A STUDY OF FACTORS INFLUENCING INDUSTRIAL BUYERS IN THE SELECTION OF WASTE SERVICE PROVIDER

By

MAYURA LIKITTRAKALKUL

A Thesis submitted in partial fulfillment
of the requirements for the degree of

Master of Business Administration

Graduate School of Business
Assumption University
Bangkok, Thailand

July 2004

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4.	Dr. Ioan Voicu	(Member)	.....
5.	Dr. Thanawan Sangsuwan	(MOE Representative)	.....

Examined on : 29 July 2004
Approved for Graduation on :

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Abstract

This study examines industrial buying behavior with specific attention to the choice of waste management services. Sheth, Mittal, Newman (1999) stated that the decision process and behavior of business customers differs vastly from those of individual customers. Marketers develop different ways of serving individual and business customers. It is important to understand their buying behavior. This study aimed to examine whether or not organizational characteristics and personal characteristics affect industrial purchasing behavior.

The objective of this study is to determine factors influencing industrial buyers in the selection of a waste services provider and to understand how the characteristics of both organization and person affect the buying decision. The organizational characteristics focused in this research consist of size in terms of capital of organization, nationality, ISO14000 status, volume of waste generated per month, policy of waste disposal method, and length of the use of current waste service. The personal characteristics consist of department of position held and decision role of the respondents. The data are collected from 50 industries located in Bangpoo Industrial Estate. Conjoint analysis is used to generate the choice alternatives as a set of physical cards for the subject score and also to do an analysis of the data so that the attribute importance and the utility score of each respondent are known. The statistis used to test the significant differences among those purchasing criteria is ANOVA.

The results from conjoint analysis indicated that the most important factor used by industries as purchase criteria is service quality, followed by waste disposal method. Price ranks third, followed by ISO 14000 Certification, and equipment. More importantly, the results shows the utilities of various levels of factors which by

examination of the ratings of importance, the most preferred profile can be described in terms of attributes and levels as: service quality (good), waste disposal method (sanitary landfill), price (20% below target), ISO 14000 Certification (obtained), and equipment provided (provided).

Finally, the results of hypotheses tested of both industries characteristics and personal characteristics indicate that there are no significant differences in purchase criteria used in the selection of waste service provider. The exceptions to this are only in terms of company nationality, ISO 14000 status, and volume of waste generated. For example, the most important purchase criteria used by American companies is waste disposal method, while the most important criteria used by other nationalities is service quality. The industries that have ISO 14000 certification consider ISO 14000 certification of waste service provider as the most important criteria. This finding would suggest that ISO 14000 certification would help the service provider to widen the market share for industries.

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The completion of this thesis was not possible without the following people who give me assistance and support. I would like to take this opportunity to acknowledge and express my gratitude.

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Chapter 1
Introduction

1.1 Background of the study

With the increasing public environmental awareness in Thailand, there is an increasing recognition of the need for more manufacturer responsibility[1]. The Thai government begins to enforce stronger environmental legislation, such as the National Environmental Quality Act (1992), the New Factories Act of 1992, towards industrial or manufacturing sector[2]. Regulatory action noticeably results in the emergence of environmental market (Phantumvanit, 1992). It is an opportunity for waste management business to play an increasingly significant role in the Thai industrial market.

Although the number of waste management companies has increased, only a few companies operate modernly appropriate infrastructure and technologies with Environmental Impact Assessment (EIA) approval and/or in compliance with environmental legislation and international standards. Many of them are open dumps which threaten not only the health of the communities, but also the surrounding environment (Corcoran, 2002).

Open dumps, however, are currently used by most industries in Thailand. Government regulations ineffectively force businesses to be responsible for their polluting activities (Corcoran, 2002). Simultaneously, businesses are reluctant to pay the cost of pollution control, fear that increased expenditure will damage competitiveness. When the cost incurred, it will eventually be passed on to consumers. Hence, it is more likely that large multinational industries can afford to pay the cost of

[1] Data Source: Web Site - http://www.tei.or.th/program_projects/bep/bep_main.htm, 24/5/2003
[2] Data Source: Web Site - http://www.usaep.org/export/em-thailand-rf.htm, 21/6/2003

pollution control, while small and/or local industries cannot pay without affecting their competitiveness (Phantumvanit, 1992).

Waste Management Siam Ltd. (WMS) is a licensed non-hazardous waste management company that operates a non-hazardous waste environmental complex at Chonburi Industrial Estate. With the higher investment of its modern facility and cost of the operation than those of open dumps, the price charged for professional or standard service is also higher. It seems to the company that businesses are mostly concerned on price in the use of waste services. However, several previous studies have found that price is not always the most important choice criteria in industrial buying decisions. Quality of products, certainty of delivery, service, and technical support are often the most important criteria in service selection (Reeder, Brierty, Reeder, 1991). It is interesting to investigate whether the above finding can be truly applied to industrial behavior in waste management business in Thailand.

This research aims to study the factors influencing industrial buyers in the selection of the use of waste services in the industrial market. In order to employ the results from this study to devise marketing strategies, conjoint analysis is utilized to understand how industrial buyers trade off the purchase criteria. Firstly, purchase criteria are identified by senior marketers of the company. Then, conjoint analysis is conducted to design alternative services for industrial buyers to choose in order of preferences. The utility from conjoint analysis gives the results of how important those purchase criteria are to each industrial buyer. Finally, hypotheses are tested to examine if purchase criteria used by the industrial buyers are significantly different in the selection of waste service provider.

1.1.1 Waste Management in Thailand Overview

Industrial Waste Management Regulations

As a result of the Sixth Economic and Social Development Plan (1985-1990) which aimed at development of Thailand from agricultural to be an industrialized country, industrial waste management became a tremendous problem in the country (Taweesri, 2002). A vast variety and quantity of waste streams from production processes are difficult to manage. An inappropriate waste management system from collection through transportation to disposal causes a great deal of environmental degradation. To cope with the problem, environmental regulations needed to be addressed.

In 1992, as part of the Seventh Economic and Social Development Plan (1991-1996), several stronger environmental laws were enacted which gave more authority to state regulatory agencies to enforce their mandates. However, the strong regulations came from adoption of the Enhancement and Conservation of National Environmental Quality Act (NEQA), the 1992 Amendments to the Factories Act, and the Hazardous Substances Act[3].

The National Environmental Quality Act (1992) strengthened environmental standard setting, planning and enforcement. The National Environmental Board was established and has the power to set national standards, approve efficient operation and emission standards, require EIA reports, etc. The Act established the "polluter pays principal" which required polluters to pay fines for their polluting activities and to compensate for damages. The Act also gave the public the right to information related to environmental matters. "This was a tremendous change for Thailand and greatly affects all areas of commerce"[4].

[3, 4] Data Source: Web Site - http://www.usaep.org/export/em-thailand-rf.htm

The Hazardous Substances Act created a system of classification and management for hazardous substances and wastes. "The Act sets forth standards for producing, possessing, and handling of hazardous substances, and mandates labeling, handling, and storage requirements"[5].

The New Factories Act of 1992 provided the Ministry of Industry with power to regulate factories for the prevention of disturbances, damage and danger to the public or environment. The Act creates liability with the plant operator and the engineer designated to be responsible for pollution control at the facility[6].

The New Factories Act of 1992 was productive and forceful to push industries to be responsible for their waste generated especially from production line. Under the Act, all factories have to ask for permission from the Department of Industrial Works (DIW) for all their outgoing waste specifying type of waste generated, quantity, disposal method, details of waste processor, and so on. However, it is likely that many industries do not know and care where their waste exactly goes. Once they have the permission and their waste goes out of the industry area, the waste generator (industries) is not responsible for the polluting, but the waste processor.

In general, industrial wastes can be in the form of solid, liquid, gas in container, or sludge wastes. Under environmental regulation perspective on disposal of wastes or unusable materials, industrial wastes can be categorized into 3 groups:

1) Industrial Non-Hazardous Wastes;

2) Industrial Hazardous Wastes; and

3) General Waste.

[5,6] Data Source: Web Site - http://www.usaep.org/export/em-thailand-rf.htm

These industrial wastes, according to the New Factories Act of 1992, can be disposed by the following five methods:

1). Incineration - Capacity of incinerator and its process must comply with the regulation of air pollution control enacted by Ministry of Science, Technology and Environment;

2) Sanitary landfill – Waste processor must have 101 or 105 permission from Department of Industrial Works;

3) Dumping – Waste generator must show the dumping area plan with permission from the landlord;

4) Compost processing – Name of processor and composting procedure must be identified;

5) Recycle, reuse, recovery, waste exchange – Waste processors must have business licenses in the same category as the waste they disposed.

The Acts are noteworthy tools to enforce industries to be more responsible to environment. They allow the Ministry of Industry to monitor and control how industrial waste is handled and where the waste goes. However, the monitoring process is not efficient to control the industries to be responsible to their polluting[7]. Therefore, sufficient monitoring process is needed to track the waste from the industry through the waste handling process to the final destination (Corcoran, 2002).

[7] Data Source: Web Site - http://www.eia.doe.gov/emeu/cabs/thaienv.html

Industrial Waste Market

Industrial approach to waste management in Thailand from past to present has been to reduce and control the cost of waste disposal through the use of open dumps and other methods which are not legally approved. Currently, there are hundreds of open dumps throughout Thailand, wasting a huge area of potentially productive land. As in every country, most open dumps are sponsored by local governments and/or "informal" businessmen (Corcoran, 2002). They are operated by non-licensed companies with links to local mafia which use their power to get benefit from the waste management business. They charge high fees for substandard services. They target mainly factories, which want to save on expensive waste treatment services (Tang, 2002).

Chalermwat & Brown (1999) mentioned that there are two economic sectors which co-exist and play a significant role in Thailand's waste management system:

1. The formal sector, which has official responsibility for waste collection and disposal, they are waste service companies and municipal government;
2. The informal sector, which are the waste picking activities of, for example, itinerant waste pickers, municipal collection crews, waste pickers who live and work in the landfill site, and itinerant waste brokers who travel around to purchase and resell materials from workers in the informal sectors.

All organizations, large or small, generate waste either from industrial (production line) or commercial (general) processes and therefore require waste management services. Currently, there are 41 licensed waste management companies in Thailand. According to the list of licensed waste management companies by Department of Industrial Works, these companies can be grouped by method of waste disposed into two categories, summarized in Table 1.1.

Table 1.1: Number of waste processors by waste disposal methods

Categories - Waste disposal method	Number of companies
1. By incinerator, treatment, landfill	
1.1 Cement Incinerator	7
1.2 Incinerator – Non-hazadous waste	4
1.3 Landfill – Hazardous and Non-hazardous waste	3
1.4 Landfill – Non-hazardous waste	2
2. By Segregration and Recycle	25
Total	41

Source: Adapted from permitted waste management companies name list, Department of Industrial Works, http://www.diw.go.th .

Other than these licensed companies, there are several brokers operating by collection and transportation waste from customer's site to licenced waste processor's site for disposal. There are also many new waste services company entering the business with very low investment taking a small segment of the market and charging very low prices.

Among these companies, General Environmental Conservation Public Co.,Ltd. (GENCO), the largest and the only one to be listed on the Thai stock exchange is a main service provider in this business (Corcoran, 2002). It is owned by the Ministry of Industry by 25% and the Industrial Estate Authority of Thailand by 2.5%. It operates sanitary landfills which mainly service for hazardous waste.

Thailand's environmental market will continue to expand and develop as a result of environmental legislation and public environmental awareness. The Thai Government is increasing its emphasis on environmental legislation and enforcement. The industrial sector is increasing its efforts to manage their waste more effectively in order to comply with local laws and international standards.

Additionally, an international standard for environmental management (ISO14000 series) would also be another significant tool urging industries to be responsible for their activities in relation to environment issues. It would help to increase the demand for waste management services especially in large multinational industries, if ISO14000 audit firms seriously look into waste disposal method of those industries.

1.1.2 Company Background

Waste Management Siam Ltd. (WMS) is a local Thai company owned by Modern Asia Environmental Ltd. which is an investor and an operator of waste management business in the Asean region. WMS was established in 1997 and actively developed its environmental complex inside Chonburi Industrial Estate for 3 years prior to the grand opening in February 2002. It is operated by a team with international experience. At present, there are 130 employees in the company.

WMS provided services in a total non-hazardous waste solution for industrialization and commercialization to comply with local and corporate/municipal standards as well as with the highest international stardards and regulation. Its services are non-harzadous waste collection, transfer, treatment, recycling, composting, and safe disposal facilities for waste management.

The company's objective is "to conduct the business as responsible stewards of the environment and to seek profits only through activities that leave the local environment healthy and safe into the foreseeable future".

Operations

Currently, WMS operates a unique modern environmental facility named "Eastern Seaboard Environmental Complex" (ESBEC) which complies with both local

and international standards. The ESBEC is located in the Chonburi Industrial Estate (CIE), Bowin subdistrict, Sriracha district, Chonburi Province. Phase I is 75 rai - 12 hectares. An additional 275 rai – 44 hectares is reserved for future development. Hemaraj Land & Development Public Co.,Ltd. supports the development and has reserved the property as part of its basic infrastructure.

At present, there are only few permitted non-hazardous waste sanitary landfills that have followed the EIA process and comply with all Thai regulations. Even though there are several permitted waste service providers in the market, many of them do not legally operate with full compliant to environmental standardization. Most of waste generated in industries and communities is placed in open dumps which do not have leachate and gas treatment systems, environmental monitering programs, approved EIA's and qualified operators. The ESBEC was developed in anticipation of the waste revolution in Thailand. The comparison between "Sanitary landfill" and "Open Dump" is shown in Appendix B.

Marketing and Competitors

Currently, most customers of the company are multinational firms which have their factories located in and around Chonburi province, especially in Industrial Estate area. The company targets mainly multinational companies in Thailand and differentiates itself through the full compliant procedures and high level customer service. The company's competitors can be broadly summarized as the following:

- In-house

Factory owners can choose to operate their own waste treatment and disposal facility such as liquid waste treatment and incinerators, either to comply with their corporate policies or if it is the only option available for proper waste disposal;

- Government and illegal private sector open dumps

This is the major industry player in Thailand which originates from government and illegal private sector open dumps which do no protect against environmental damage, thereby exposing their customers to future liabilities and risks;

- Private sector owns a service facility

The market players receive permits to operate waste management within their own facilities which may or may not fully comply with local or international standards;

- Others

Brokers, which are either licensed or unlicensed companies, transport and dispose waste at other companies' landfill.

The first modern waste management facility in the kingdom was GENCO which was designed to treat and dispose of hazardous waste (Corcoran, 2002). GENCO is the main service provider in this business. Not only hazardous waste, but it can also provide service for non-hazardous waste.

Pricing is generally made to customers on the basis of volume, and type of waste. According to the internal market research, there is a wide range of pricing in the business charging from 300 – 100,000 Baht per ton. It is currently issued on the basis of price without serious recognition of standards, costs, long term liabilities, and quality of service being provided. Many waste service companies with very low capital investment (improperly disposal facility) are completing for a small segment with very large differences in service levels and thus wide ranges in pricing (Corcoran, 2003). All they have are a couple of trucks and a piece of land they can dig up (Tang, 2002). They are established to make easy money charging very low prices, between 300-800 Baht per ton.

1.2 Statement of Problem

The role of waste management services continue to increase in Thai industrial market increasing the intense market competition. Many waste services companies are established with low investment, improper facilities, and/or illegal dumping and environmental liabilities. They can charge very low prices for their substandard service. With the high investment in modernly proper facilities, the company faces the price competition. In order to develop completitive marketing strategies, it is important for the company to understand the industrial buying behavior in the environmenal market.

Therefore, the aim of this research is to answer the following questions:

1. Is price the most important purchase criteria for industrial buyers in the selection of waste service providers?
2. What other factors are used by industrial buyers as purchase criteria in the use of waste service? Are there any significant differences in these criteria?
3. In the selection process, how do these industrial buyers trade off the weakness in one or more attributes against the strength on other attributes when service provider possess the attributes at varying levels?

1.3 Research Objective

The study is aimed to achieve the following objectives:

1. To examine what are the important criteria used by industrial buyers in the selection of waste service provider;
2. To determine how organizational characteristics and personal characteristics of respondents affect those criteria.

1.4 Scope and Limitation of the study

1. The research is focused on industrial buying behavior in waste management business in five purchase criteria: price, service quality, ISO 14000 certification, equipment provided, and waste disposal method. The results employed for hypothesis testing are from the trade-off of those criteria. Therefore, it should be careful when using the result from this research to compare with other criteria which are not focused in this research.
2. The data collected for the study are from industries located in Bangpoo Industrial Estate only. Therefore, it needs to be careful when using the results of this research to apply to other locations.

1.5 Significance of the Study

In order to develop effective and competitive marketing strategies, it is important for a waste service provider to understand how industrial consumers make a decision in the selection of a waste management service. This study provides marketers information in learning how important of those purchase criteria are to industrial buyers. The marketers can use the results from this study as a guideline to develop marketing strategies.

Furthermore, the results from this study can help to understand Thai industries' practices/response to waste management systems. Currently most industries in Thailand use open-dumps as well as the government's monitoring process is not efficient to control the polluting. The results could signify level of an acceptance of environmental management and industries' responsibility to the Thai Governments, and thus, to identify the directions for further improvement of the environmental regulations.

1.6 Definition of Key terms

Disposal: Final placement or destruction of wastes. Disposal may be accomplished through use of approved secure landfills, surface impoundments, land farming, deep-well injection, ocean dumping, or incineration[8].

Hazardous Industrial Waste: Waste generated from industrial process which can pose a substantial or potential hazard to human health or the environment when improperly managed[9].

Incineration: A treatment technology involving "destruction of waste by controlled burning at high temperatures; e.g., burning sludge to remove the water and reduce the remaining residues to a safe, non-burnable ash that can be disposed of safely on land, in some waters, or in underground locations"[10].

Industrial buyer: The manufacturers that acquire the large quantities of goods and services used in the production of other products or services that are sold, rented or supplied to others. (Kotler, 2000)

Non-hazardous Industrial Waste: Waste generated from industrial process which does not at all pose a substantial or potential hazard to human health or the environment and not considered hazardous waste[11].

Open-dump: An uncovered site used for disposal of waste without environmental controls[12].

Organizational Characteristics: Features that identify a business organization, for example, size, industry activities, location, nationality, etc.

[8-11] Data Source: Web Site - http://www.epa.gov/ OCEPAterms/Iterms.html

[12] Data Source: Web Site - http://www.epa.gov/epaoswer/non-hw/reduce/catbook/you.htm

Permit: An authorization, license, or equivalent control document issued by the Governments to implement the requirements of an environmental regulation e.g. a permit to operation a wastewater treatment plant or to operate facility that may generate harmful emissions[13].

Personal Characteristics: Features that identify or describe a person, for example, gender, age, education, position, etc.

Sanitary landfills: Disposal sites for solid wastes spread in layers, compacted to the smallest practical volume, and covered by material applied at the end of each operating day[14].

Trade-off: An exchange of one quality or thing for another[15].

Waste: Any unwanted material intentionally thrown away for disposal (Urban Development Sector Unit, East Asia and Pacific Region, The World Bank, 1999).

Waste generator: Any person, business entity, manufacturer, who act or process produces regulated waste or who act first causes such waste to become subject to regulation[16].

Waste management or Waste service: The service in supervised handling of waste materials from their source through recovery processes to disposal[17]. The services are including collection, transfer, treatment, recycling, and dispose.

[13,14,16,17] Data Source: Web Site - http://www.epa.gov/ OCEPAterms/Iterms.html

[15] Data Source: Web Site - http://pespmc1.vub.ac.be/ASC/TRADE-OFF.html

Chapter 2
Literature Review

This chapter provides the literature review of theories and previous studies to support research framework and research methodology.

2.1 Literature to support framework

2.1.1 Industrial Buying Behavior

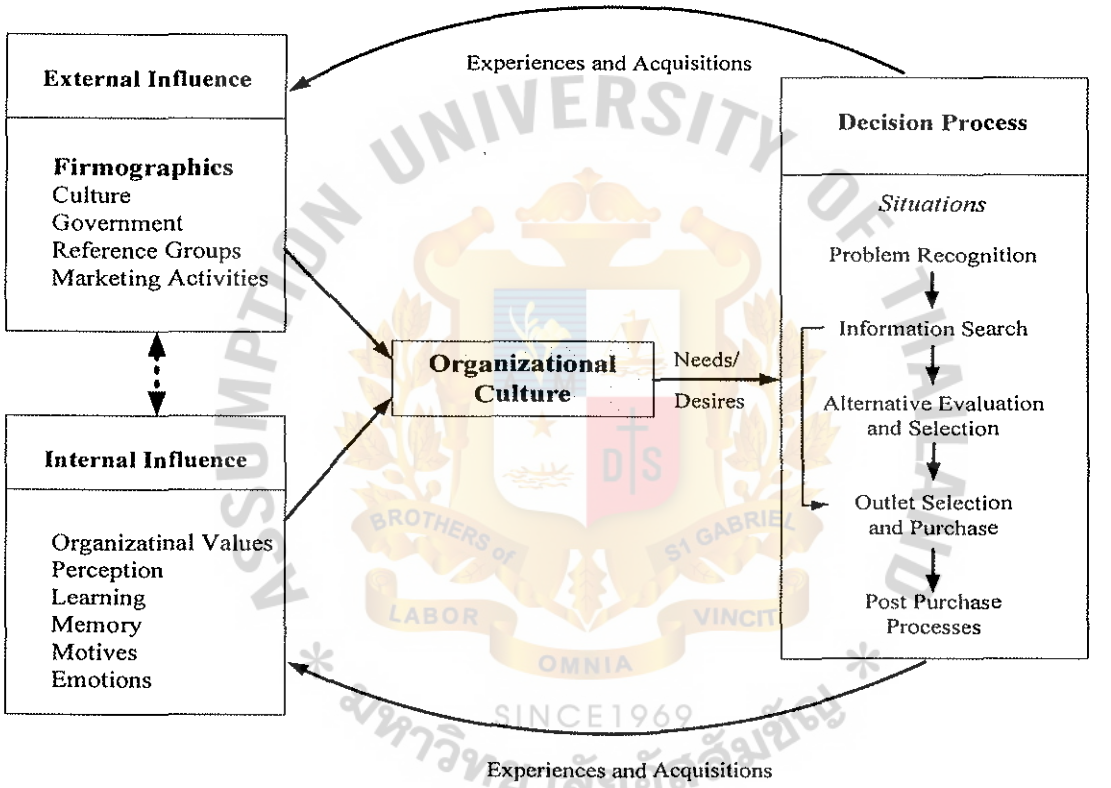
By adapting the definition of organizational buying given by Kotler (2000), industrial buying is "the decision-making process by which industries or manufacturers establish the need for purchased products and services and identify, evaluate and choose among alternative brands and suppliers".

