a final product.	Commodity Products
Component Parts and Materials	Processed good that become a portion of the final product.	PCB board, electronics component
	Indirect	
⇨ Installations	Major capital equipment to produce the final product.	Machines
Accessory equipment	Finished goods that facilitate the production of the final products	Tools and instrument
Operating Supplies	Finished goods that facilitate repair, maintenance and ongoing operation	Office Supplies, repair services
Business Services	Provide special expertise to facilitate the ongoing operation	Law firms, advertising services

Table 2.2: Categories and Description of Goods and Services bought by Organization

Another category of procurement is "Indirect procurement" consist 4 types – Installation, Accessory equipment, Operating supplies and Business services. These types of goods are not directly process by production to become a part of the final product. For example, Installations - supporting equipment such as machines, Accessory equipment such as tools, Operating supplies