Solomon (2002) defined consumer behavior as "a study of the processes involved when individuals or groups select, purchase, or dispose of products, service, ideas or experience to satisfy needs and desires". The term "consumer behavior" differs from a similar term 'buyer behavior' in that buyer behavior is a term often understand and encompasses business-to-business as well as individual consumption (Hanna & Wozniak, 2001).

The decision process and behavior of business customers differs vastly from those of individual customers. Individual customers make decision to serve their own needs/wants, while industrial customers make decsition to serve business needs. Marketers develop different ways of serving individual and business customers (Sheth, Mittal, Newman, 1999). Since this research is to study the behavior of industries/manufacturers, to make it clear, buyer or consumer in this research is clasified into two groups: individual consumer and organizational consumer.

The model used to support the framework in the study is adapted from the organizational buyer behavior by Hawkins, Best, & Coney (2001). It is a conceptual model which reflects beliefs about the general nature of organizational behavior as shown in Figure 2.1.

Figure 2.1: Conceptual Model of Organizational Buyer Behavior



Source: Hawkins, Best, & Coney, Consumer Behavior: An applied approach (New Jersey: The Prentice Hall, 2001)

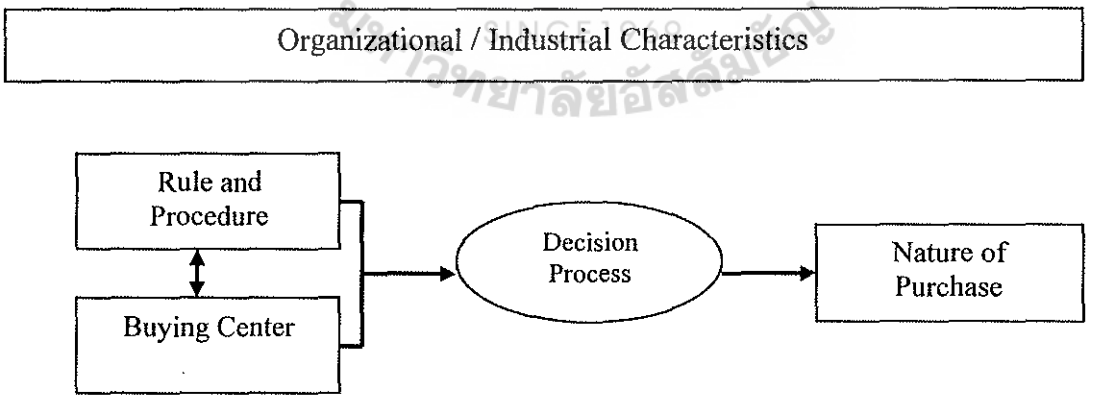
Organization develops its culture based on a variety of internal and external influences. Organizational culture reflects and shapes organizational needs and desires, which in turn influence how organizations make decisions (Hawkins et al., 2001). External and internal influences are composed of many characteristics as shown in the figure. The research studies only how an external influence called firmographics influence the organizational culture and thus affect buying behavior.

Firmographics involve both *organizational characteristics*, for example, size, activities, objective, location, and industry category, and *characteristics of the person in the organization*, for example, gender, age, education of employees (Hawkins et al., 2001). This research, then, will study how those characteristics affect the organizational buying behavior.

2.1.2 Industrial Buying Process

Industrial buying process is more formalized than those of individual buying process with respect to policy, procedures, and paperwork (Sheth et al., 1999). This formal system called procurement systems has several components: nature of the purchase, organizational characteristics, buying center, rules and procedures, and a decision process as shown in Figure 2.2.

Figure 2.2: Components of Industrial Buying Process



Source: Adapted from Sheth, Mittal & Newman (1999), Consumer Behavior: Consumer Behavior and Beyond (Forth Worth: Dryden Press)

Organizational Characteristics

According to Sheth et al. (1999), organizational characteristics affect buying behavior can be divided into four characteristics:

(1) Size – is determined not only in amount, but also in the sophistication of its buying process; small organizations usually behave more like a family in the buying process, have one person in purchasing group while large organizations have larger groups and more formalized procedure.

(2) Structure – refers to the number of departments and geographical locations; the more departments, the larger the buying group and more complicated process is likely to be;

(3) Purchase resources – refers to the availability of professional buyers as well as equipment; generally, large and professionally managed firms would have better purchasing resources;

(4) Purchase orientation – refers to "its purchasing philosophy along a continuum from viewing purchasing simply function that finds the most economical sources of materials to viewing it as a strategic, managerial function that to add value to the organization's ability in turn to offer better value to its customers".

Nature of the Purchase

Industrial buyers face many situations in making a purchase and the way they make a decision depends on the nature of the purchase. Sheth et al. (1999) defined this as a type of purchase need called the buyclass which is composed of three types of purchase needs: the straight rebuy, modified rebuy, and new task.

1. A straight rebuy is a buying situation in which the purchasing department reorders on a routine basis (Kotler, 2000). This involves an automatic decision, as when an inventory level reaches a reorder point. Most organizations maintain an approved vendor list, and as long as they are satisfied with the vendor performance there is little or ongoing information search or evaluation (Reeder et al., 1991).

2. A modified rebuy is a situation in which the buyer wants to modify product specifications, prices, delivery requirements, or other terms (Kotler, 2000). This situation involves limited decision-making. It occurs when an organization wants to repurchase a product or service, but with some minor modifications. This decision might involve a limited search for information, most likely by speaking to a few vendors. The decision will probably be made by one or a few people (Reeder et al., 1991).

3. A new task is a buying situation in which a purchaser buys a product or service for the first time (Kotler, 2000). It involves extensive problem-solving. Because the decision has not been made before, there is often a serious risk that the product will not perform as it should or that it will be too costly. The organization designates a buying center with a variety of specialists to evaluate the purchase, and they typically gather a lot of information before making a decision (Reeder et al., 1991).

Buying Center - Participants in the industrial buying process

Typically, more complex organizational decisions tend to be made by a group of people who play different roles in the decision (Solomon, 1997). According to Kolter (2000), the decision-making unit of buying industries is called "*the buying center*". It is composed of "all those individuals and groups who participate in the purchasing decision-making process, who share some common goals and the risks arising from the

decisions". The members in the buying center may play any of seven roles in the purchase decision process which are:

1. Initiators - those who request to purchase something;
2. Users - those who will use the product or service;
3. Influences – those who influence the buying decision, they provide information for evaluating vendors;
3. Deciders – those who decide on which product to be purchased and from which suppliers.
4. Approvers – those who authorize the proposed purchase of deciders or buyers.
5. Buyers – those who select and negotiate the supplier and arrange the purchase terms.
6. Gatekeepers – those who prevent sellers or information from members of the buying center.

Decision Process

Industrial buying process entails a multistage process as stated in Figure 2.1. These stages comprise problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior. Sheth, et al. (1999) mentioned that various roles in the buying center participate more in some stages than others as example shown in Table 2.1.

Table 2.1: Varying Influence of Buying Center Roles

	Initiator	User	Influencer	Decider	Approver	Buyer	Gatekeeper
Problem Recognition	//	//	/	/			
Information Search			//	//		//	//
Evaluation of Alternatives			//			//	
Purchase Decision	/	/	/	//	//	/	//
Postpurchase behavior	//	//					

Source:Adapted from Sheth, Mittal & Newman, Consumer Behavior: Consumer Behavior and Beyond (Forth Worth: Dryden Press)

/ Influence // Strong Influence

2.1.3 Industrial Market Characteristics

Buying characteristics

Reeder et al. (1991) stated that "the buyer in the industrial market are professionally trained and technically qualified. Purchasing decisions are generally made on the basis of compliance with specifications, cost-effectiveness, and dependability of supply rather than on social or psychological needs".

People who are involved in the purchasing decision process will have specific knowledge on what they are going to purchase. They might have a different point of view depending on their basic and specific knowledge. In research, therefore, position of a person involved and the decision-making role are considered to be important characteristics which might result in a different decision.

Price characteristics

Price is less critical in industrial buying decisions. In one recent study of industrial buying in high-tech markets, researchers found that price ranked low in the purchasing criteria. Quality and consistency of products, certainty of delivery, service, and technical support are often the most important criteria (Reeder et al., 1991).

Price-Quality Signaling

Signals are important to consumers when judging product quality. A signal could be a brand name, a guarantee or even a price tag. It is very common for consumers to equate quality with a high price (Blythe, 1997). According to Reeder et al. (1991), the study found that if one knows nothing else about a product than its price and is asked to differentiate that product from another, then price would be held as a sign to quality because there is no other information to use. Similarly, another study found that price

had an effect on perceived quality only when the price information was presented with no other information. Many market research results show a modest but positive correlation between price and quality and also that some markets can be characterized by a zero or even a negative correlation. This suggests that at least two interesting questions related to consumers' abilities to process price information. "First, how well can consumers judge the correlation between price and quality. Second, to what extent are these judgments of the price-quality relationship biased by prior overall perceptions about price-quality?" (Bloom & Gundlach, 2001)

2.1.4 Service Concept

There are several definitions in the service marketing literature. Kotler (2000) defines services as "any act or performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything. Its production may or may not be tied to a physical product". Kasper, Helsdingen, & Vries (1999) constructs a broad definition which is "service are originally intangible and relatively quickly perishable activities whose buying takes place in an interaction process aimed at creating customer satisfaction but during this interactive consumption this does not always lead to material possession". Service, according to Blythe (1997), can be distinguished from physical products by the following characteristics:

1. They are intangible;
2. Production and consumption usually happen at the same time;
3. There is a lack of trainability;
4. Services are variable, even from the same supplier;
5. Services are perishable.

Service level

According to Blythe (1997), the service level refers to the degree to which the customer's needs are met. The decision about service levels will depend mainly on economic factors and the "value-for-money" perception of the clients. More often, the clients will pay more for a service because they believe that they will get better service. They may be disappointed in afterwards. The service level must relate to something that the customer feels is important. Likewise the service level set must be within their powers to achieve. It is important to understand here that the service level must be appropriate to meet expectations, not at the maximum. A consumer paying a low price will not be expecting very good service, and may become suspicious if the service is too good. In other words, it is possible to make the customers think that there must be a hidden problem somewhere (Blythe, 1997). Marketers should study what the customers perceive are important things when receiving the service.

Choosing the service

Blythe (1997) points out the three aspects which normally are taken into account when consumers choose the services:

Word-of-mouth - Consumers rely much more on word-of-mouth when choosing services, and will be more likely to using word-of-mouth after purchasing a service – whether to praise or condemn;

Risk and certainty - Consumers are faced with a greater degree of uncertainty when purchasing services because service is intangible and variable; guarantees from the service provider in order to reduce uncertainty; unfortunately, since services are perishable and not reclaimable, the supplier is rarely able to recoup anything from a refused service;

Involvement - Because of the greater risks and uncertainty attached to purchase of service, consumers are likely to become more involved with the service provider, and therefore more brand loyal.

Relationship between service providers and Customer or clients

Relationship between service providers and customers may be ended when the service providers cannot meet a customer's specific demands. The market-oriented service providers are not focusing on a single transaction with consumers. They are focusing on starting, developing, and maintaining relationship with customers. Kasper et al. (1999) stated that the relationship marketing principal is the creation of 'true customers'. The 'true customers' is "the customers who are glad they selected a firm, who perceive they are receiving value and feel valued, who are likely to buy additional services from the firm and who are unlikely to defect to a competitor". True customers are the most profitable of all customers. They spend more money with the firm on a per-year basis and stay with the firm for more years. They spread favorable word-of-mouth information about the firm, and may even be willing to pay a premium price for the benefits the service offers.

2.2 Literature to support methodology

2.2.1 Supplier Choice and Evaluation

Blythe (1997) stated that how buyers choose and evaluate suppliers depends upon the type of buying situation and the importance of the purchase in terms of complexity and money value. The decision rule is divided into two categories:

1. Non-compensatory decision rules are absolute: if a product does not meet the decision rule for one attribute, this cannot be compensated for by its strength in other areas.
2. Compensatory decision rules allow for trade-offs, so that a weakness in one area can be compensated for in another. In this rule, the customer considers all of the attributes for a product or service and trade off the alternative's perceived weakness on one or more attributes for its perceived strength on other attributes (Sheth et al., 1999).

To understand how industries evaluate the waste service providers and how they make a decision, it is important to understand decision rules and know which rule each customer uses in evaluation. The exact decision rule customers exercise varies from case to case, person to person. Trade-off is the methodology used in this study through conjoint analysis to examine if the customer trade off of one attribute for another in service selection. Conjoint analysis is used to examine these trade offs and measure the preferences.

2.2.2 Conjoint Analysis

Conjoint analysis is a method of evaluating alternatives using individual preferences. Each alternative is composed of a bundle of attributes and each attribute has two or more levels (Mummalaneni et al., 1996). It is becoming an increasingly useful tool for analyzing benefit segments among buyers. In particular, it is suited to industrial marketing research, because the small sample size arising from a small population of buyers is not a problem as analysis is fundamentally at the individual level (Auty, 1995). It also can be said that conjoint analysis has become popular because it is a more powerful, more flexible, and often less expensive way to address

the important questions than the traditional concept testing approach (McDaniel & Roger, 1996).

Conjoint analysis examines trade-offs to determine the combination of attributes that will be most satisfying for the consumer. By using conjoint analysis a company can determine the optimal features for their product or service.[1] It comes closer to allowing marketers to model the expected buying behavior based on purchasers' preferences than any other technique currently available, making it useful for both everyday marketing strategy and new product development (Auty, 1995).

The technique uses different attributes in order to develop a number of existing or imaginary products/services. These products/services are described on cards and shown to the consumer. Customers then have to indicate their preference for a particular product/service package.

2.3 Previous research

There are several previous researches studied on the supplier evaluation and selection in the industrial markets. Many of them utilized conjoint analysis methodology in the studies. The following studies are briefly reviewed to support the methodology used in this research. Mummalaneni, Dubas, and Chao (1996) studied on *Chinese Purchasing Mangers' Preferences and Trade-offs in Supplier Selection and Performance Evaluation.* The purpose of the study was to understand supplier characteristics used by Chinese managers as purchase criteria and the evaluation processes and trade off of those characteristics when multiple suppliers are considered. Conjoint analysis was used in the study. Six attributes were identified in varying levels for the respondents trading off their preferences.

[1]Data source: Web site - http:\\www.surveysite.com/newsite/docs/conjoint-tutes.html

Auty (1995) studied *Using Conjoint Analysis in Industrial Marketing*. This research studied the process of designing and interpreting conjoint analysis surveys in an industrial context. The study emphasized the operationalizing the conjoint analysis technique with regard to the relative reliability that can be achieved under a research climate constrained by time, money, and experience. Three industrial marketing surveys were conducted using full profile descriptions. The first survey employed personal interview technique. The second and third were conducted by the telephone-mail-telephone technique. The findings of the study provided more understanding of the technique operationalizing. Conclusions show that conjoint analysis is a useful technique in estimating the industrial buying behavior of others, since industrial purchasing decisions are more difficult to predict than consumer decisions. Additionally, the conjoint analysis software becomes easy to use and a deep knowledge of statistics is not required. Only understanding of the consequences of the decisions that need to be taken in the source of designing, implementing, and interpreting the study is required.

The comparison between both previous researches in terms of its framework, methodology, sample, and measurement is shown in Table 2.2.

Table 2.2: Comparison research framework, methodology, and measurement of the previous studies

	Mummalaneni, Dubas, and Chao (1996)	Auty (1995)
FRAMEWORK	Independent variable : Demographic of the respondents Dependent variable : Performance Criteria which consist of 6 attributes and levels as below; On-time delivery : 1. Seldom/Few times 2. Most times 3. Almost always Quality : 1. Poor (more than 5% defective) 2. Good (2% - 5% defective) 3. Excellent (less than 2% defective) Price/Cost : 1. 5% above target price 2. Approximately at target price 3. 5% below target price Professionalism of Salesperson 1. Not highly professional 2. Highly professional Responsiveness to Customer needs 1. Low level of responsiveness (Late, not satisfactory) 2. Moderate level of responsiveness (Average) 3. High level of responsiveness (Quick and satisfactory) Quality of Relationship with supplier 1. Poor 2. Good 3. Excellent	**Survey 1** Independent Variable : Respondents demographic Dependent Variable : Computer components RAM, Chip, speed, Monitor, and **Survey 2** Independent Variable : Respondents demographic Dependent Variable : Computer components RAM, Chip, speed, Monitor, and **Survey 3** Independent Variable : Respondents demographic Dependent Variable : Computer components RAM, Chip, speed, Monitor, and Price
METHODOLOGY	Questionnaire and Face-to-Face interview	Survey 1 - Personal Interview Survey 2 & 3 - Telephone-mail-Telephone
RESPONDENTS	47 of the total of 215 Purchasing Manager from manufacturing industries	Survey 1- 59 Consulting electrical engineers and design-and-build contractors Survey 2 - 48 Mechanics Survey 3 - 47 professional purchasing agents
MEASUREMENT	Conjoint analysis : Rating 1-100 points	Conjoint analysis: Survey 1 - Raking Survey 2 & 3 – Rating 1-10 scale

The first research by Mummalaneni et al. (1996) focused on the supplier characteristics in Chinese purchasing manager's evaluation process, while the second one focused on how conjoint analysis works in industrial marketing research. Both researches are similar in studying industrial marketing research and using conjoint analysis, but differ in focus and objective. The first research conducted in China with Chinese purchasing managers who attend the seminars through face-to-face interviews and Chinese-language questionnaires. This research could be of value to marketers who want to do business in China. However, it is necessary to realize different cultures when using the results in the other areas. Auty (1995) conducted the study in three industrial marketing surveys which provide an understanding of the process of conjoint analysis.

In collecting data, both studies employ the same survey technique through personal interview and the questionnaire. The first research asked respondents to rating score from 1-100, while the second one asked respondents to both ranking and rating score form 1-10. In preparing questionnaires for this study, the marketing team of the company was asked to do both ranking and rating the profiles for conjoint analysis. They informed that it is difficult to do ranking since one attribute can be substituted by another at any situation while selecting waste management service.

This study applied research framework from the research by Mummalaneni et al. (1996) because the objectives are similar. Independent and dependent variables are drawn by considering the true environmental market situation in Thailand. However, when identifying attributes and levels, it is difficult to identify the exact price in the study. The assumption of price term, target price, is applied from this study. Many previous research shown in table in Table 2.3 as well as those two studies use approximately 50 respondents as their sample size. It is acceptable to use a similar number of sample size in this research.

Table 2.3: A Summary of Selected Studies Evaluating Supplier Performance Characteristics

Researcher and Year of Publication	Respondents	Measurement Approach	Country	Supplier Characteristics in Order of Importance
Wind, Green, and Robinson (1968)	20 purchasing agents from a single company	Thurstonian scale	U.S.A.	1. Quality/price ratio 2. Delivery 3. Technical ability 4. Information and market services 5. Reputation 6. Location 7. Technical innovativeness 8. Previous contact with buyer 9. Reciprocity 10. Personal benefits received by buyer
Lehmann and O'Shaughnessy (1974)	Purchasing agents from 19 U.S. and 26 U.K. companies	Ratings of importance on a 5-point scale	U.S.A. and U.K.	1. Delivery 2. Price 3. Flexibility 4. Reputation 5. Technical specifications 6. Past experience 7. Sale service 8. Maintenance 9. Financing 10. Ease of use 11. Reliability 12. Technical service 13. Preference of user 14. Confidence in salesmen 15. Convenience in ordering 16. Training offered 17. Training required
Perreault and Russ (1976)	216 purchasing agents affiliated with NAPM	Ratings of importance on a 7-point scale	U.S.A.	1. Product quality 2. Distribution service 3. Price 4. Supplier management 5. Distance to supplier 6. Required order size 7. Minority/small business 8. Reciprocity
Abratt (1986)	Purchasers of high-tech products from 54 organization	Ratings of importance on a 7-point scale	South Africa	1. Technical service 2. Product reliability 3. After-sales support 4. Reputation 5. Ease of maintenance 6. Ease of operation 7. Price 8. Confidence in salesmen 9. Product flexibility
Billesbach, Harrison, & Croom-Morgan (1991)	Approximately 50 buyers from manufacturing companies	Ratings on a 5-point semantic differential scale	U.K.	1. Delivery 2. Quality 3. Price 4. Response flexibility 5. Technical support 6. JIT capability
Billesbach, Harrison, & Croom-Morgan (1991)	Approximately 50 buyers from manufacturing companies	Ratings on a 5-point semantic differential scale	U.S.A.	1. Delivery 2. Quality 3. Response flexibility 4. Price 5. Technical support 6. JIT capability

*The results presented here are for routine order products. Further, thisstudy did not report the results for U.S.A. and U.K. separately.

Source: Mummalaneni et al., Chinese Purchasing Managers' Preferences and Trade-offs in Supplier Selection and Performance Evaluation, Industrial Marketing Management, Vol. 25, p. 117.

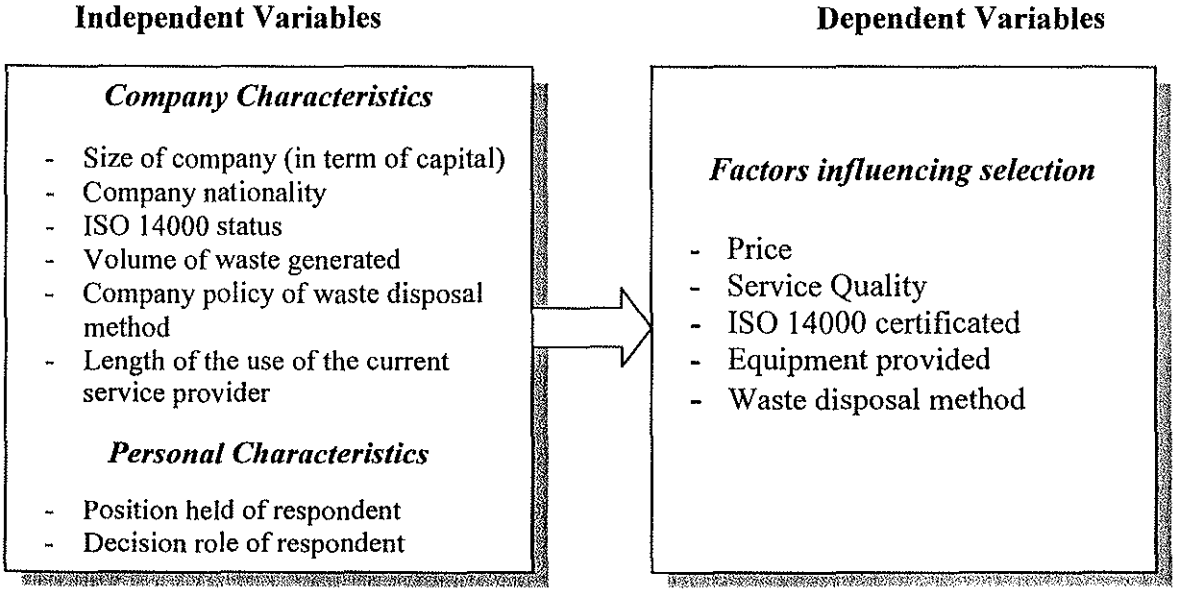
Chapter 3
Research Framework

This chapter is to provide a diagram of framework of the research with the definitions of the variables. Hypotheses are developed in order to have a clear understanding on the objectives of the study. The expected outcome is also described in this chapter.

3.1 Research Framework

The research framework in this study applies from the previous research by Mummalaneni et al. (1996), together with referring to research objective. The organizational and personal characteristics of industrial buyers are assigned as the **independent variable**. Purchase criteria used by industrial buyers in the use of waste services providers are identified as the **dependent variable**. Both variables are identified through discussion with the marketing team of Waste Management Siam Ltd. The research framework is shown in Figure 3.1.

Figure 3.1: Research Framework



Since the purpose of this research is to be a guideline to develop marketing strategy for the company, it is important to understand buying behavior of customers selecting the use of waste management service. Generally, there are several groups of people in the company involved in making decisions such as environmental engineers, purchasing managers, financial controllers, administrative manager, or managing directors/plant manager. Some of them may play a significant role in making decisions. Some of them may be only an influencer or a user. It is worth understanding buying behavior of not only each company with different characteristics, but also the opinion of each respondent with different positions and roles in decision making. Therefore, company and respondents characteristics are assigned to be the **independent variable**. Factors influencing the decision are assigned as the **dependent variable**. Understanding the important criteria influencing the decision will provide the company the thought of how to set marketing strategies to capture more customers.

3.2 Definition of Variables

Independent Variables

Independent variable in this research is the characteristics of the organization and the respondents. With reference to the organizational buyer behavior model in Chapter 2 by Hawkins, Best & Coney (2001), both characteristics are important external influences in understanding industrial behavior. To make it easier to understand and test the differences in the use of the criteria across organizational as well as personal culture, it is divided into 2 groups;

- ***Company Characteristics*** consist of several variables. They are size of company by its capital, company nationality, ISO 14000 status, volume of waste generated per month, waste disposal method policy, and length of the use the current service.
- ***Personal Characteristics*** consist of two variables; position held by the respondent and his/her decision role. Roles or position in which people serve greatly influence their consumption behavior (Hanna & Wozniak, 2001). It was found that individual plays the same roles and/or occupies the same group had similar notions and used similar criteria to evaluate product and service.

Dependent Variables

There is only one dependent variable of this study to test the criteria industries considered when making decision on the use of waste service.

- ***Purchase criteria of the use of waste service***

Based on past research and a discussion with the marketing team of the company, five factors considered as the important criteria in waste service provider selection are identified.

Price is the value which a service provider sets on service. Service charge in waste management market varies, as different types of waste will have different costs of disposal and charged at different prices. It is difficult to set the exact number of price. By applying the concept from previous study by Mumalaneni et al. (1996), price in this research is defined as the target price. Target price means price that the buyers willing to pay given that specification of service.

Service Quality is a degree of performance that service provider can offer to industrial client. Service quality can be good, bad, or excellent depending on how clients perceive the performance. Blythe (1997) stated that the service level refers to

the degree to which the customer's needs are met and must relate to something that the customer feels is important. It is assumed for this research that customers are most concerned with 1) quick response to customer needs, 2) on-time service, 3) keep clean during collection and transportation.

ISO 14000 Standard is a multi-industry auditing and planning process that includes designing and implementing requirements for detailed manufacturing plans to achieve good environment management systems. The ISO 14000 can widen the industries' international market share. However under ISO 14000 systems, industries that received ISO14000 certification must manage their environment in a proper manner, including waste disposal (Kongrut, 1998). Thus, it is assumed that industrial clients which received ISO 14000 certificates are more preferred to use waste service provider that also has certified ISO 14000, given that price remains the same.

Equipment provide means container, bin or similar equipments placed at client's site/plant and collected to disposal site when required. Containers are provided as part of the service for secure, clean and safe waste storage at customer's site. This allows customers to place large volumes of wastes, hence saving on total cost for waste handling. The equipment provided is one of the factors industrial buyer takes into consideration.

Waste disposal method used for the study can be divided into 3 methods; incineration, sanitary landfill, and open dumping. According to the New Factories Act B.E. 1992, waste can be disposed by 5 methods as mentioned earlier; incineration, sanitary landfill, dumping, composting, and reuse/recycling. Only 3 selected methods mainly influence the selection of waste service providers. In this research we use only these 3 methods. Each industry may have different policies or preferences of waste disposal method. It is assumed that industrial buyer considers a type of waste disposal as an important factor in selecting the waste service provider.

3.3 Research Hypotheses

After defining the proper dependent and independent variables and establishing the relationships among them, the relevant hypotheses can be developed and tested. The hypotheses stated in statistical form, null and alternate hypotheses, are as follows;

Hypothesis #1: Test the difference in purchasing criteria used in waste service provider selection among companies

Ho: There is no significant difference in purchasing criteria used in waste service provider selection among companies in terms of size of companies (capital), nationality, ISO14000 standard, Volume of waste generated, length of the use of current service provider, and waste disposal method policy of the industries.

Ha: There is a significant difference in purchasing criteria used in waste service provider selection among companies in terms of size of companies (capital), nationality, ISO14000 standard, Volume of waste generated, length of the use of current service provider, and company's waste disposal method policy.

Hypothesis #2: Test the difference in purchasing criteria used in waste service provider selection among respondents in terms of department of position held, and decision role.

Ho: There is no statistically significant difference in purchasing criteria used in waste service provider selection among respondents in terms of department of position held, and decision role.

Ha: There is a statistically significant difference in purchasing criteria used in waste service provider selection among respondents in terms of department of position held, and decision role.

3.4 Expected outcome

Many previous researches such as Mummalaneni et al. (1996), and Liukko, Vuori, & Woodside (1997) found that in industrial markets price is not always the most important factor used by purchasing managers in their evaluation of suppliers. Quality and reliability of delivery are considered as more important than price. However, the environmental market has a very special characteristic and it is not simply developed. Phantumvanit (1992) mentioned that large multinational industries can afford more to pay for the price of pollution than small-medium local industries. Therefore, it is expected that large companies will be firstly concerned on quality of service, followed by price and other criteria while local small companies are most concerned on price. It is also expected that there is a significant difference in purchasing criteria among companies (Reject Ho).

Chapter 4
Research Methodology

This chapter provides an overview of research methodology and procedure employed in this research which consists of research method, research sample, data collection method, data measurement, and data analysis and statistics used to test the data.

4.1 Research Method

This research designed to use descriptive research aimed at describing the industrial buying behavior. The major purpose of descriptive research is to describe characteristics of a population or phenomenon, seeks to determine the answers to who, what, when, where, and how questions (Zikmund, 1997). The study is to understand the factors influencing industrial buying behavior towards waste service company and how the characteristics of the industries and respondents affect those criteria.

The research is based mainly on primary data utilizing sample survey technique to collect data. Questionnaires were used to obtain the data from representative sample of the target population.

The secondary data were obtained from internet and previous studies. Information about company size in terms of its capital registration was drawn from Department of Business Development web site. To make respondents keen on filling questionnaire, capital was not questioned in the questionnaire, but it was obtained by searching through the internet. In addition, previous research provided useful information to support the research framework and methodology.

4.2 Research Sample

4.2.1 Target population

The target population of this research study is manufacturers located in Bangpoo Industrial Estate. Bangpoo Industrial Estate operates in 5,560 rai located near Bangkok between kilometer 34 and kilometer 37 of Sukhumvit Road, Samutprakarn province (Factories in Industrial Estates, 2003). The researcher selects this industrial estate to be the target population for two reasons. First, Bangpoo Industrial Estate is a big industrial estate where 349 manufacturers are located on record at end of June 2003 (Factories in Industrial Estates, 2003). Second, Waste Management Siam Ltd. has a small number of customers in this industrial estate. Understanding the industrial buying behavior of potential consumers in this area would add value to the company to expand the business into this area.

4.2.2 Sampling Frame

Sampling frame refers to the list of population elements from which the sample may be drawn (Zikmund, 1997). Sample frame in this study is the mailing list which gives the names, addresses, and telephone numbers of all companies in Bangpoo Industrial Estate, as it is available in the Factories in 2003 Industrial Estates Directory.

4.2.3 Sampling Method & Procedure

With the number of target population available, a systematic sampling procedure under a probability sampling method is applied in the study. Probability sampling is a sampling technique in which every member of the population will have a known, nonzero probability of selection. Systematic sampling is a sampling procedure in which

an initial starting point is selected by a random process, and then every *n*th number on the list is selected. Although the systematic sampling is not actually a random selection procedure, it yields random results if the arrangement of the items in the list is random in character (Zikmund, 1997). Its advantage is simple to draw samples and easy to check. Therefore, sampling procedure in the research started from arranging the names of companies in Bangpoo Industrial Estate in alphabetical order. Then, every *2nd* name from the list was drawn.

4.2.4 Sample Size

The sample size in this study is determined by using historical evidence. According to Churchill J.R. (1996), the sample size can be determined by using historical evidence which an analyst can determine the size of the sample to employ from the size that the others have used for similar studies in the past.

According to a summary of selected studies evaluating supplier performance characteristics by Mummalaneni et al. (1996) as shown in Chapter 2, most previous studies were conducted by using sample size from 20 to 50 samples. In central-limit theorem, a proposition stating that as sample size increases, the distribution of sample means of size n, randomly selected, approaches a normal distribution (Zikmund, 1997). Moreover, Churchill J.R. (1996) suggests that regardless of the shape of the population being sampled, when sample size n is large ($n > 30$) the distribution of sample mean of size n is approximately normal.

Therefore, sample size in this research was 50 samples which is the maximum number of the previous studies.

4.3 Data Collection

Data was obtained by respondents who are involved in the use of waste service in the selected companies during December 2003 to February 2004. They may work for purchasing, environmental, or administrative department etc. The instrument used for data collection in this survey research was questionnaires. Telephone-mail-telephone technique which is recommended by Green and Srinivasan (Auty, 1995) was also employed in the research. With the time constraint of both researcher and respondents, it is difficult to meet every manager in the selected companies in person without making an appointment. Therefore, it is more applicable to use mail survey. Additionally, a telephone reminder was made to increase response rate, as suggested by Jobber & O'Reilly (1998). The data collection began with, firstly, making a call to the selected companies and asking for the person involved in the waste service providers. Then, the questionnaires were mail or e-mail to them. Finally, the telephone reminder was made repeatedly until the number of the questionnaires reached the sample size.

4.4 Data Measurement

This research used the questionnaire as an instrument to obtain information from respondents. All questions are designed to align with the research objective and hypotheses. The questionnaire is divided into two sections as follows:

Section one: Bio-data consists of 12 questions which are designed to collect information about the characteristics of the organization and respondent. These questions are designed by applying the research framework by Mummalaneni et al. (1996) and through discussion with the marketing team of the company.

The twelve questions in the first section are subdivided into 10 questions on the organizational characteristics and two questions on the individual respondent characteristics. Both characteristics are designed to measure the effect to buying behavior in the waste service.

Section two: Sixteen cards of serve attributes called plancards were designed by SPSS conjoint analysis. Plancards are used as stimuli to rate the score from 1 to 5. Plancards are a utility procedure used to produce printed cards for a conjoint experiment. The printed cards are used as stimuli to be sorted, ranked, or rated by the subjects[1].

In this section, the 16 cards of possible alternatives are a minimum number of runs generated by orthogonal function in the conjoint analysis. Normally, the desired number of cards for the plan can be specified, however, there was a minimum number of runs that orthogonal generates as for the reliability of the subject data[2].

The last section which is not included in the questionnaire is the industrial preference of each attribute generated by conjoint analysis. After inputting the data and running the conjoint analysis in SPSS for each respondent, conjoint produces the results of average importance of each attribute which tell what the most preferred attribute levels and the relative preference for each level of each attribute. The results was input in the SPSS to further test the hypothesis of the study.

4.4.1 Conjoint Analysis

Full-profile approach was used to construct conjoint analysis in this research. A full profile provides a complete description of a supplier concept based on attributes under consideration (Mummalaneni et al, 1996). The full-profile is the most popular approach because of its perceived realism and its ability to reduce the number of comparisons. It is recommended when the number of factors is not more than six.

[1,2] Data Source: http://www.spss.com

To design the attributes, the salient attributes and their levels need to be identified. These attributes can be identified based on previous research and/or through discussions with the management and/or experts. With studying the previous research and discussion with the marketing management team of the company, five salient attributes used in service provider evaluation were identified. These attributes include price, quality of service, ISO 14000 certification, equipment provided, and method of waste disposal. All attributes and their measured levels are listed in Table 4.1.

Table 4.1: Attributes and Levels of Factors influencing in the selection of waste service provider

Attributes	Levels of Attributes
1. Price	1. 20% above target price 2. Approximately at target price (Amount which is aimed to be achieved) 3. 20% below target price
2. Service Quality	1. Poor (Slow, Late, and Not keep clean) 2. Good (Quick, On-time, Keep clean) 3. Excellent (Very quick, On-time, Keep very clean)
3. ISO 14000 Certificated	1. No 2. Yes
4. Equipment provided	1. No 2. Yes
5. Method of waste disposal	1. Incinerator 2. Sanitary Landfill 3. Open-dumps

Source: Adapted from Mummalaneni et al. (1996): Chinese Purchasing Managers' Preferences and Trade-offs in Supplier Selection and Performance Evaluation, Industrial Marketing Management, vol. 25, pp. 115-124.

As in Table 4.1, all attributes can generate 108 (3x3x2x2x3) combinations. All possible combinations represent too many product alternatives so that the research cost may keep up and the respondents could be confused and fatigued in filling the questionnaire. Orthogonal design in SPSS 11.0 is utilized to automatically generate main-effects orthogonal fraction factorial plans. Orthogonal display generates physical profiles. The minimum number of runs by orthogonal, 16 profiles or plancards, are put in section 2 of the questionnaire. The respondents were asked to give scores from 1-5 to each card. Score 1 means not at all likely to use, 2 means not likely to use, 3 means neither, 4 means likely to use and 5 means most likely to use.

4.4.2 Operationalization of Variables

Table 4.2: Operationalization of Variables

Variables	Definition	Type of Measurement	Question number in Questionnaire
Industrial Buyer Characteristics - Organizational Characteristics - Personal Characteristics	Both organizational and personal characteristics influence the organizational culture and thus affects decision making (Hawkins et al., 2001)	Nominal scale	Q. 2-4, 6-9 – to test differences in purchase criteria used among companies which have different organizational characteristics Q. 1, 5 – to test differences in purchase criteria used among respondents which have different decision role, and department of position held
Factors influencing the selection	Five purchase criteria identified by the marketers of WMS are considered to be the important factors in waste management service selection.	Ratio scale	Q. 10 – to test the important factors influencing the selection

4.4.3 Pre-testing

Pre-testing, according to Zikmund (1997), is a trial run with a group of respondents in order to detect problems in the questionnaire instructions or design. Basically, pretest can be done by screening the questionnaire with the research professionals and/or the manager who ordered the research, or by testing run with the group of respondents (Zikmund, 1997). The pre-testing of this study was done in both ways. First, the marketing team of the company was asked to review and fill in the questionnaire in order to check for such things as difficulties with question wording, and problem with leading questions. Then, after first modification, the questionnaires were sent to the respondents through telephone-mail-telephone technique to test not only the reliability of questionnaire, but also the data collection technique.

As mentioned earlier, the sample size of this research is 50 samples. Pre-testing in this study was done through telephone-mail-telephone technique to 20 industries in Bangpoo Industrial Estate. Ten questionnaires from 25 companies were returned, representing 10% of the sample size. The returning rate was at 40%.

Furthur, the Pearson's R and Kendall's tau statistics were conducted to determine if all respondents understand the questions in the same direction, and also the conjoint analysis model fits the data. The pre-testing results are shown in Table 4.3.

Table 4.3: Pearson's R and Kendall's tau

Attributes	Pearson's R	Kendall's tau
Department:		
- Purchasing	.976	.894
- Environment & Safety	.982	.845
- Administration	.988	.914
- Others	.963	.903

Attributes	Pearson's R	Kendall's tau
ISO 14000 Certification		
- ISO 14000 Certification	.985	.923
- Do not have ISO 14000, but plan to apply	.990	.929
- Do not have ISO 14000, and do not plan	.994	.953
Volume of waste generated		
- Below 25 tons per month	.989	.957
- Between 26-50 tons per month	.979	.949
- Between 51-75 tons per month	.978	.850

The best Pearson's R and Kendall's tau score is 1. The higher score the higher level of model fits to the data. From the result in Table 4.3, Person's R score are between .963 and .994 and Kendal's tau score are between .845 and .957 which are close to 1. Thus, it can be concluded that the model fits the data well.

4.5 Data Analysis

After collecting the questionnaires, the completed questionnaires were selected and the data was entered, summarized, analyzed, and interpreted. The Statistical Package for Social Science (SPSS) program version 11.0 and SPSS conjoint were utilized to summarize and analyze the data.

Data analysis in this research was based on descriptive analysis approach. Descriptive analysis is the transformation of raw data into a form that will make them easy to understand and interpret; rearranging, ordering, manipulating data to provide descriptive information (Zikmund, 1997).

Before testing hypotheses, data was summarized and analyzed in a readable and easily interpretable form. Statistical data treatment to questions used in the research can be divided into the following categories;

Part I (Bio-data): Descriptive statistics is used to explain the characteristic profile of the companies and respondents.

Part II (Plancards): Conjoint analysis is used to identify the averaged importance score of each utility (factors) in waste service provider selection.

The steps in analyzing the data are the following;

Step 1: Select only completed questionnaires to be included in the analysis, and then input data from both parts of each respondent in the SPSS.

Step 2: Run the conjoint analysis to obtain the average importance score of the five factors from part II (plancards).

Step 3: Create new five dependent variables called averaged importance score of price, service quality, ISO 14000 certificate, equipment provided, and method of waste disposed, then input the important scores of each respondent resulting from conjoint analysis in step 2 in each variable.

Step 4: Run ANOVA to test hypotheses, bio-data is treated as an independent variable and the averaged importance score of the factors of each respondent is a dependent variable.

4.5.1 Statistics used

To test hypotheses in this research, the averaged importance is tested by SPSS 11.0, compare mean of each group of characteristics. Statistical treatment of data used for analysis is shown in the Table 4.4.

Table 4.4: Statistics used in Hypotheses

Hypotheses	Statistics
H1: There is no significant difference in purchasing criteria used in waste service provider selection among companies in terms of size, nationality, ISO14000 Status, volume of waste disposal per month, waste disposal method policy, and length of the use of current waste service provider.	ANOVA
H2: There is no statistically significant difference in purchasing criteria used in waste service provider selection among respondents in terms of department of position held, and decision role	ANOVA

With 95% level of confidence, if the significance level is less than 0.05, null hypothesis will be rejected. Then, it is concluded that there is a significant difference in purchasing criteria among those companies or respondents, and vice versa.

Chapter 5

Presentation of Data and Critical Discussion of Results

This chapter provides the analysis and results of the collected data. As the objective of study is to determine the factors influencing industrial buyers in the use of waste services, conjoint analysis is utilized in this study to test how they trade-off the given factors. Then, ANOVA is used to test the statistic significant difference among the companies and respondents.

This chapter is divided into three sections;

1. Profile of the sample: explain the characteristics of the respondents by using Descriptive Statistic
2. Conjoint analysis: explain the importance of each factor and describe the results of the importance by characteristics of the respondents
3. Test of Hypothesis results: to test if purchasing criterion used by industries in the use of waste service are significantly different.

5.1 Profile of the sample

The questionnaires were distributed to managers who are involved in waste management activity in 180 factories in the target population. There are 52 responded questionnaires. The numbers of completed questionnaires are 50 or 96%, while the other 2 questionnaires or 4% are not completed. Uncompleted questionnaires are excluded from the analysis. Therefore, the total number of questionnaires for the analysis is 50 sets.

To identify the characteristics of respondents in the research, Table 5.1 shows the summary of respondents by their demographics from the part I of the questionnaire. They are departments of respondents' position which they hold, decision role of respondents, size of company in terms of capital, company nationality, ISO14000 status, company's method of waste disposal policy, volume of waste generated, and length of the use of current service.

Table 5.1: Summary of Respondents by Demographics

Description	Frequency	Percentage (%)
Department		
Purchasing	22	44.0
Environmental / Safety	11	22.0
Administration	12	24.0
Others	5	10.0
Total	50	100.0
Decision role of Respondents		
Influencer	28	56.0
Decision Maker	12	24.0
User	10	20.0
Total	50	100.0
Capital Register		
Between 1-20 million Baht	16	32.0
Between 21-50 million Baht	11	22.0
Between 51-100 million Baht	8	16.0
Between 101-500 million Baht	10	20.0
More than 500 million Baht	5	10.0
Total	50	100.0
Company nationality		
Thai	14	28.0
Japanese	11	22.0
Taiwanese	10	20.0
American	3	6.0
European Union	5	10.0
Others	7	14.0
Total	50	100.0
ISO 14000 Status		
ISO14000 Certified	15	30.0
Currently working on ISO14000	5	10.0
Do not have ISO14000, but plan to apply in the future	14	28.0
Do not have ISO14000, and do not plan to apply	16	32.0
Total	50	100.0

Description	Frequency	Percentage (%)
Method of waste disposal policy		
Incinerator	8	16.0
Dumping at landfill	14	28.0
Any, not specific	20	40.0
Others	8	16.0
Total	50	100.0
Volume of waste generated		
Below 25 tons per month	35	70.0
Between 26-50 tons per month	6	12.0
Between 51-75 tons per month	2	4.0
Between 76-100 tons per month	3	6.0
Between 101-200 tons per month	4	8.0
Total	50	100.0
Length of the use of current service		
Less than 6 months	7	14.0
6 months – 1 year	9	18.0
1 – 2 years	9	18.0
More than 2 years	25	50.0
Total	50	100.0

5.2 Conjoint Analysis results

SPSS Conjoint analysis is conducted to analyze the plancard data from the Part II of the questionnaire for the overall respondents. Conjoint analysis does an analysis of the data. The subfile summary generated by the conjoint is a result of average importance score of each attributes. It is summarized from the overall 50 respondents as shown in Table 5.2.

The utility column shows a set of score values for each level of each factor in the conjoint analysis. These score values show that 20% below target price is the most preferred price, good service quality is the most preferred service quality, sanitary landfill is the most preferred waste disposal method, and that both ISO 14000 certification and container provided have some utility.

The averaged importance column shows attribute importance. The result shows factors ordered by importance are service quality, waste disposal method, price, ISO

14000 certification, and equipment provided respectively. The attribute importance is indicated by the relative range of utility scores for an attribute.

Table 5.2: Summary of conjoint analysis results

	Attribute Description	Averaged Importance	Utility	Different Utility Levels
1.	PRICE	Third		
	20% below target price	18.15	0.2983	
	Approximately at target price		0.0608	-0.2375
	20% above target price		-0.3592	-0.4200
2.	QUALITY	First		
	Poor	**29.88**	-0.7550	
	Good		0.3925	1.1475
	Excellent		0.3625	
3.	ISO14000 CERTIFICATION	Forth		
	No	16.17	-0.3137	
	Yes		0.3137	-0.0300
4.	EQUIPMENT PROVIDED	Fifth		
	No	15.76	-0.3163	
	Yes		0.3163	0.6326
5.	DISPOSAL METHOD	Second		
	Incineration	**20.04**	0.1117	
	Sanitary Landfill		0.1492	0.0375
	Open Dumping		-0.2608	-0.4100

2.67 CONSTANT

Person's R = .977 Signifcance = .0000
Kendall's tau = .920 Signifcance = .0000

Description of Average Importance by Demographics

In part II of the questionnaire, the respondents were asked to give the score from 1 to 5 to all 16 cards which designed by orthogonal function of conjoint analysis. Then, conjoint analysis is used to analyze the given score of each respondent. Conjoint analysis generates the averaged importance of each factor to measure how the respondent trade-off the attributes when considering the use of waste management service. The averaged importance can be generated and grouped by characteristics of the respondents as shown in the following tables and figures.

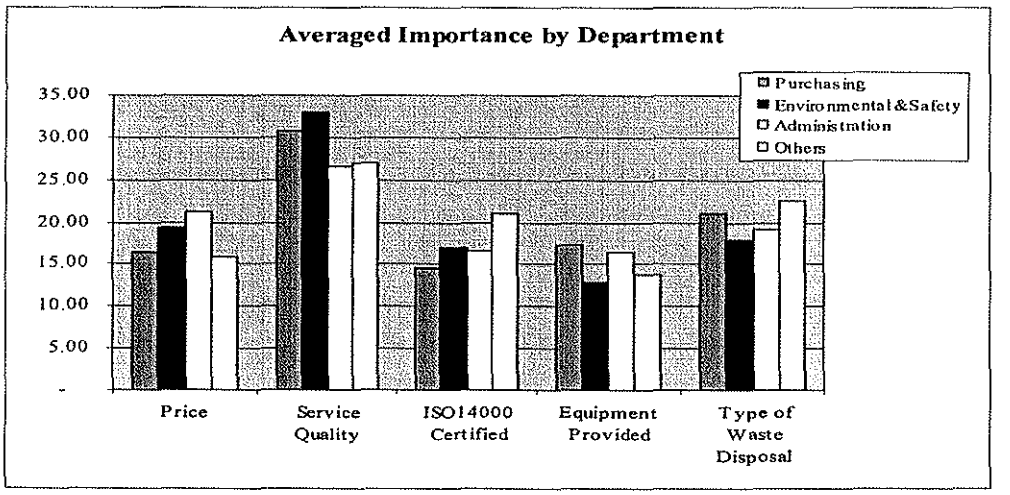
Description of Averaged importance by Department of respondents' position hold

Table 5.3 shows the scores of each importance factor in different departments. The most important factor for every department is service quality. Method of waste disposal is the second most important factor for Purchasing and Other departments. Environmental & Safety and Administration departments place price as the second most important factor in their decision making process. Equipment provision represents the least important factor for every department, except Purchasing. In addition, other than service quality and method of waste disposal, the averaged importance of the other factors is quite close.

Table 5.3: Averaged Importance by Department of respondents' position held

Factors	Purchasing	Environmental & Safety	Administration	Others
Price	16.40	19.31	21.24	15.87
Service Quality	**30.81**	**32.91**	**26.62**	**26.98**
ISO14000 Certified	14.44	16.93	16.63	20.98
Equipment Provided	17.34	12.92	16.32	13.72
Method of Waste Disposal	21.01	17.93	19.19	22.45
Total	100.00	100.00	100.00	100.00

Figure 5.1: Averaged Importance by Department of position hold



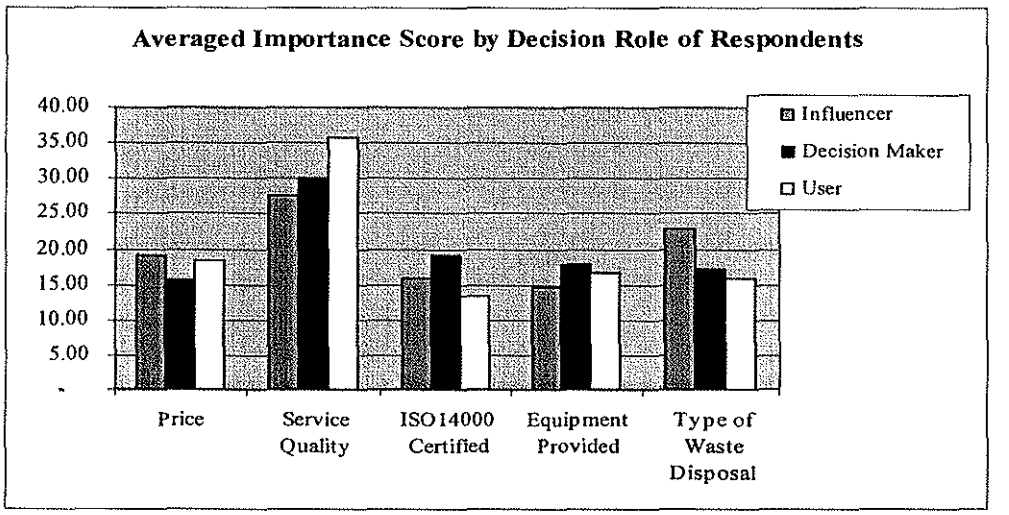
Description of Averaged importance by Decision Role of respondents

Table 5.4 shows the scores of each importance factor in different decision role of respondents. The most important factor for all decision roles is service quality. Method of waste disposal is the second most important factor for influencer, while ISO 14000 Certification is the second most important factor for decision maker. User places price as the second most important factor in their decision making process. Equipment provision represents the least important factor for influencer. Noticeably, price represents the least important factor for decision maker. User place ISO 14000 certification as the least important factor.

Table 5.4: Averaged Importance by Decision Role of respondents

Factors	Influencer	Decision Maker	User
Price	19.15	15.63	18.35
Service Quality	**27.68**	**30.15**	**35.76**
ISO14000 Certified	15.83	19.25	13.40
Equipment Provided	14.54	17.83	16.71
Method of Waste Disposal	22.80	17.14	15.78
Total	100.00	100.00	100.00

Figure 5.2: Averaged Importance by Decision Role of respondents



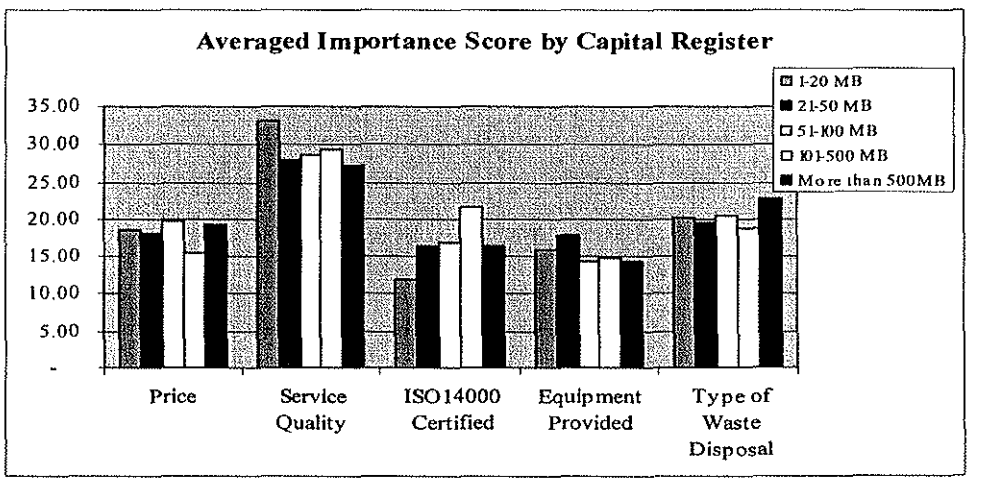
Description of Averaged importance by Capital Register

Table 5.5 shows the scores of each importance factor in different size of company in terms for capital register. Service quality is the most important factor for every size of company. Method of waste disposal is the second most important factor for all sized, except 101-500 million Baht capital register. Price ranks third for every size, except 101-500 million Baht capital register. The company with capital register less than 50 million Baht place ISO 14000 Certification the least important factor. Equipment provision represents the least important factor for the company which has capital register more than 50 million Baht.

Table 5.5: Averaged Importance Score by Capital register

Factors	1-20 MB	21-50 MB	51-100 MB	101-500 MB	More than 500MB
Price	18.61	18.15	19.84	15.52	19.22
Service Quality	**33.04**	**27.97**	**28.61**	**29.31**	**27.19**
ISO14000 Certified	12.04	16.53	16.82	21.67	16.51
Equipment Provided	16.08	17.87	14.39	14.77	14.29
Method of Waste Disposal	20.23	19.48	20.34	18.73	22.79
Total	100.00	100.00	100.00	100.00	100.00

Figure 5.3: Average Importance Score by Capital Register



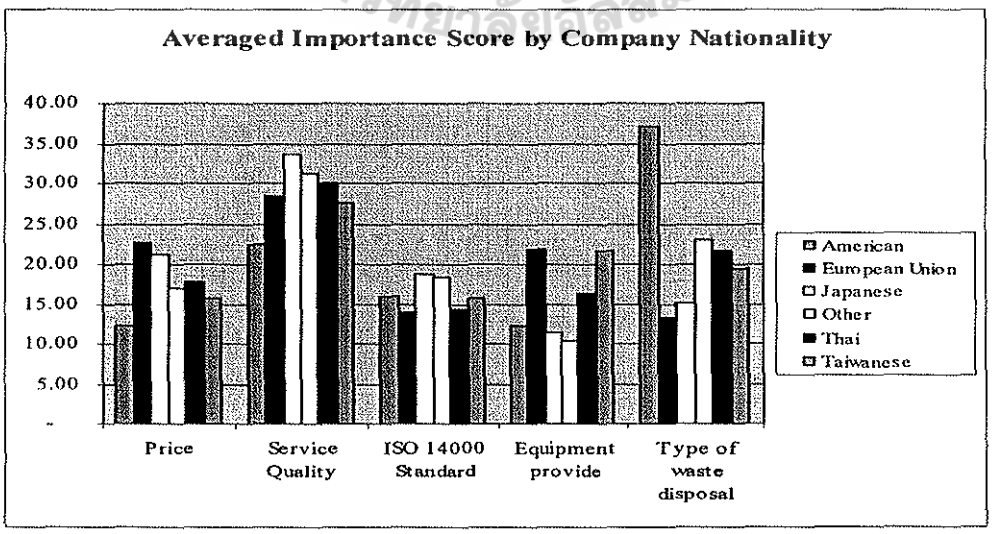
Description of Averaged importance by Company Nationality

Table 5.6 shows that factors ranked quite differently in terms of the company nationality. Service quality is the most important factor for every nationality, except American. The most important factor for American company is waste disposal method, while service quality ranked second. Price is the second important factor for European Union and Japanese companies, while method of waste disposal is the second ranked by Thai and others. Noticeably, figure 5.4 shows that the factors are ranked differently in term of company nationality.

Table 5.6: Averaged Importance by Company Nationality

Factors	American	European Union	Japanese	Other	Thai	Taiwanese
Price	12.27	22.63	21.15	16.90	17.79	15.75
Service Quality	22.42	**28.37**	**33.61**	**31.25**	**30.04**	**27.62**
ISO 14000 Standard	15.92	13.94	18.69	18.43	14.25	15.67
Equipment provide	12.19	21.74	11.40	10.39	16.32	21.63
Method of waste disposal	**37.20**	13.32	15.15	23.03	21.60	19.33
Total	100.00	100.00	100.00	100.00	100.00	100.00

Figure 5.4: Averaged Importance by Company Nationality



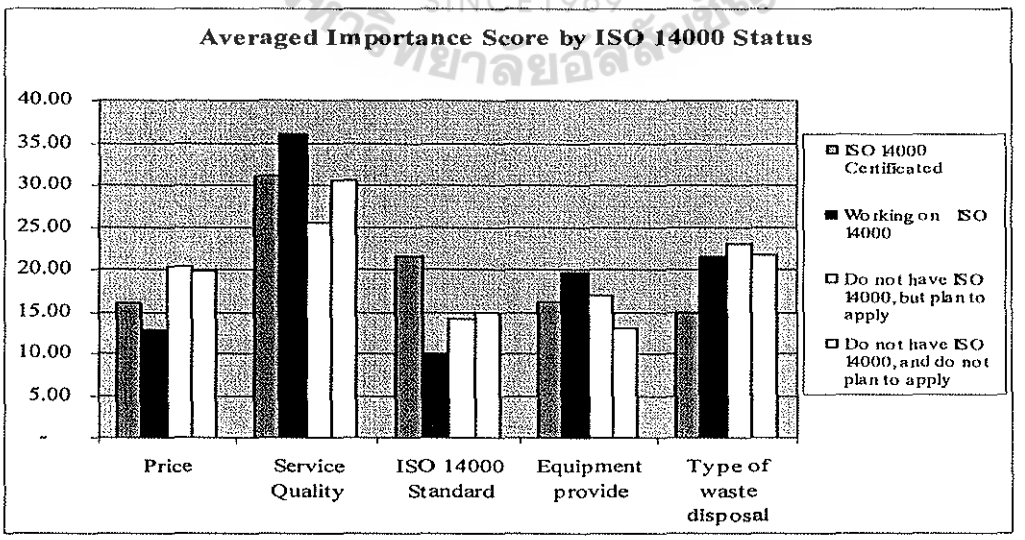
Description of Averaged importance by ISO 14000 Status

Service quality is also the most importance factor for every group of ISO 14000 status. ISO 14000 Certification is ranked the second important factor for the company with obtain ISO 14000 certification while method of waste disposal is ranked the second for the others. Price ranked third important factor for company which does not have ISO 14000 Certification and not yet working on it.

Table 5.7: Averaged Importance Score by ISO 14000 Status

Factors	ISO 14000 Certification	Working on ISO 14000	Do not have ISO 14000, but plan to apply	Do not have ISO 14000, and do not plan to apply
Price	16.12	12.83	20.40	19.74
Service Quality	**31.12**	**36.07**	**25.48**	**30.65**
ISO 14000 Certification	21.52	9.82	14.13	14.91
Equipment provide	16.30	19.69	16.95	13.00
Method of waste disposal	14.95	21.59	23.04	21.70
Total	100.00	100.00	100.00	100.00

Figure 5.5: Average Importance Score by ISO 14000 Status



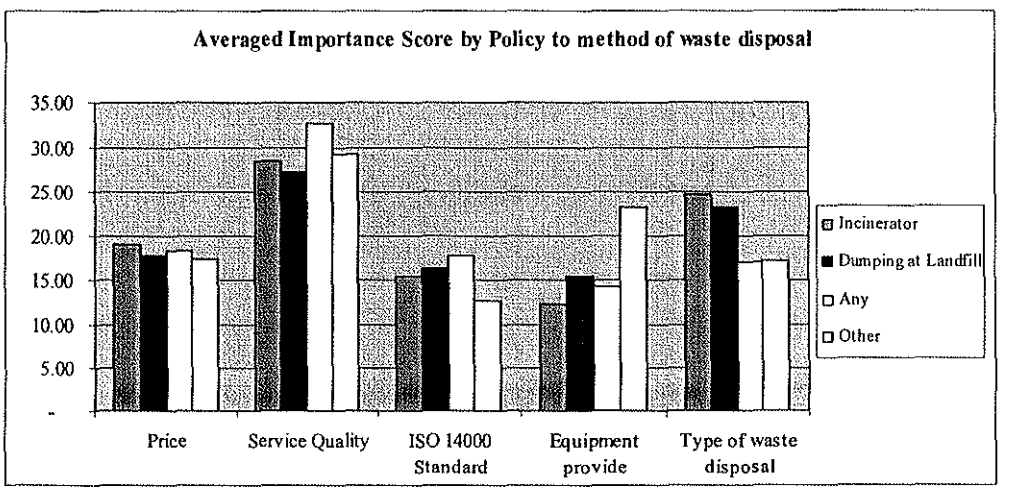
Description of Averaged importance by Company policy to waste disposal method

Table 5.8 shows the scores of each importance factor in different company policy to waste disposal method. Service quality is the most important factor for every company policy. Method of waste disposal ranked the second importance for the company that has specific waste disposal method policy, while price ranked the second for company without specific disposal method policy. Equipment provision represents the least important factor for every company policy, except other.

Table 5.8: Averaged Importance Score by Company policy to waste disposal method

Factors	Incinerator	Dumping at Landfill	Any	Other
Price	19.05	17.82	18.28	17.50
Service Quality	**28.51**	**27.22**	**32.58**	**29.18**
ISO 14000 Certification	15.40	16.29	17.74	12.78
Equipment provide	12.36	15.49	14.31	23.28
Method of waste disposal	24.68	23.18	17.09	17.26
Total	100.00	100.00	100.00	100.00

Figure 5.6: Average Importance Score by Company policy to waste disposal method



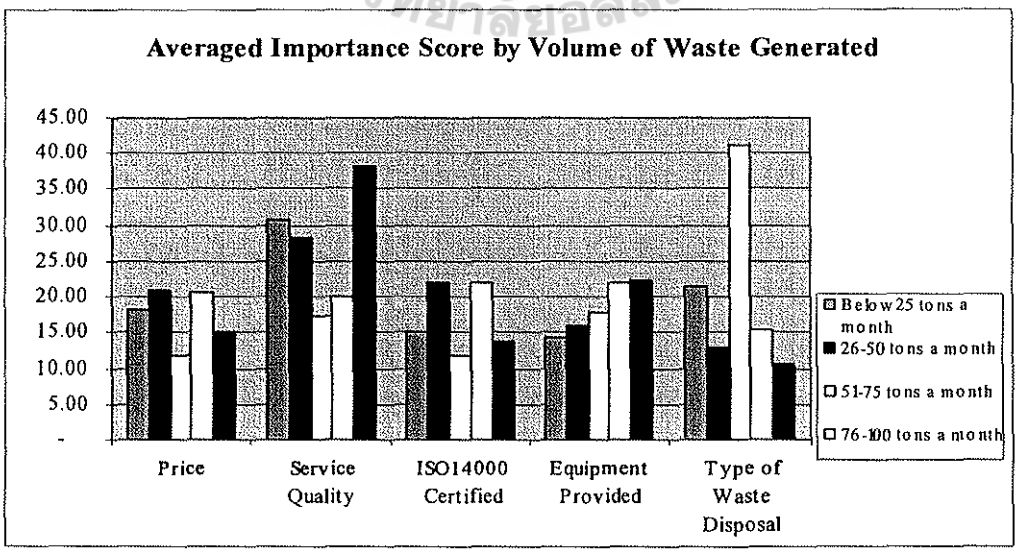
Description of Averaged importance by Volume of Waste Generated

Figure 5.7 shows the very different trend of the averaged importance score ranked by volume of waste generated. Service quality is the most importance for company which generates waste below 50 tons a month and above 100 tons a month. Method of waste disposal is the most importance for company which generates waste between 51-75 tons a month while ISO 14000 Certification is the most important factor for company which generates waste between 76-100 tons a month.

Table 5.9: Averaged Importance Score by Volume of Waste Generated a month

Factors	Below 25 tons a month	26-50 tons a month	51-75 tons a month	76-100 tons a month	More than 100 tons a month
Price	18.16	20.99	11.81	20.69	15.07
Service Quality	**30.80**	**28.20**	17.36	19.95	**38.11**
ISO14000 Certification	15.17	22.07	11.81	**22.04**	13.82
Equipment Provided	14.34	15.94	17.92	21.84	22.32
Method of Waste Disposal	21.53	12.80	**41.10**	15.48	10.68
Total	100.00	100.00	100.00	100.00	100.00

Figure 5.7: Average Importance Score by Volume of Waste Generated a month



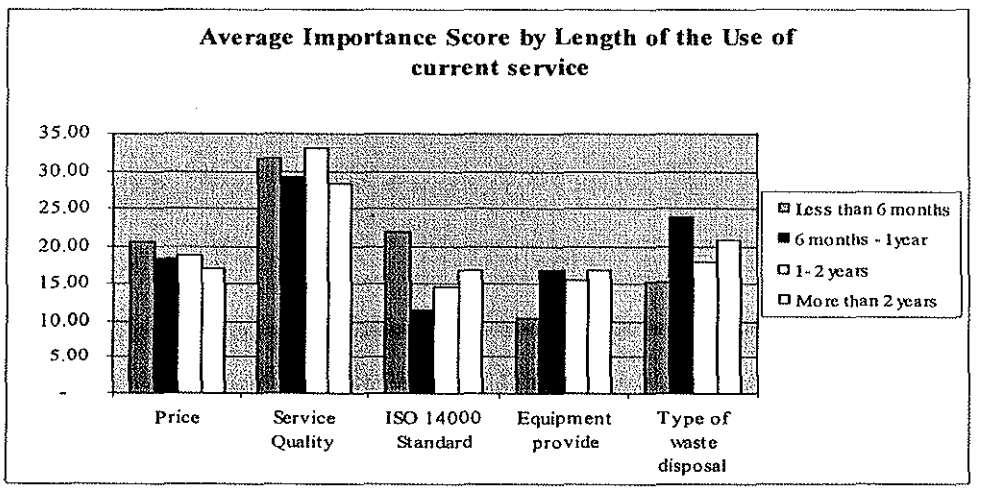
Description of Averaged importance by Length of the use of Current Waste Service

Service quality is also the most important factor ranked by the company which has different length of the use of current waste service. The company which has the length of the use of current waste services between 6 months to 1 year and more than 2 year places all factors in the same level of importance. Method of waste disposal is the second most important factor, followed by price. The company which has the length of the use of current waste services less than 6 months places ISO 14000 Certification the second most important factor. Price ranked third important factor for the company which has less than 6 months length of current use of service, while ranked second for the company which has 1-2 year length of the use of current waste service.

Table 5.10: Averaged Importance Score by Length of the use of current service

Factors	Less than 6 months	6 months - 1 year	1 - 2 years	More than 2 years
Price	20.68	18.31	18.84	17.13
Service Quality	**31.70**	**29.34**	**33.10**	**28.41**
ISO 14000 Certification	22.00	11.46	14.64	16.78
Equipment provide	10.43	16.91	15.55	16.92
Method of waste disposal	15.19	23.98	17.87	20.76
Total	100.00	100.00	100.00	100.00

Figure 5.8: Average Importance Score by Length of the use of current service



Reliability Analysis of Conjoint Analysis

To determine how well the model fits the data, the Pearson's R and Kendall's tau statistics are utilized. The result of reliability analysis from 50 sets of the questionnaires is shown in Table 5.9.

Table 5.11: Pearson's R and Kendall's tau

Attributes	Pearson's R	Kendall's tau
Department:		
- Purchasing	.970	.917
- Environment & Safety	.971	.937
- Administration	.980	.906
- Others	.929	.863
Role in Making Decision		
- Influencer	.965	.954
- Decision Maker	.971	.937
- User	.975	.886
Nationality		
- European Union	.928	.814
- Japanese	.975	.941
- Thai	.948	.840
- Taiwanese	.966	.857
- American	.984	.957
- Other	.965	.885
Capital Register		
- 1 - 20 Million Baht	.984	.920
- 21 – 50 Million Baht	.930	.809
- 51 – 100 Million Baht	.966	.884
- 101– 500 Million Baht	.955	.932
- Above 500 Million Baht	.949	.828

Attributes	Pearson's R	Kendall's tau
ISO 14000 Status		
- ISO 14000 Certificated	.951	.891
- Working on ISO 14000 Certificated	.975	.920
- Do not have ISO 14000, but plan to apply	.964	.920
- Do not have ISO 14000, and do not plan to apply	.979	.891
Volume of waste generated per month		
- Below 25 tons per month	.976	.946
- Between 26-50 tons per month	.985	.945
- Between 51-75 tons per month	.833	.709
- Between 76-100 tons per month	.945	.882
- Between 101-200 tons per month	.938	.867
Waste disposal policy		
- Incinerator	.956	.821
- Dumping at Landfill	.959	.877
- Any	.979	.895
- Others	.976	.946
Length of the use of current service		
- Less than 6 months	.946	.831
- 6 months – 1 year	.964	.850
- 1 – 2 year	.970	.923
- More than 2 years	.968	.895

The best Pearson's R and Kendall's tau score is 1. The higher the number is the higher reliability of the data. The results the score is between .80 to .97, it can be concluded that the model fits the data very well.

5.3 Test of Hypothesis result

After inputting all data and conjoint analysis results, ANOVA was conducted to test all hypotheses in this study in order to determine the significant difference of purchasing criteria (independent variables) used in waste management service selection in terms of the companies and respondents characteristics (dependent variables).

Hypothesis #1:

Ho: There is no significant difference in purchasing criteria used in waste service provider selection among companies in terms of size, nationality, ISO 14000, volume of waste generated, method of waste disposal policy, length of the use of current service provider.

Ha: There is a significant difference in purchasing criteria used in waste service provider selection among companies in terms of size, nationality, ISO 14000, volume of waste generated, method of waste disposal policy, length of the use of current service provider.

Table 5.12: Oneway ANOVA of purchasing criteria among companies which has different Size (in term of Capital)

ANOVA

	Sig.
Price	0.916
Service Quality	0.634
ISO 14000 Certification	0.180
Equipment provide	0.934
Method of waste disposal	0.978

The result from ANOVA shown in Table 5.12 indicated that there is no statistically significant difference in purchasing criteria among the companies which are of different sizes in terms of capital as the significances of all criteria are more than 0.05. Therefore, the null hypothesis was accepted.

Table 5.13: Oneway ANOVA of purchasing criteria among companies which has different nationality

ANOVA

	Sig.
Price	0.712
Service Quality	0.243
ISO 14000 Certification	0.953
Equipment provide	**0.039**
Method of waste disposal	**0.027**

The result from ANOVA shown in Table 5.13 indicated that there is statistically significant difference in equipment provided and method of waste disposal among the companies which has different nationality, as the significances of both criteria are less than 0.05. The significant difference of equipment supplies is 0.039 while the significant difference of method of waste disposal is 0.027. Other than these two criteria, the null hypothesis was accepted.

Table 5.14: Post Hoc Tests of significant difference in term of company nationality

Post Hoc Tests

Dependent Variables	(I) Company Nationality	(J) Company Nationality	Sig.
Equipment Provided	Japanese	Taiwanese	0.015
		European Union	0.022
	Taiwanese	Others	0.018
	European Union	Others	0.022
Method of waste disposal	American	Thai	0.039
		Japanese	0.002
		Taiwanese	0.013
		European Union	0.003

In considering the mean difference of equipment provided criteria, the Post Hoc tests in Table 5.14 shows that the mean of average importance score of Taiwanese and European Union are significantly different from those of both Japanese and Others, as the significance are less than 0.05. It can be said that Japanese and Others are less concerned in equipment provided criteria. European Union is more concerned on equipment provided criteria than other nationalities, since its mean difference in post hoc table is more than those of other nationalities.

The mean difference of method of waste disposal criteria, Post Hoc tests in Appendix C shows that the mean average importance score of Americans are significantly more than those of Thai, Japanese, Taiwanese, and European Union at 14.346, 22.047, 17.852, and 24.974 respectively. The significances are less than 0.05. It can be concluded that Americans are really concerned on method of waste disposal in consideration of the use of waste service provider.

Table 5.15: Oneway ANOVA of the different criteria in purchasing among companies which have different ISO 14000 Status

ANOVA

	Sig.
Price	0.379
Service Quality	0.157
ISO 14000 Certification	**0.048**
Equipment provide	0.531
Method of waste disposal	0.206

The result from ANOVA shown in Table 5.15 indicated that there is statistically significant difference in ISO 14000 Certification among the companies which has different ISO 14000 status. The null hypothesis in terms of ISO 14000 Certification was rejected as the significance of ISO 14000 is 0.048 which is less than 0.05.

Table 5.16: Post Hoc Tests of significant difference in term of ISO 14000 status

Post Hoc Tests

Dependent Variables	(I) ISO 14000 status	(J) ISO 14000 status	Sig.
ISO 14000 Certification	ISO14000 Certificated	Working on ISO 14000	0.017
		Do not have ISO 14000, but plan to apply	0.035

Under dependent variable, ISO 14000 Certification, in Post Hoc tests in Appendix C shows that the mean of average importance score of the company which received ISO 14000 certificated are significantly more than the company without ISO 14000 certificated. But its significant differences are with the company which is working on ISO 14000 and the company with plans to apply to ISO 14000. Therefore, it can be said that ISO 14000 Certification is the importance factor for the company with ISO 14000 certificate when considers the use of waste service provider.

Table 5.17: Oneway ANOVA of purchasing criteria among companies which has different method of waste disposal policy

ANOVA

	Sig.
Price	0.991
Service Quality	0.439
ISO 14000 Certification	0.677
Equipment provide	0.110
Method of waste disposal	0.225

The result from ANOVA shown in Table 5.17 indicated that there is no statistically significant difference in purchasing criteria among the companies which has different methods of waste disposal policy as the significances of all criteria are more than 0.05. Therefore, the null hypothesis of all criteria was accepted.

Table 5.18: Oneway ANOVA of purchasing criteria among companies which have different volume of waste generated

ANOVA

	Sig.
Price	0.776
Service Quality	**0.037**
ISO 14000 Certification	0.366
Equipment provide	0.462
Method of waste disposal	**0.005**

The result from ANOVA shown in Table 5.18 indicated that there is statistically significant difference in service quality and method of waste disposal criteria among the companies which has different volumes of waste generated as the significances of both criteria are less than 0.05. The null hypothesis of both criteria was rejected.

Table 5.19: Post Hoc Tests of significant difference in term of Volume of waste generated per month

Post Hoc Tests

Dependent Variables	(I) Volume of waste generated per month	Volume of waste generated per month	Sig.
Service Quality	Between 51-75 tons per month	Below 25 tons per month	0.048
		Beween 101-200 tons per month	0.012
	Beween 101-200 tons per month	Between 51-75 tons per month	0.012
		Between 76-100 tons per month	0.012
Method of Waste Disposal	Between 51-75 tons per month	Below 25 tons per month	0.009
		Beween 26-50 tons per month	0.001
		Between 76-100 tons per month	0.007
		Between 101-200 tons per month	0.001

Considering service quality criteria in Post Hoc tests in Table 5.19, the mean of averaged importance score of the company which generates waste between 101-200 tons per month are significantly more than the mean of the company which generates waste between 51-75 and 76-100 tons per month. At the same time the mean of averaged importance of the company which generates waste between 51-75 tons per month is significantly different from those of the company which generates waste below 25 tons a month.

Post Hoc tests in Table 5.19 also shows the significant difference of the mean of averaged importance of the company which generates waste between 51-75 tons per month and the company which generates waste below 25 tons, between 25 tons, 76-100 tons, and 101-200 tons per month at the significance less than 0.05. Thus, the company which generates waste between 51-75 tons per month are more concerned with the method of waste disposal than the others

Table 5.20: Oneway ANOVA of purchasing criteria among companies which has different length of the use of current waste service

ANOVA

	Sig.
Price	0.869
Service Quality	0.624
ISO 14000 Certification	0.169
Equipment provide	0.490
Method of waste disposal	0.419

The result from ANOVA shown in Table 5.20 indicated that there is no statistically significant difference in purchasing criteria among the companies which have different lengths of the use of current waste service as the significances of all criteria are more than 0.05. Therefore, the null hypothesis was accepted.

Hypothesis #2:

Ho: There is no significant difference in purchasing criteria used in waste service provider selection among respondents in terms of department of position hold, decision role.

Ha: There is a significant difference in purchasing criteria used in waste service provider selection among respondents in terms of department of position hold, decision role

Table 5.21: Oneway ANOVA of the different criteria in purchasing among respondent by different department of position hold

ANOVA

	Sig.
Price	0.518
Service Quality	0.124
ISO 14000 Certification	0.655
Equipment provide	0.676
Method of waste disposal	0.209

The result from ANOVA shown in Table 5.21 indicated that there is no statistically significant difference in purchasing criteria among the respondents in terms of department of position hold as the significances of all criteria are more than 0.05. Therefore, the null hypothesis was accepted.

Table 5.22: Oneway ANOVA of the different criteria in purchasing among respondent by their decision role

ANOVA

	Sig.
Price	0.602
Service Quality	0.077
ISO 14000 Certification	0.359
Equipment provide	0.606
Method of waste disposal	0.136

The result from ANOVA shown in Table 5.22 indicated that there is no statistically significant difference in purchasing criteria among the respondents in the different role in making decision as the significances of all criteria are more than 0.05. Therefore, the null hypothesis was accepted.

Chapter 6

Conclusions and Recommendations

This chapter provides conclusions of research results for the study. The topics in this chapter include the summary of findings, critical discussions, as well as implication and recommendations.

6.1 Summary of findings

According to the objective, the research was to examine what important purchase criteria are to industries in considering in the selection of a waste service provider, and how both organizational and personal characteristics affect those purchase criteria.

Conjoint analysis was performed to understand attribute importance and total utility. The result in Table 5.2 presents the averaged importance of attributes and utility. The attributes were ranked by their importance which shows that the most important criteria is service quality at a score of 29.88, followed by method of waste disposal at a score of 20.04. Unexpectedly, price ranks third in order of importance at 18.15 followed by ISO 14000 and equipment provided at 16.17 and 15.76 respectively.

In examination of the ratings of importance, the most preferred profile can be described in terms of attributes and levels such as: service quality (good), waste disposal method (sanitary landfill), price (20% below target), ISO 14000 Certification (obtained), and equipment provided (provided). It is noticeable that the greatest utility of waste disposal method level is sanitary landfill, followed by incineration.

The utilities of various levels of attributes are generally in expected order. This finding presents some evidence confirming that the profile in the questionnaire was correctly interpreted by the respondents. For example, among the three levels of price, 20% below target is associated with the highest level of utility, while 20% above target with the lowest level of utility. The only exception is in service level. "Excellent" service level was rated lower than "Good" service level. It could be because the terms of good and excellent services were somewhat confusing to the respondents so that they could not distinguish clearly the difference between the two levels.

Considering the ranked averaged importance by respondent characteristics, the results presented in descriptions of each subgroup of characteristics show similar ranking for purchase criteria. The first ranked purchase criteria is service quality. The only two exceptions are by nationality, and volume of waste disposal. In respect of nationality, method of waste disposal was ranked as the first purchase criteria for American industries, while service quality was ranked as the first for the other nations. In respect of volume of waste generated, waste disposal method was ranked as first purchase criteria for industries that generated 51-75 tons a month. ISO 14000 Certification ranked the first factor for industries that generated 76-100 tons a month.

The first hypothesis tested by ANOVA is concluded in different terms of 5 characteristics of the company which are size (capital), company nationality, ISO 14000 Status, method of waste disposal policy, volume of waste generated, and length of the use of current service. It is concluded that there is no significant difference in the purchase criteria among industrial buyers in terms of size, method of waste disposal policy, and length of the use of waste service provider. However, there is a significant difference in the purchase criteria among industrial buyers in terms of company nationality, ISO 14000 Status, and volume of waste generated.

In terms of company nationality, there are differences in equipment provided and method of waste disposal criteria at 0.039 and 0.027 (sig. <0.05). Service ranked first purchase criteria for all nationalities, excepting that only for American industries did the waste disposal method ranked first.

In terms of ISO 14000 Status, there are differences in ISO 14000 certificate at 0.048 which is less than significance of 0.05. Post Hoc test in Appendix C under the ISO 14000 Certification as a dependent variable shows that industrial buyers who already have ISO 14000 certificate are willing to use the service provider who also have ISO 14000 certificate. Mean difference of ISO 14000 certificated is higher than both industrial buyers who are working on getting one and who do not have one but plan to apply at 11.69 and 7.38 at significance level at 0.17 and 0.35.

In terms of volume of waste generated, there are differences in service quality and method of waste disposal at 0.037 and 0.005 which are less than significance of 0.05. The significant differences are mainly from the rank of industries that generated waste between 51-75 tons per month. Method of waste disposal ranked first for industries that generated waste between 51-75 tons per month, while service quality ranked first for others.

The second hypothesis tested by ANOVA concluded that there is no significant difference in purchasing criteria used in waste service provider selection among respondents in terms of departments of position held and decision role of respondent.

6.2 Critical Discussion

The results indicate the relative importance of purchase criteria for industries in Thailand in the selection of waste services. Similar to the result of previous study by Mummalaneni et al. (1996) that is quality of service is the most important purchase criteria. Price ranks third in order of importance. As stated by Reeder et al. (1991) that price is less critical in industrial buying decisions, rather quality, service, and technical support are often the most important, this rating of importance of the study indicates that these industries use purchase criteria in the selection of waste service similarly to the selection of other product or service.

The differences among utility levels show the trade-off considerations of respondents among five purchase criteria. The difference between poor and good service are larger than the difference between good and excellent service. This means that improving service from good to excellent level would not offer as much incremental benefit as the movement from poor to good levels. The second large difference of utility level is providing equipment, followed by obtaining ISO 14000 Certificate. Open dump is associated with the negative level of utility which can be interpreted that industries preferred to use sanitary landfill rather than open dump. However, cost of infrastructure investment and operation of sanitary landfill is very high compared to those open dumps (Corcoran, 2002). Price charge for sanitary landfill is much higher and that could be over target price for some industries. Development of open dump to sanitary landfill will increase 0.41 in utility, while the utility will decrease by 0.6575 if the price changed from 20% below target to 20% above target. Based on compensatory decision rule by Blythe (1997), industries would trade off a weakness in open dump to be compensated by the low price. It could be that respondents would prefer more to use open dump with 20% below target price rather than sanitary landfill

with 20% above target price. This is to support the reason that most industries use open dump. The insights into their trade-offs is helpful to the company devising marketing strategies.

The purchase criteria analyzed by nationality presents that waste disposal method ranks first for American industries, while service quality ranked first criteria for other nationalities. The definitions of service quality in the study are speed of service, on-time delivery, and keep clean. Each method of waste disposal affects the environment differently. Open dumps are harmful to the environment and detrimental to local communities (Corcoran, 2002). This finding indicates that American industries are concerned with the environmental issue rather than the quality of service.

6.3 Implications and Recommendations

According to the result of conjoint analysis, it is important to understand the average importance that service quality is the most important criteria for industrial buyers in considering their waste service providers. Price is not the most important factor, but ranked third after service quality and method of waste disposal. Moreover, utilities analyses demonstrate the result of the most preferred level of each factor. The differences between each utility level among the various combinations of each factor give the idea of which factor should be improved to at which level in order to get more incremental benefits. Hypothesis, testing by ANOVA, shows the significant difference in three purchasing criteria among nationality, volume of waste generated per month, and ISO 14000 Status. The implications to the findings are the following;

Finding 1: Service Quality

Service quality of service ranked the most important criteria.

Implication: Marketers should emphasize on good quality of service when presenting service to industrial buyers.

Finding 2: Equipment provided

The difference of the utility between providing equipment and not providing equipment is high.

Implication: Providing equipments, such as containers, collecting & cleaning equipment etc. should also be emphasized when presenting service to industrial buyers.

Finding 3: ISO 14000 Certification

The difference of the utility between having ISO 14000 certification and not having one is high. In addition, waste service provider that obtained ISO 14000 Certification is more attractive to industrial buyers who also have ISO 14000 Certification.

Implication: Obtaining ISO 14000 Certification should be advantageous and marketers should also highlight this material to industrial buyers. The waste service company should achieve and maintenance ISO 14000 certification.

Finding 4: Waste disposal method vs. Price

As discussed earlier, even though sanistary landfill ranked first, while open dump is associated with the negative level of utility, respondents preferred to use open dump with a cheaper price, i.e. 20% below target price, to sanitary landfill with a more expensive price i.e. 20% above target price.

***Implication*:** In order to increase environmental responsibility to industies, there should be more aggressive environmental law and monitoring processes, along with better education and understanding for managers or persons who are involved in the waste service. These would create more awareness in environmental impact. More importantly, it would eventually reduce the trade-off gap between price and waste disposal method in the use of waste disposal service.

In summary, it is recommended that when presenting waste service to industrial buyers, it should be advantangeous for marketers if they emphasize on good quality of service, equipment provision in waste service.

Quality of service ranked as the most important criteria does not mean that waste service company should provide the highest level of service quality as Kotler (1999) suggested that the company should provide service to a level appropriate to the target market and competitors' service level. The higher service quality, the cost of delivering service is higher. Thus the price charged for the service is higher so that repeat purchasing, customer loyalty, and positive word of mouth are low. The incremental benefits from delivering excellent quality of service are not much higher than good quality of service due to the benefits from repeat purchasing, customer loyalty. Evidently, the most preferred level is at good service quality that shows that the utility of good service is higher than excellent service.

The containers should be of several sizes to properly serve different volumes of waste generated by customers. As the different utilities between container providing and not providing is large, providing containers at the customer site can help much incremental benefits to the company.

The waste service company which obtain ISO 14000 Certification should also have advantangeous in provision service to customers. ISO 14000 Certification should help the company to widen the market share as it is an important factor in the selection for industries which received ISO 14000 Certificate. In addition, the difference in incremental benefits of having and not having ISO 14000 is large. By law, factories must manage their waste in a proper manner. Factories that received ISO 14000 Certificate are even more required to manage their environment and waste disposal in a proper manner to comply with the international standard. They rely more on the operations of waste services company which receives ISO 14000. With increasing global competition, the needs for factories to apply for ISO 14000 certificate increases, and thus the needs for the use of waste service with international standard also increase.

Finally, marketers of the waste service company should arrange seminar to educate managers or persons who are involved in the industrial waste management to better understand the impact of substandard waste management to environment.

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Appendix A

Comparison
between
"Sanitary Landfill" and "Open Dump"

Comparison Between "Sanitary Landfill" and "Open Dump'

Technical Information	Sanitary Landfill	Open Dump
1. Daily covering of Waste	All waste covered at the end of each day by either plastic tarps or soil (150 mm.) to prevent flies, deeps rainwater out, controls odor.	No daily cover, rain waste goes directly into the waste creating additional leachate, flies, rats, and odor that is released continually.
2. compaction of Waste at Tipping Area	Use compactor to compact the waste to minimize future settlement and minimize odor release. The waste is compacted in place immediately after tipping it, conserving space.	Waste is placed by excavators and bulldozers only. Double handling the waste released=s more odor and valuable property is wasted.
3. Leachate Management and Leachate Treatment	The leachate will be pumped continually to an onsite leachate treatment facility where the leachate is treated and managed.	Leachate sits inside the landfill and surrounding drainage areas where flies bread and odor are create. There is no actively managed leachate treatment system. Leachate leaks into the local groundwater and cannels polluting the area.
4. Engineered Surface Water System	The surface water system is designed and operated to minimize rain water contacting the waste and controls surface water on site.	There is no engineer drainage system and polluted water flows freely offsite in an uncontrolled manner.
5. Landfill Gas Collection System	Collect the landfill gas through a system of pipes and wells by creating a vacuum pulling the gas from the landfill and burning it to destroy the odors in a flare station.	No collection of landfill gas. Gas seeps through the top of the waste and creates strong odor and air pollution throughout the area.
6. Flare Station	Landfill gas is burned in a flare station to destroy the odors.	There is no flare station and methane (a green house gas) is releases into the local environment.
7. Engineered Bottom Liner System	1.5 mm. HDPE (impermeable plastic) and 600 mm. clay barrier keeps leachate and landfill gas inside the landfill. An independent engineer certifies the liner system. The liner system keeps the gas and leachate inside the landfill which prevents odors meets US-EPA standards.	No engineered landfill liner system. Landfill gas and leachate leak through the bottom and sides of the landfill and create odor and ground water pollution. Surrounding area remains polluted until expensive cleanup by taxpayers or companies.
8. Truck Wash	All trucks exiting the site are to be cleaned to eliminate smelling trucks on the local roads.	None - or not in use.
9. Trained and experienced Employees	The key positions such as site engineer, operations manager, leachate treatment plant operator, and site manager will have experience or training from overseas.	Little or no experience in modern landfill operation.
11. Internal Inspection System	ISO 14001 system. Daily, weekly and monthly inspections as well as quarterly environmental audits.	Ineffective or no inspection system, no audits, no environmental reporting.
12. Liability	Low risk for your company business to pay future clean up.	Extremely high risk and large liability for future clean up.
13. Closure & Post Closure Funds	Set aside funds for closing the site & after care period maintenance.	No plans for this.
14. Community Benefits	Local long term jobs are created and offer donations are made to the local community schools and healthcare.	Little or no benefits directly to the community plus long term liability for cleanup of the pollution is passed to local people.

Source: Corcoran,Close the open dumps & stop sending waste there.Thai-American Business, (2002, October-November) p. 20.

Appendix B

Questionnaires

QUESTIONNAIRE

This questionnaire is aim for studying the Factors influencing Industrial Buyers in selection the use of Waste Management. The research is a partial fulfillment of the requirements for Master Degree of Business Administration, Assumption University.

Section 1: Bio-Data

1. What department is your position?
   a) Purchasing
   b) Environment / Safety
   c) Administration
   d) Others, please specify _____

2. What is your company nationality?
   a) Thai
   b) Japanese
   c) Chinese
   d) Taiwanese
   e) Singapore
   f) American
   g) E.U.
   h) Others, please specify _____

3. What is your current ISO14000 status?
   a) ISO 14000 certified
   b) Working on ISO 14000, plan to achieve in _____
   c) Do not have ISO 14000, but plan to apply in the future
   d) Do not have ISO 14000, and do not plan to apply

4. What is your role in choosing a waste management service provider?
   a) Influencer
   b) Decision Maker
   c) User
   d) Do not involve in any activity related to waste management service provider

5. What type of waste disposal do you need as in your company/your mother company's policy?
   a) Incinerator
   b) Sanitary Landfill
   c) Recycle
   d) Any, not specific
   e) Other, please specify_____

6. How much is the volume of waste generated by your factory?
    a) Below 25 tons per month
    b) Between 26 – 50 tons per month
    c) Between 51- 75 tons per month
    d) Between 76 – 100 tons per month
    e) Between 101 – 200 tons per month
    f) Above 200 tons per month

7. What is the waste disposal method by your current service provider?
    a) Incinerator
    b) Sanitary landfill
    c) Recycle
    a) Other, please specify_____

8. How long has your company use the current waste processor?
    a) less than 6 month
    b) 6 month – 1 year
    c) 1 year – 2 year (Skip to Q. 14)
    d) more than 2 year (Skip to Q. 14)

9. How are you satisfied your current use of service?
    a) Most satisfied
    b) Satisfied
    c) Neither
    d) Not satisfied
    e) Not really satisfied

Section 2: Factors influencing the use of waste service provider (Plancard)

10. The following 16 cards are the profile of waste service providers in terms of price, quality of service, ISO14000 Certification, equipment provide, and type of waste disposal. Please consider each card and give the score to each of them for how would you likely to use the services.

    The scale from 1 – 5 are stand for level of your preferences.

    1 2 3 4 5

    Not at all likely use Most likely use

Card 1
PRICE : 20% above expected price SERVICE QUALITY : Poor ISO 14000 CERTIFICATED : No EQUIPMENT PROVIDE : Yes TYPE OF WASTE DISPOSAL : Sanitary Landfill 1 2 3 4 5 Not at all likely use Most Likely Use

Card 2
PRICE : 20% below expected price SERVICE QUALITY : Good ISO 14000 CERTIFICATED : Yes EQUIPMENT PROVIDE : Yes TYPE OF WASTE DISPOSAL : Incinerator 1 2 3 4 5 Not at all likely use Most Likely Use

Card 3
PRICE : 20% below expected price SERVICE QUALITY : Poor ISO 14000 CERTIFICATED : Yes EQUIPMENT PROVIDE : No TYPE OF WASTE DISPOSAL : Incinerator 1 2 3 4 5 Not at all likely use Most Likely Use

Card 4
PRICE : 20% below expected price SERVICE QUALITY : Good ISO 14000 CERTIFICATED : No EQUIPMENT PROVIDE : No TYPE OF WASTE DISPOSAL : Open-Dumping 1 2 3 4 5 Not at all likely use Most Likely Use

Card 5
PRICE : 20% above expected price
SERVICE QUALITY : Excellent
ISO 14000 CERTIFICATED : Yes
EQUIPMENT PROVIDE : No
TYPE OF WASTE DISPOSAL : Open-Dumping

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 6
PRICE : Approx. at expected price
SERVICE QUALITY : Poor
ISO 14000 CERTIFICATED : Yes
EQUIPMENT PROVIDE : No
TYPE OF WASTE DISPOSAL : Incinerator

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 7
PRICE : 20% below expected price
SERVICE QUALITY : Poor
ISO 14000 CERTIFICATED : No
EQUIPMENT PROVIDE : No
TYPE OF WASTE DISPOSAL : Incinerator

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 8
PRICE : 20% below expected price
SERVICE QUALITY : Excellent
ISO 14000 CERTIFICATED : No
EQUIPMENT PROVIDE : Yes
TYPE OF WASTE DISPOSAL : Incinerator

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 9
PRICE : Approx. at expected price
SERVICE QUALITY : Excellent
ISO 14000 CERTIFICATED : No
EQUIPMENT PROVIDE : Yes
TYPE OF WASTE DISPOSAL : Incinerator

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 10
PRICE : 20% below expected price
SERVICE QUALITY : Poor
ISO 14000 CERTIFICATED : No
EQUIPMENT PROVIDE : Yes
TYPE OF WASTE DISPOSAL : Open-Dumping

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 11

PRICE : 20% above expected price
SERVICE QUALITY : Poor
ISO 14000 CERTIFICATED : No
EQUIPMENT PROVIDE : No
TYPE OF WASTE DISPOSAL : Incinerator

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 12

PRICE : 20% below expected price
SERVICE QUALITY : Excellent
ISO 14000 CERTIFICATED : Yes
EQUIPMENT PROVIDE : No
TYPE OF WASTE DISPOSAL : Sanitary Landfill

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 13

PRICE : 20% below expected price
SERVICE QUALITY : Poor
ISO 14000 CERTIFICATED : Yes
EQUIPMENT PROVIDE : Yes
TYPE OF WASTE DISPOSAL : Sanitary Landfill

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 14

PRICE : Approx. at expected price
SERVICE QUALITY : Good
ISO 14000 CERTIFICATED : No
EQUIPMENT PROVIDE : No
TYPE OF WASTE DISPOSAL : Sanitary Landfill

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 15

PRICE : 20% above expected price
SERVICE QUALITY : Good
ISO 14000 CERTIFICATED : Yes
EQUIPMENT PROVIDE : Yes
TYPE OF WASTE DISPOSAL : Incinerator

1	2	3	4	5
Not at all likely use				Most Likely Use

Card 16

PRICE : Approx. at expected price
SERVICE QUALITY : Poor
ISO 14000 CERTIFICATED : Yes
EQUIPMENT PROVIDE : Yes
TYPE OF WASTE DISPOSAL : Open-Dumping

1	2	3	4	5
Not at all likely use				Most Likely Use

แบบสอบถาม

แบบสอบถามชุดนี้ เป็นแบบสอบถามที่จัดทำขึ้นเพื่อศึกษาถึงปัจจัยซึ่งผู้ซื้อคำนึงถึงในการพิจารณาเลือกใช้บริการการกำจัดขยะจากอุตสาหกรรม ซึ่งเป็นส่วนหนึ่งของวิทยานิพนธ์ระดับมหาบัณฑิต ภาควิชาบริหารธุรกิจ มหาวิทยาอัสสัมชัญ (ABAC)

ขอขอบคุณทุกท่านที่ให้ความร่วมมือในการทำแบบสอบถามนี้ และขอความกรุณาโปรดตอบคำถามทุกข้อ

ส่วนที่ 1: ข้อมูลของผู้ตอบแบบสอบถามและของบริษัทฯ

1. ท่านทำงานในฝ่ายใด ?
   - ก) ฝ่ายจัดซื้อ
   - ข) ฝ่ายสิ่งแวดล้อมและความปลอดภัย
   - ค) ฝ่ายบริหารงานทั่วไป
   - ง) อื่น ๆ โปรดระบุ_____

2. บริษัทของท่านมีบริษัทแม่เป็นชนชาติใด?
   - ก) ไทย
   - ข) ญี่ปุ่น
   - ค) จีน
   - ง) ไต้หวัน
   - จ) สิงคโปร์
   - ฉ) อเมริกา
   - ช) ประเทศในกลุ่มสหพันธภาพยุโรป
   - ซ) อื่น ๆ โปรดระบุ _____

3. บริษัทได้รับมาตรฐาน ISO14000 แล้วหรือไม่ อยู่ในสถานะใด?
   - ก) ได้รับมาตรฐาน ISO14000 แล้ว
   - ข) กำลังอยู่ในช่วงดำเนินการ แล้วคาดว่าจะได้รับใน (เดือน/ปี) _____
   - ค) ยังไม่ได้รับมาตรฐาน ISO14000 แต่จะดำเนินการในอนาคต
   - ง) ยังไม่ได้รับมาตรฐาน ISO14000 และไม่ได้วางแผนที่จะได้รับ

4. บทบาทของท่าน ในการพิจารณาเลือกใช้บริการการกำจัดขยะ?
   - ก) ผู้ให้ข้อมูลเพื่อช่วยในการตัดสินใจ (Influencer)
   - ข) ผู้ตัดสินใจ (Decision Maker)
   - ค) ผู้ซื้อ (Budget Holder)
   - ง) ผู้ใช้บริการ (User)
   - จ) ไม่มีส่วนเกี่ยวข้องใด ๆ ในการใช้บริการการกำจัดขยะ

5. บริษัทมีนโยบายในการให้กำจัดขยะที่ไม่สามารถนำกลับมาใช้ใหม่ได้ด้วยวิธีใด?
   - ก) เตาเผา (Incinerator)
   - ข) หลุมฝังกลบ (Dumping in Landfill)
   - ค) นำขยะหมุนเวียนมาใช้ใหม่ (Recycle)
   - ง) วิธีใดก็ได้
   - จ) อื่น ๆ, โปรดระบุ _____

6. ขยะกากอุตสาหกรรมที่มาจากขบวนการผลิตจากโรงงานของท่าน มีปริมาณเป็นละเท่าไร ?

ก) น้อยกว่า 25 ตัน ต่อเดือน (น้อยกว่า 300 ตัน ต่อปี)

ข) ประมาณ 26 - 50 ตัน ต่อเดือน (ระหว่าง 301 – 600 ตัน ต่อปี)

ค) ประมาณ 51 - 75 ตัน ต่อเดือน (ระหว่าง 601 – 900 ตัน ต่อปี)

ง) ประมาณ 76 - 100 ตัน ต่อเดือน (ระหว่าง 901 – 1,200 ตัน ต่อปี)

จ) ประมาณ 101 – 200 ตัน ต่อเดือน (ระหว่าง 1,201 – 2,400 ตัน ต่อปี)

ฉ) มากกว่า 200 ตัน ต่อเดือน (มากกว่า 2,400 ตันต่อปี)

7. ผู้รับกำจัดขยะที่ท่านใช้บริการในปัจจุบัน กำจัดขยะโดยวิธีใด ?

ก) เตาเผา (Incinerator)

ข) หลุมฝังกลบ (Dumping at landfill)

ค) นำขยะหมุนเวียนมาใช้ใหม่ (Recycle)

ง) อื่น ๆ, โปรดระบุ _____

8. บริษัทได้ใช้บริการจากผู้รับกำจัดขยะนี้มาเป็นเวลานานเท่าไร?

ก) น้อยกว่า 6 เดือน

ข) 6 เดือน – 1 ปี

ค) 1 ปี – 2 ปี (ข้ามไปตอบคำถามข้อ 14)

ง) มากกว่า 2 ปี (ข้ามไปตอบคำถามข้อ 14)

9. ท่านมีความพึงพอใจในบริการของผู้รับกำจัดกากที่ท่านใช้อยู่ในปัจจุบันหรือไม่ ?

ก) พอใจมาก

ข) พอใจ

ค) เฉย ๆ

ง) ไม่ค่อยพอใจ

จ) ไม่พอใจมาก

ส่วนที่ 3 : ปัจจัยที่คำนึงถึงในการตัดสินใจเลือกผู้รับกำจัดขยะ

การ์ดแต่ละใบต่อไปนี้ แสดงถึงคุณสมบัติของผู้รับกำจัดกากขยะ, ราคาค่าบริการและวิธีการกำจัด มีจำนวนทั้งสิ้น 16 ใบ ให้แต่ละใบหมายถึงบริการและราคาของผู้รับกำจัดขยะแต่ละราย ซึ่งท่านอาจเลือกที่จะใช้หรือไม่ใช้บริการก็ได้ โปรดพิจารณารายละเอียดจากการ์ดแต่ละใบ ว่าท่านจะเลือกใช้บริการหรือไม่

โดยให้เลือกหมายเลขใดหมายเลขหนึ่งจาก 1 – 5 ซึ่งแต่ละหมายเลขหมายถึง

1	2	3	4	5
ไม่ใช้แน่นอน	อาจจะไม่ใช้	อาจจะใช้หรืออาจจะไม่ใช้	อาจจะใช้	ใช้แน่นอน

Card 1

ราคา : 20% สูงกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ไม่ดี
มาตรฐาน ISO 14000 : ไม่ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : หลุมฝังกลบแบบถูกสุขลักษณะ) Sanitary Landfill)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 2

ราคา : 20% ต่ำกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ดี
มาตรฐาน ISO 14000 : ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ :มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : เตาเผาขยะ)Incinerator)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 3

ราคา : 20% ต่ำกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ไม่ดี
มาตรฐาน ISO 14000 : ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : ไม่มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : เตาเผาขยะ)Incinerator)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 4

ราคา :20% ต่ำกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ดี
มาตรฐาน ISO 14000 : ไม่ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : ไม่มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด :หลุมฝังกลบเทศบาล)Open Dump)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 5

ราคา : 20% สูงกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ดีมาก
มาตรฐาน ISO 14000 : ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : ไม่มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : หลุมฝังกลบเทศบาล)Open Dump)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 6

ราคา : ราคาประมาณที่ตั้งไว้
คุณภาพการบริการ : ไม่ดี
มาตรฐาน ISO 14000 : ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : ไม่มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : เตาเผาขยะ) Incinerator)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 7

ราคา : 20% ต่ำกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ไม่ดี
มาตรฐาน ISO 14000 : ไม่ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : ไม่มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : เตาเผาขยะ) Incinerator)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 8

ราคา : 20% ต่ำกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ดีมาก
มาตรฐาน ISO 14000 : ไม่ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : เตาเผาขยะ)Incinerator)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 9

ราคา : ราคาประมาณที่ตั้งไว้
คุณภาพการบริการ : ดีมาก
มาตรฐาน ISO 14000 : ไม่ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด :เตาเผาขยะ)Incinerator)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 10

ราคา : 20% ต่ำกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ไม่ดี
มาตรฐาน ISO 14000 : ไม่ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : หลุมฝังกลบเทศบาล) Open Dump)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 11

ราคา : 20% สูงกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ไม่ดี
มาตรฐาน ISO 14000 : ไม่ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ :ไม่มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : เตาเผาขยะ) Incinerator)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 12

ราคา : 20% ต่ำกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ดีมาก
มาตรฐาน ISO 14000 : ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : ไม่มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : หลุมฝังกลบแบบถูกสุขลักษณะ)Sanitary Landfill)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 13

ราคา : 20% ต่ำกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ไม่ดี
มาตรฐาน ISO 14000 : ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : หลุมฝังกลบแบบถูกสุขลักษณะ) Sanitary Landfill)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 14

ราคา : ราคาประมาณที่ตั้งไว้
คุณภาพการบริการ : ดี
มาตรฐาน ISO 14000 : ไม่ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ :ไม่มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : หลุมฝังกลบแบบถูกสุขลักษณะ)Sanitary Landfill)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 15

ราคา : 20% สูงกว่าราคาที่ตั้งไว้
คุณภาพการบริการ : ดี
มาตรฐาน ISO 14000 : ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : เตาเผาขยะ) Incinerator)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Card 16

ราคา : ราคาประมาณที่ตั้งไว้
คุณภาพการบริการ : ไม่ดี
มาตรฐาน ISO 14000 : ได้รับการรับรองจากมาตรฐาน ISO 14000
ภาชนะรองรับ : มีบริการภาชนะรองรับให้ที่โรงงานของท่าน
วิธีการกำจัด : หลุมฝังกลบเทศบาล)Open Dump)

1	2	3	4	5
ไม่ใช้แน่นอน		อาจจะใช้หรือไม่ใช้		ใช้แน่นอน

Appendix C

One-way ANOVA for Hypotheses Testing

Conjoint Analysis

Factor Model Levels Label
PRICE d 3 ราคา :
QUALITY d 3 คุณภาพการบริการ :
ISO14000 d 2 มาตรฐาน ISO 14000 :
EQUIPMEN d 2 ภาชนะรองรับ :
DISPOSAL d 3 วิธีการกำจัด :
(Models: d=discrete, l=linear, i=ideal, ai=antiideal, <=less, >=more)

All the factors are orthogonal.

SUBFILE SUMMARY

Averaged Importance	Utility	Factor	
		PRICE	ราคา :
18.15	.2983		20% ต่ำกว่าราคาที่ตั
	.0608		ราคาประมาณที่ตั้งไว้
	-.3592		20% สูงกว่าราคาที่ตั
		QUALITY	คุณภาพการบริการ :
29.88	-.7550		ไม่ดี
	.3925		ดี
	.3625		ดีมาก
		ISO14000	มาตรฐาน ISO 14000 :
16.17	-.3137		ไม่ได้รับการรับรองจา
	.3137		ได้รับการรับรองจากมา
		EQUIPMEN	ภาชนะรองรับ :
15.76	-.3163		ไม่มีบริการภาชนะรองร
	.3163		มีบริการภาชนะรองรับใ
		DISPOSAL	วิธีการกำจัด :
20.04	.1117		เตาเผาขยะ (Incinerat
	.1492		หลุมฝังกลบแบบถูกสุขล
	-.2608		หลุมฝังกลบเทศบาล (Op
	2.6700	CONSTANT	

Pearson's R = .977 Significance = .0000

Kendall's tau = .920 Significance = .0000

SUBFILE SUMMARY

Explore
Capital Register

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Capital	Statistic	df	Sig.	Statistic	df	Sig.
Price	1-20 MB	.096	16	.200*	.975	16	.908
	21-50 MB	.174	11	.200*	.927	11	.382
	51-100 MB	.157	8	.200*	.976	8	.939
	101-500 MB	.285	10	.021	.829	10	.032
	More than 500 MB	.363	5	.030	.803	5	.086
Service Quality	1-20 MB	.191	16	.120	.918	16	.158
	21-50 MB	.175	11	.200*	.902	11	.195
	51-100 MB	.210	8	.200*	.843	8	.081
	101-500 MB	.215	10	.200*	.933	10	.483
	More than 500 MB	.216	5	.200*	.930	5	.596
ISO 14000 Standard	1-20 MB	.165	16	.200*	.950	16	.495
	21-50 MB	.150	11	.200*	.971	11	.897
	51-100 MB	.167	8	.200*	.927	8	.490
	101-500 MB	.174	10	.200*	.953	10	.704
	More than 500 MB	.165	5	.200*	.988	5	.973
Equipment provide	1-20 MB	.198	16	.095	.930	16	.245
	21-50 MB	.201	11	.200*	.905	11	.211
	51-100 MB	.275	8	.077	.809	8	.036
	101-500 MB	.236	10	.122	.894	10	.186
	More than 500 MB	.365	5	.028	.835	5	.152
Type of waste disposal	1-20 MB	.118	16	.200*	.974	16	.898
	21-50 MB	.141	11	.200*	.931	11	.423
	51-100 MB	.174	8	.200*	.932	8	.534
	101-500 MB	.228	10	.149	.848	10	.055
	More than 500 MB	.395	5	.010	.759	5	.036

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Oneway
Capital Register

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Price	1.456	4	45	.231
Service Quality	2.435	4	45	.061
ISO 14000 Standard	2.814	4	45	.036
Equipment provide	1.473	4	45	.226
Type of waste disposal	1.612	4	45	.188

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Price	Between Groups	101.292	4	25.323	.237	.916
	Within Groups	4801.820	45	106.707		
	Total	4903.111	49			
Service Quality	Between Groups	252.427	4	63.107	.643	.634
	Within Groups	4414.179	45	98.093		
	Total	4666.606	49			
ISO 14000 Standard	Between Groups	580.520	4	145.130	1.643	.180
	Within Groups	3974.519	45	88.323		
	Total	4555.040	49			
Equipment provide	Between Groups	86.293	4	21.573	.205	.934
	Within Groups	4736.307	45	105.251		
	Total	4822.600	49			
Type of waste disposal	Between Groups	59.709	4	14.927	.111	.978
	Within Groups	6038.374	45	134.186		
	Total	6098.083	49			

Explore
Company Nationality

Tests of Normality

	Company nationality	Kolmogorov-Smirnov [a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Price	Thai	.189	12	.200*	.918	12	.269
	Japanese	.121	11	.200*	.947	11	.603
	Taiwanese	.170	10	.200*	.924	10	.389
	American	.310	3	.	.900	3	.384
	European Union	.267	4	.	.842	4	.200
	Others	.156	7	.200*	.941	7	.648
Service Quality	Thai	.197	12	.200*	.927	12	.350
	Japanese	.227	11	.120	.902	11	.193
	Taiwanese	.210	10	.200*	.925	10	.403
	American	.299	3	.	.915	3	.434
	European Union	.298	4	.	.926	4	.571
	Others	.249	7	.200*	.937	7	.616
ISO 14000 Standard	Thai	.213	12	.140	.939	12	.490
	Japanese	.168	11	.200*	.908	11	.233
	Taiwanese	.159	10	.200*	.974	10	.923
	American	.316	3	.	.890	3	.354
	European Union	.260	4	.	.944	4	.678
	Others	.215	7	.200*	.882	7	.238
Equipment provide	Thai	.224	12	.099	.906	12	.188
	Japanese	.141	11	.200*	.943	11	.557
	Taiwanese	.117	10	.200*	.972	10	.912
	American	.176	3	.	1.000	3	.988
	European Union	.297	4	.	.852	4	.233
	Others	.291	7	.076	.772	7	.021
Type of waste disposal	Thai	.141	12	.200*	.926	12	.343
	Japanese	.122	11	.200*	.958	11	.752
	Taiwanese	.189	10	.200*	.911	10	.288
	American	.203	3	.	.994	3	.849
	European Union	.298	4	.	.847	4	.217
	Others	.139	7	.200*	.970	7	.898

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Oneway
Company Nationality

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Price	3.577	5	41	.009
Service Quality	8.171	5	41	.000
ISO 14000 Standard	1.535	5	41	.200
Equipment provide	1.061	5	41	.396
Type of waste disposal	3.688	5	41	.008

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Price	Between Groups	268.775	5	53.755	.585	.712
	Within Groups	3770.471	41	91.963		
	Total	4039.246	46			
Service Quality	Between Groups	508.767	5	101.753	1.403	.243
	Within Groups	2973.945	41	72.535		
	Total	3482.713	46			
ISO 14000 Standard	Between Groups	105.833	5	21.167	.218	.953
	Within Groups	3988.539	41	97.281		
	Total	4094.372	46			
Equipment provide	Between Groups	1114.505	5	222.901	2.597	.039
	Within Groups	3518.386	41	85.814		
	Total	4632.892	46			
Type of waste disposal	Between Groups	1548.431	5	309.686	2.855	.027
	Within Groups	4446.974	41	108.463		
	Total	5995.404	46			

Post Hoc Tests

Multiple Comparisons

LSD

Dependent Variable	(I) Company nationality	(J) Company nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Price	Thai	Japanese	-3.0581	4.00297	.449	-11.1423	5.0261
		Taiwanese	2.3442	4.10607	.571	-5.9482	10.6365
		American	5.8158	6.19014	.353	-6.6854	18.3171
		European Union	1.5617	5.53663	.779	-9.6198	12.7431
		Others	1.1849	4.56082	.796	-8.0259	10.3956
	Japanese	Thai	3.0581	4.00297	.449	-5.0261	11.1423
		Taiwanese	5.4023	4.19005	.205	-3.0597	13.8642
		American	8.8739	6.24616	.163	-3.7404	21.4883
		European Union	4.6198	5.59919	.414	-6.6880	15.9276
		Others	4.2430	4.63657	.365	-5.1208	13.6067
	Taiwanese	Thai	-2.3442	4.10607	.571	-10.6365	5.9482
		Japanese	-5.4023	4.19005	.205	-13.8642	3.0597
		American	3.4717	6.31273	.585	-9.2771	16.2205
		European Union	-.7825	5.67335	.891	-12.2401	10.6751
		Others	-1.1593	4.72586	.807	-10.7034	8.3848
	American	Thai	-5.8158	6.19014	.353	-18.3171	6.6854
		Japanese	-8.8739	6.24616	.163	-21.4883	3.7404
		Taiwanese	-3.4717	6.31273	.585	-16.2205	9.2771
		European Union	-4.2542	7.32427	.565	-19.0458	10.5375
		Others	-4.6310	6.61753	.488	-17.9953	8.7334

Multiple Comparisons

LSD

Dependent Variable	(I) Company nationality	(J) Company nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Price	European Union	Thai	-1.5617	5.53663	.779	-12.7431	9.6198
		Japanese	-4.6198	5.59919	.414	-15.9276	6.6880
		Taiwanese	.7825	5.67335	.891	-10.6751	12.2401
		American	4.2542	7.32427	.565	-10.5375	19.0458
		Others	-.3768	6.01067	.950	-12.5156	11.7620
	Others	Thai	-1.1849	4.56082	.796	-10.3956	8.0259
		Japanese	-4.2430	4.63657	.365	-13.6067	5.1208
		Taiwanese	1.1593	4.72586	.807	-8.3848	10.7034
		American	4.6310	6.61753	.488	-8.7334	17.9953
		European Union	.3768	6.01067	.950	-11.7620	12.5156
Service Quality	Thai	Japanese	-7.3410*	3.55510	.045	-14.5206	-.1613
		Taiwanese	-1.3472	3.64666	.714	-8.7117	6.0174
		American	3.8475	5.49755	.488	-7.2550	14.9500
		European Union	-3.3117	4.91716	.504	-13.2421	6.6187
		Others	-4.9763	4.05053	.226	-13.1565	3.2039
	Japanese	Thai	7.3410*	3.55510	.045	.1613	14.5206
		Taiwanese	5.9938	3.72124	.115	-1.5214	13.5090
		American	11.1885	5.54730	.050	-.0145	22.3915
		European Union	4.0293	4.97272	.422	-6.0133	14.0719
		Others	2.3647	4.11780	.569	-5.9514	10.6807
	Taiwanese	Thai	1.3472	3.64666	.714	-6.0174	8.7117
		Japanese	-5.9938	3.72124	.115	-13.5090	1.5214
		American	5.1947	5.60642	.360	-6.1277	16.5171
		European Union	-1.9645	5.03858	.699	-12.1401	8.2111
		Others	-3.6291	4.19711	.392	-12.1054	4.8471

Multiple Comparisons

LSD

Dependent Variable	(I) Company nationality	(J) Company nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Service Quality	American	Thai	-3.8475	5.49755	.488	-14.9500	7.2550
		Japanese	-11.1885	5.54730	.050	-22.3915	.0145
		Taiwanese	-5.1947	5.60642	.360	-16.5171	6.1277
		European Union	-7.1592	6.50478	.277	-20.2958	5.9775
		Others	-8.8238	5.87712	.141	-20.6929	3.0453
	European Union	Thai	3.3117	4.91716	.504	-6.6187	13.2421
		Japanese	-4.0293	4.97272	.422	-14.0719	6.0133
		Taiwanese	1.9645	5.03858	.699	-8.2111	12.1401
		American	7.1592	6.50478	.277	-5.9775	20.2958
		Others	-1.6646	5.33816	.757	-12.4453	9.1160
	Others	Thai	4.9763	4.05053	.226	-3.2039	13.1565
		Japanese	-2.3647	4.11780	.569	-10.6807	5.9514
		Taiwanese	3.6291	4.19711	.392	-4.8471	12.1054
		American	8.8238	5.87712	.141	-3.0453	20.6929
		European Union	1.6646	5.33816	.757	-9.1160	12.4453
ISO 14000 Standard	Thai	Japanese	-3.5003	4.11711	.400	-11.8150	4.8144
		Taiwanese	-.4737	4.22314	.911	-9.0025	8.0551
		American	-.7233	6.36663	.910	-13.5810	12.1343
		European Union	-2.2367	5.69448	.697	-13.7369	9.2636
		Others	-3.2410	4.69086	.494	-12.7143	6.2324
	Japanese	Thai	3.5003	4.11711	.400	-4.8144	11.8150
		Taiwanese	3.0266	4.30951	.486	-5.6766	11.7299
		American	2.7770	6.42424	.668	-10.1971	15.7510
		European Union	1.2636	5.75883	.827	-10.3666	12.8938
		Others	.2594	4.76876	.957	-9.3714	9.8901

Multiple Comparisons

LSD

Dependent Variable	(I) Company nationality	(J) Company nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
ISO 14000 Standard	Taiwanese	Thai	.4737	4.22314	.911	-8.0551	9.0025
		Japanese	-3.0266	4.30951	.486	-11.7299	5.6766
		American	-.2497	6.49271	.970	-13.3620	12.8626
		European Union	-1.7630	5.83511	.764	-13.5472	10.0212
		Others	-2.7673	4.86061	.572	-12.5835	7.0489
	American	Thai	.7233	6.36663	.910	-12.1343	13.5810
		Japanese	-2.7770	6.42424	.668	-15.7510	10.1971
		Taiwanese	.2497	6.49271	.970	-12.8626	13.3620
		European Union	-1.5133	7.53309	.842	-16.7267	13.7001
		Others	-2.5176	6.80621	.713	-16.2630	11.2278
	European Union	Thai	2.2367	5.69448	.697	-9.2636	13.7369
		Japanese	-1.2636	5.75883	.827	-12.8938	10.3666
		Taiwanese	1.7630	5.83511	.764	-10.0212	13.5472
		American	1.5133	7.53309	.842	-13.7001	16.7267
		Others	-1.0043	6.18205	.872	-13.4892	11.4806
	Others	Thai	3.2410	4.69086	.494	-6.2324	12.7143
		Japanese	-.2594	4.76876	.957	-9.8901	9.3714
		Taiwanese	2.7673	4.86061	.572	-7.0489	12.5835
		American	2.5176	6.80621	.713	-11.2278	16.2630
		European Union	1.0043	6.18205	.872	-11.4806	13.4892
Equipment provide	Thai	Japanese	6.2077	3.86685	.116	-1.6015	14.0170
		Taiwanese	-4.0200	3.96644	.317	-12.0304	3.9904
		American	5.4150	5.97963	.370	-6.6611	17.4911
		European Union	-6.6300	5.34834	.222	-17.4312	4.1712
		Others	7.2164	4.40572	.109	-1.6811	16.1140

Multiple Comparisons

LSD

Dependent Variable	(I) Company nationality	(J) Company nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Equipment provide	Japanese	Thai	-6.2077	3.86685	.116	-14.0170	1.6015
		Taiwanese	-10.2277*	4.04756	.015	-18.4019	-2.0535
		American	-.7927	6.03374	.896	-12.9781	11.3927
		European Union	-12.8377*	5.40878	.022	-23.7610	-1.9145
		Others	1.0087	4.47889	.823	-8.0366	10.0540
	Taiwanese	Thai	4.0200	3.96644	.317	-3.9904	12.0304
		Japanese	10.2277*	4.04756	.015	2.0535	18.4019
		American	9.4350	6.09805	.129	-2.8803	21.7503
		European Union	-2.6100	5.48042	.636	-13.6779	8.4579
		Others	11.2364*	4.56515	.018	2.0169	20.4559
	American	Thai	-5.4150	5.97963	.370	-17.4911	6.6611
		Japanese	.7927	6.03374	.896	-11.3927	12.9781
		Taiwanese	-9.4350	6.09805	.129	-21.7503	2.8803
		European Union	-12.0450	7.07519	.096	-26.3336	2.2436
		Others	1.8014	6.39249	.780	-11.1085	14.7113
	European Union	Thai	6.6300	5.34834	.222	-4.1712	17.4312
		Japanese	12.8377*	5.40878	.022	1.9145	23.7610
		Taiwanese	2.6100	5.48042	.636	-8.4579	13.6779
		American	12.0450	7.07519	.096	-2.2436	26.3336
		Others	13.8464*	5.80627	.022	2.1204	25.5724
	Others	Thai	-7.2164	4.40572	.109	-16.1140	1.6811
		Japanese	-1.0087	4.47889	.823	-10.0540	8.0366
		Taiwanese	-11.2364*	4.56515	.018	-20.4559	-2.0169
		American	-1.8014	6.39249	.780	-14.7113	11.1085
		European Union	-13.8464*	5.80627	.022	-25.5724	-2.1204

Multiple Comparisons

LSD

Dependent Variable	(I) Company nationality	(J) Company nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Type of waste disposal	Thai	Japanese	7.7009	4.34728	.084	-1.0786	16.4804
		Taiwanese	3.5060	4.45924	.436	-5.4996	12.5116
		American	-14.3467*	6.72256	.039	-27.9232	-.7702
		European Union	10.6275	6.01284	.085	-1.5157	22.7707
		Others	-.1757	4.95310	.972	-10.1787	9.8273
	Japanese	Thai	-7.7009	4.34728	.084	-16.4804	1.0786
		Taiwanese	-4.1949	4.55044	.362	-13.3847	4.9949
		American	-22.0476*	6.78340	.002	-35.7469	-8.3482
		European Union	2.9266	6.08078	.633	-9.3538	15.2070
		Others	-7.8766	5.03537	.125	-18.0458	2.2925
	Taiwanese	Thai	-3.5060	4.45924	.436	-12.5116	5.4996
		Japanese	4.1949	4.55044	.362	-4.9949	13.3847
		American	-17.8527*	6.85569	.013	-31.6980	-4.0073
		European Union	7.1215	6.16133	.254	-5.3216	19.5646
		Others	-3.6817	5.13234	.477	-14.0467	6.6833
	American	Thai	14.3467*	6.72256	.039	.7702	27.9232
		Japanese	22.0476*	6.78340	.002	8.3482	35.7469
		Taiwanese	17.8527*	6.85569	.013	4.0073	31.6980
		European Union	24.9742*	7.95424	.003	8.9103	41.0381
		Others	14.1710	7.18672	.055	-.3429	28.6848

Multiple Comparisons

LSD

Dependent Variable	(I) Company nationality	(J) Company nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Type of waste disposal	European Union	Thai	-10.6275	6.01284	.085	-22.7707	1.5157
		Japanese	-2.9266	6.08078	.633	-15.2070	9.3538
		Taiwanese	-7.1215	6.16133	.254	-19.5646	5.3216
		American	-24.9742*	7.95424	.003	-41.0381	-8.9103
		Others	-10.8032	6.52766	.106	-23.9861	2.3797
	Others	Thai	.1757	4.95310	.972	-9.8273	10.1787
		Japanese	7.8766	5.03537	.125	-2.2925	18.0458
		Taiwanese	3.6817	5.13234	.477	-6.6833	14.0467
		American	-14.1710	7.18672	.055	-28.6848	.3429
		European Union	10.8032	6.52766	.106	-2.3797	23.9861

*. The mean difference is significant at the .05 level.

Explore
ISO 14000 status

Tests of Normality

	ISO 14000 status	Kolmogorov-Smirnov [a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Price	ISO 14000 Certificated	.192	15	.143	.948	15	.499
	Working on ISO 14000	.293	5	.185	.886	5	.335
	Do not have ISO 14000, but plan to apply	.075	14	.200*	.986	14	.996
	Do not have ISO 14000, and do not plan to apply	.184	16	.153	.931	16	.257
Service Quality	ISO 14000 Certificated	.122	15	.200*	.948	15	.487
	Working on ISO 14000	.213	5	.200*	.901	5	.414
	Do not have ISO 14000, but plan to apply	.163	14	.200*	.958	14	.686
	Do not have ISO 14000, and do not plan to apply	.124	16	.200*	.971	16	.855
ISO 14000 Standard	ISO 14000 Certificated	.250	15	.013	.898	15	.088
	Working on ISO 14000	.260	5	.200*	.909	5	.461
	Do not have ISO 14000, but plan to apply	.099	14	.200*	.971	14	.889
	Do not have ISO 14000, and do not plan to apply	.155	16	.200*	.960	16	.653
Equipment provide	ISO 14000 Certificated	.193	15	.139	.890	15	.066
	Working on ISO 14000	.245	5	.200*	.903	5	.427
	Do not have ISO 14000, but plan to apply	.144	14	.200*	.958	14	.684
	Do not have ISO 14000, and do not plan to apply	.085	16	.200*	.968	16	.804
Type of waste disposal	ISO 14000 Certificated	.181	15	.200*	.885	15	.056
	Working on ISO 14000	.276	5	.200*	.915	5	.498
	Do not have ISO 14000, but plan to apply	.127	14	.200*	.971	14	.887
	Do not have ISO 14000, and do not plan to apply	.173	16	.200*	.899	16	.077

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Oneway
ISO 14000 status

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Price	3.478	3	46	.023
Service Quality	3.138	3	46	.034
ISO 14000 Standard	1.177	3	46	.329
Equipment provide	2.061	3	46	.119
Type of waste disposal	1.242	3	46	.305

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Price	Between Groups	314.399	3	104.800	1.051	.379
	Within Groups	4588.712	46	99.755		
	Total	4903.111	49			
Service Quality	Between Groups	494.836	3	164.945	1.819	.157
	Within Groups	4171.771	46	90.691		
	Total	4666.606	49			
ISO 14000 Standard	Between Groups	713.797	3	237.932	2.849	.048
	Within Groups	3841.243	46	83.505		
	Total	4555.040	49			
Equipment provide	Between Groups	223.484	3	74.495	.745	.531
	Within Groups	4599.116	46	99.981		
	Total	4822.600	49			
Type of waste disposal	Between Groups	571.073	3	190.358	1.584	.206
	Within Groups	5527.010	46	120.152		
	Total	6098.083	49			

Post Hoc Tests

Multiple Comparisons

LSD

Dependent Variable	(I) ISO 14000 status	(J) ISO 14000 status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Price	ISO 14000 Certificated	Working on ISO 14000	3.2827	5.15764	.528	-7.0991	13.6645
		Do not have ISO 14000, but plan to apply	-4.2806	3.71155	.255	-11.7516	3.1904
		Do not have ISO 14000, and do not plan to apply	-3.6220	3.58956	.318	-10.8474	3.6035
	Working on ISO 14000	ISO 14000 Certificated	-3.2827	5.15764	.528	-13.6645	7.0991
		Do not have ISO 14000, but plan to apply	-7.5633	5.20348	.153	-18.0374	2.9108
		Do not have ISO 14000, and do not plan to apply	-6.9046	5.11719	.184	-17.2050	3.3957
	Do not have ISO 14000, but plan to apply	ISO 14000 Certificated	4.2806	3.71155	.255	-3.1904	11.7516
		Working on ISO 14000	7.5633	5.20348	.153	-2.9108	18.0374
		Do not have ISO 14000, and do not plan to apply	.6587	3.65513	.858	-6.6987	8.0161
	Do not have ISO 14000, and do not plan to apply	ISO 14000 Certificated	3.6220	3.58956	.318	-3.6035	10.8474
		Working on ISO 14000	6.9046	5.11719	.184	-3.3957	17.2050
		Do not have ISO 14000, but plan to apply	-.6587	3.65513	.858	-8.0161	6.6987
Service Quality	ISO 14000 Certificated	Working on ISO 14000	-4.9493	4.91774	.319	-14.8482	4.9496
		Do not have ISO 14000, but plan to apply	5.6372	3.53892	.118	-1.4862	12.7607
		Do not have ISO 14000, and do not plan to apply	.4680	3.42260	.892	-6.4213	7.3574

Multiple Comparisons

LSD

Dependent Variable	(I) ISO 14000 status	(J) ISO 14000 status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Service Quality	Working on ISO 14000	ISO 14000 Certificated	4.9493	4.91774	.319	-4.9496	14.8482
		Do not have ISO 14000, but plan to apply	10.5866*	4.96146	.038	.5997	20.5735
		Do not have ISO 14000, and do not plan to apply	5.4174	4.87917	.273	-4.4039	15.2386
	Do not have ISO 14000, but plan to apply	ISO 14000 Certificated	-5.6372	3.53892	.118	-12.7607	1.4862
		Working on ISO 14000	-10.5866*	4.96146	.038	-20.5735	-.5997
		Do not have ISO 14000, and do not plan to apply	-5.1692	3.48512	.145	-12.1844	1.8460
	Do not have ISO 14000, and do not plan to apply	ISO 14000 Certificated	-.4680	3.42260	.892	-7.3574	6.4213
		Working on ISO 14000	-5.4174	4.87917	.273	-15.2386	4.4039
		Do not have ISO 14000, but plan to apply	5.1692	3.48512	.145	-1.8460	12.1844
ISO 14000 Standard	ISO 14000 Certificated	Working on ISO 14000	11.6940*	4.71891	.017	2.1953	21.1927
		Do not have ISO 14000, but plan to apply	7.3873*	3.39583	.035	.5518	14.2227
		Do not have ISO 14000, and do not plan to apply	6.6030	3.28422	.050	-.0078	13.2138
	Working on ISO 14000	ISO 14000 Certificated	-11.6940*	4.71891	.017	-21.1927	-2.1953
		Do not have ISO 14000, but plan to apply	-4.3067	4.76085	.370	-13.8898	5.2764
		Do not have ISO 14000, and do not plan to apply	-5.0910	4.68189	.283	-14.5152	4.3332
	Do not have ISO 14000, but plan to apply	ISO 14000 Certificated	-7.3873*	3.39583	.035	-14.2227	-.5518
		Working on ISO 14000	4.3067	4.76085	.370	-5.2764	13.8898
		Do not have ISO 14000, and do not plan to apply	-.7843	3.34421	.816	-7.5158	5.9473

Multiple Comparisons

LSD

Dependent Variable	(I) ISO 14000 status	(J) ISO 14000 status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
ISO 14000 Standard	Do not have ISO 14000, and do not plan to apply	ISO 14000 Certificated	-6.6030	3.28422	.050	-13.2138	.0078
		Working on ISO 14000	5.0910	4.68189	.283	-4.3332	14.5152
		Do not have ISO 14000, but plan to apply	.7843	3.34421	.816	-5.9473	7.5158
Equipment provide	ISO 14000 Certificated	Working on ISO 14000	-3.3867	5.16348	.515	-13.7802	7.0069
		Do not have ISO 14000, but plan to apply	-.6478	3.71576	.862	-8.1272	6.8316
		Do not have ISO 14000, and do not plan to apply	3.3043	3.59363	.363	-3.9293	10.5379
	Working on ISO 14000	ISO 14000 Certificated	3.3867	5.16348	.515	-7.0069	13.7802
		Do not have ISO 14000, but plan to apply	2.7389	5.20938	.602	-7.7471	13.2248
		Do not have ISO 14000, and do not plan to apply	6.6910	5.12298	.198	-3.6210	17.0030
	Do not have ISO 14000, but plan to apply	ISO 14000 Certificated	.6478	3.71576	.862	-8.1272	6.8316
		Working on ISO 14000	-2.7389	5.20938	.602	-13.2248	7.7471
		Do not have ISO 14000, and do not plan to apply	3.9521	3.65927	.286	-3.4136	11.3179
	Do not have ISO 14000, and do not plan to apply	ISO 14000 Certificated	-3.3043	3.59363	.363	-10.5379	3.9293
		Working on ISO 14000	-6.6910	5.12298	.198	-17.0030	3.6210
		Do not have ISO 14000, but plan to apply	-3.9521	3.65927	.286	-11.3179	3.4136
Type of waste disposal	ISO 14000 Certificated	Working on ISO 14000	-6.6380	5.66045	.247	-18.0319	4.7559
		Do not have ISO 14000, but plan to apply	-8.0913	4.07339	.053	-16.2906	.1080
		Do not have ISO 14000, and do not plan to apply	-6.7551	3.93950	.093	-14.6849	1.1747

Multiple Comparisons

LSD

Dependent Variable	(I) ISO 14000 status	(J) ISO 14000 status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Type of waste disposal	Working on ISO 14000	ISO 14000 Certificated	6.6380	5.66045	.247	-4.7559	18.0319
		Do not have ISO 14000, but plan to apply	-1.4533	5.71076	.800	-12.9485	10.0419
		Do not have ISO 14000, and do not plan to apply	-.1171	5.61605	.983	-11.4216	11.1874
	Do not have ISO 14000, but plan to apply	ISO 14000 Certificated	8.0913	4.07339	.053	-.1080	16.2906
		Working on ISO 14000	1.4533	5.71076	.800	-10.0419	12.9485
		Do not have ISO 14000, and do not plan to apply	1.3362	4.01146	.741	-6.7385	9.4108
	Do not have ISO 14000, and do not plan to apply	ISO 14000 Certificated	6.7551	3.93950	.093	-1.1747	14.6849
		Working on ISO 14000	.1171	5.61605	.983	-11.1874	11.4216
		Do not have ISO 14000, but plan to apply	-1.3362	4.01146	.741	-9.4108	6.7385

*. The mean difference is significant at the .05 level.

Explore
Company's policy to use what type of waste disposal

Tests of Normality

	Company's policy to use what type	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Price	Incinerator	.151	8	.200*	.962	8	.827
	Dumping at Landfill	.141	14	.200*	.954	14	.624
	Any	.154	20	.200*	.964	20	.631
	Other	.215	8	.200*	.896	8	.266
Service Quality	Incinerator	.179	8	.200*	.894	8	.257
	Dumping at Landfill	.248	14	.020	.867	14	.039
	Any	.138	20	.200*	.932	20	.170
	Other	.172	8	.200*	.946	8	.666
ISO 14000 Standard	Incinerator	.169	8	.200*	.942	8	.634
	Dumping at Landfill	.178	14	.200*	.907	14	.144
	Any	.137	20	.200*	.961	20	.558
	Other	.239	8	.200*	.896	8	.265
Equipment provide	Incinerator	.171	8	.200*	.928	8	.500
	Dumping at Landfill	.168	14	.200*	.925	14	.256
	Any	.168	20	.143	.933	20	.179
	Other	.273	8	.081	.848	8	.091
Type of waste disposal	Incinerator	.285	8	.056	.759	8	.010
	Dumping at Landfill	.116	14	.200*	.935	14	.358
	Any	.126	20	.200*	.924	20	.120
	Other	.191	8	.200*	.933	8	.543

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Oneway
Company's policy to use what type of waste disposal

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Price	.650	3	46	.587
Service Quality	1.154	3	46	.337
ISO 14000 Standard	1.552	3	46	.214
Equipment provide	1.784	3	46	.163
Type of waste disposal	.431	3	46	.732

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Price	Between Groups	11.656	3	3.885	.037	.991
	Within Groups	4891.456	46	106.336		
	Total	4903.111	49			
Service Quality	Between Groups	263.697	3	87.899	.918	.439
	Within Groups	4402.909	46	95.715		
	Total	4666.606	49			
ISO 14000 Standard	Between Groups	146.602	3	48.867	.510	.677
	Within Groups	4408.438	46	95.836		
	Total	4555.040	49			
Equipment provide	Between Groups	587.281	3	195.760	2.126	.110
	Within Groups	4235.320	46	92.072		
	Total	4822.600	49			
Type of waste disposal	Between Groups	545.872	3	181.957	1.508	.225
	Within Groups	5552.211	46	120.700		
	Total	6098.083	49			

Explore

Waste volume generated per month

Tests of Normality

	Waste volume generated per month	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Price	Below 25 tons per month	.092	35	.200*	.973	35	.520
	Between 26-50 tons per month	.190	6	.200*	.911	6	.442
	Between 51-75 tons per month	.260	2	.			
	Between 76-100 tons per month	.324	3	.	.876	3	.313
	Between 101-200 tons per month	.291	4	.	.931	4	.602
Service Quality	Below 25 tons per month	.148	35	.051	.915	35	.011
	Between 26-50 tons per month	.147	6	.200*	.978	6	.941
	Between 51-75 tons per month	.260	2	.			
	Between 76-100 tons per month	.335	3	.	.858	3	.262
	Between 101-200 tons per month	.307	4	.	.740	4	.031
ISO 14000 Standard	Below 25 tons per month	.090	35	.200*	.957	35	.187
	Between 26-50 tons per month	.251	6	.200*	.866	6	.212
	Between 51-75 tons per month	.260	2	.			
	Between 76-100 tons per month	.313	3	.	.895	3	.369
	Between 101-200 tons per month	.284	4	.	.805	4	.111

Tests of Normality

	Waste volume generated per month	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Equipment provide	Below 25 tons per month	.101	35	.200*	.947	35	.094
	Between 26-50 tons per month	.295	6	.111	.743	6	.017
	Between 51-75 tons per month	.260	2	.			
	Between 76-100 tons per month	.320	3	.	.884	3	.336
	Between 101-200 tons per month	.304	4	.	.807	4	.116
Type of waste disposal	Below 25 tons per month	.124	35	.195	.960	35	.223
	Between 26-50 tons per month	.249	6	.200*	.814	6	.079
	Between 51-75 tons per month	.260	2	.			
	Between 76-100 tons per month	.352	3	.	.825	3	.176
	Between 101-200 tons per month	.261	4	.	.828	4	.164

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Oneway

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Price	2.731	4	45	.041
Service Quality	1.118	4	45	.360
ISO 14000 Standard	1.167	4	45	.338
Equipment provide	1.648	4	45	.179
Type of waste disposal	3.316	4	45	.018

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Price	Between Groups	186.089	4	46.522	.444	.776
	Within Groups	4717.022	45	104.823		
	Total	4903.111	49			
Service Quality	Between Groups	927.099	4	231.775	2.789	.037
	Within Groups	3739.507	45	83.100		
	Total	4666.606	49			
ISO 14000 Standard	Between Groups	407.439	4	101.860	1.105	.366
	Within Groups	4147.600	45	92.169		
	Total	4555.040	49			
Equipment provide	Between Groups	363.513	4	90.878	.917	.462
	Within Groups	4459.088	45	99.091		
	Total	4822.600	49			
Type of waste disposal	Between Groups	1693.967	4	423.492	4.327	.005
	Within Groups	4404.116	45	97.869		
	Total	6098.083	49			

Post Hoc Tests

Multiple Comparisons

LSD

Dependent Variable	(I) Waste volume generated per month	(J) Waste volume generated per month	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Price	Below 25 tons per month	Between 26-50 tons per month	-2.8295	4.52387	.535	-11.9411	6.2820
		Between 51-75 tons per month	6.3521	7.44354	.398	-8.6399	21.3442
		Between 76-100 tons per month	-2.5362	6.15921	.682	-14.9415	9.8691
		Between 101-200 tons per month	3.0846	5.40376	.571	-7.7991	13.9684
	Between 26-50 tons per month	Below 25 tons per month	2.8295	4.52387	.535	-6.2820	11.9411
		Between 51-75 tons per month	9.1817	8.35953	.278	-7.6553	26.0186
		Between 76-100 tons per month	.2933	7.23957	.968	-14.2879	14.8746
		Between 101-200 tons per month	5.9142	6.60879	.376	-7.3966	19.2250
	Between 51-75 tons per month	Below 25 tons per month	-6.3521	7.44354	.398	-21.3442	8.6399
		Between 26-50 tons per month	-9.1817	8.35953	.278	-26.0186	7.6553
		Between 76-100 tons per month	-8.8883	9.34624	.347	-27.7126	9.9360
		Between 101-200 tons per month	-3.2675	8.86662	.714	-21.1258	14.5908

Multiple Comparisons

LSD

Dependent Variable	(I) Waste volume generated per month	(J) Waste volume generated per month	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Price	Between 76-100 tons per month	Below 25 tons per month	2.5362	6.15921	.682	-9.8691	14.9415
		Between 26-50 tons per month	-.2933	7.23957	.968	-14.8746	14.2879
		Between 51-75 tons per month	8.8883	9.34624	.347	-9.9360	27.7126
		Between 101-200 tons per month	5.6208	7.81963	.476	-10.1287	21.3704
	Between 101-200 tons per month	Below 25 tons per month	-3.0846	5.40376	.571	-13.9684	7.7991
		Between 26-50 tons per month	-5.9142	6.60879	.376	-19.2250	7.3966
		Between 51-75 tons per month	3.2675	8.86662	.714	-14.5908	21.1258
		Between 76-100 tons per month	-5.6208	7.81963	.476	-21.3704	10.1287
Service Quality	Below 25 tons per month	Between 26-50 tons per month	2.5987	4.02794	.522	-5.5140	10.7114
		Between 51-75 tons per month	13.4420*	6.62755	.048	.0934	26.7906
		Between 76-100 tons per month	10.8587	5.48401	.054	-.1867	21.9040
		Between 101-200 tons per month	-7.3055	4.81138	.136	-16.9961	2.3851
	Between 26-50 tons per month	Below 25 tons per month	-2.5987	4.02794	.522	-10.7114	5.5140
		Between 51-75 tons per month	10.8433	7.44313	.152	-4.1479	25.8346
		Between 76-100 tons per month	8.2600	6.44594	.207	-4.7228	21.2428
		Between 101-200 tons per month	-9.9042	5.88431	.099	-21.7558	1.9474

Multiple Comparisons

LSD

Dependent Variable	(I) Waste volume generated per month	(J) Waste volume generated per month	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Service Quality	Between 51-75 tons per month	Below 25 tons per month	-13.4420*	6.62755	.048	-26.7906	-.0934
		Between 26-50 tons per month	-10.8433	7.44313	.152	-25.8346	4.1479
		Between 76-100 tons per month	-2.5833	8.32167	.758	-19.3440	14.1774
		Between 101-200 tons per month	-20.7475*	7.89463	.012	-36.6481	-4.8469
	Between 76-100 tons per month	Below 25 tons per month	-10.8587	5.48401	.054	-21.9040	.1867
		Between 26-50 tons per month	-8.2600	6.44594	.207	-21.2428	4.7228
		Between 51-75 tons per month	2.5833	8.32167	.758	-14.1774	19.3440
		Between 101-200 tons per month	-18.1642*	6.96241	.012	-32.1872	-4.1412
	Between 101-200 tons per month	Below 25 tons per month	7.3055	4.81138	.136	-2.3851	16.9961
		Between 26-50 tons per month	9.9042	5.88431	.099	-1.9474	21.7558
		Between 51-75 tons per month	20.7475*	7.89463	.012	4.8469	36.6481
		Between 76-100 tons per month	18.1642*	6.96241	.012	4.1412	32.1872
ISO 14000 Standard	Below 25 tons per month	Between 26-50 tons per month	-6.8992	4.24204	.111	-15.4431	1.6447
		Between 51-75 tons per month	3.3641	6.97982	.632	-10.6939	17.4222
		Between 76-100 tons per month	-6.8742	5.77550	.240	-18.5066	4.7583
		Between 101-200 tons per month	1.3466	5.06711	.792	-8.8590	11.5523

Multiple Comparisons

LSD

Dependent Variable	(I) Waste volume generated per month	(J) Waste volume generated per month	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
ISO 14000 Standard	Between 26-50 tons per month	Below 25 tons per month	6.8992	4.24204	.111	-1.6447	15.4431
		Between 51-75 tons per month	10.2633	7.83875	.197	-5.5247	26.0514
		Between 76-100 tons per month	.0250	6.78855	.997	-13.6478	13.6978
		Between 101-200 tons per month	8.2458	6.19707	.190	-4.2357	20.7274
	Between 51-75 tons per month	Below 25 tons per month	-3.3641	6.97982	.632	-17.4222	10.6939
		Between 26-50 tons per month	-10.2633	7.83875	.197	-26.0514	5.5247
		Between 76-100 tons per month	-10.2383	8.76398	.249	-27.8899	7.4132
		Between 101-200 tons per month	-2.0175	8.31425	.809	-18.7632	14.7282
	Between 76-100 tons per month	Below 25 tons per month	6.8742	5.77550	.240	-4.7583	18.5066
		Between 26-50 tons per month	-.0250	6.78855	.997	-13.6978	13.6478
		Between 51-75 tons per month	10.2383	8.76398	.249	-7.4132	27.8899
		Between 101-200 tons per month	8.2208	7.33248	.268	-6.5475	22.9892
	Between 101-200 tons per month	Below 25 tons per month	-1.3466	5.06711	.792	-11.5523	8.8590
		Between 26-50 tons per month	-8.2458	6.19707	.190	-20.7274	4.2357
		Between 51-75 tons per month	2.0175	8.31425	.809	-14.7282	18.7632
		Between 76-100 tons per month	-8.2208	7.33248	.268	-22.9892	6.5475

Multiple Comparisons

LSD

Dependent Variable	(I) Waste volume generated per month	(J) Waste volume generated per month	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Equipment provide	Below 25 tons per month	Between 26-50 tons per month	-1.6062	4.39844	.717	-10.4651	7.2527
		Between 51-75 tons per month	-3.5779	7.23717	.623	-18.1543	10.9985
		Between 76-100 tons per month	-7.5029	5.98844	.217	-19.5642	4.5585
		Between 101-200 tons per month	-7.9854	5.25394	.136	-18.5673	2.5966
	Between 26-50 tons per month	Below 25 tons per month	1.6062	4.39844	.717	-7.2527	10.4651
		Between 51-75 tons per month	-1.9717	8.12776	.809	-18.3418	14.3985
		Between 76-100 tons per month	-5.8967	7.03885	.407	-20.0736	8.2803
		Between 101-200 tons per month	-6.3792	6.42556	.326	-19.3209	6.5626
	Between 51-75 tons per month	Below 25 tons per month	3.5779	7.23717	.623	-10.9985	18.1543
		Between 26-50 tons per month	1.9717	8.12776	.809	-14.3985	18.3418
		Between 76-100 tons per month	-3.9250	9.08712	.668	-22.2274	14.3774
		Between 101-200 tons per month	-4.4075	8.62080	.612	-21.7707	12.9557
	Between 76-100 tons per month	Below 25 tons per month	7.5029	5.98844	.217	-4.5585	19.5642
		Between 26-50 tons per month	5.8967	7.03885	.407	-8.2803	20.0736
		Between 51-75 tons per month	3.9250	9.08712	.668	-14.3774	22.2274
		Between 101-200 tons per month	-.4825	7.60283	.950	-15.7954	14.8304

Multiple Comparisons

LSD

Dependent Variable	(I) Waste volume generated per month	(J) Waste volume generated per month	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Equipment provide	Between 101-200 tons per month	Below 25 tons per month	7.9854	5.25394	.136	-2.5966	18.5673
		Between 26-50 tons per month	6.3792	6.42556	.326	-6.5626	19.3209
		Between 51-75 tons per month	4.4075	8.62080	.612	-12.9557	21.7707
		Between 76-100 tons per month	.4825	7.60283	.950	-14.8304	15.7954
Type of waste disposal	Below 25 tons per month	Between 26-50 tons per month	8.7385	4.37125	.052	-.0656	17.5427
		Between 51-75 tons per month	-19.5731*	7.19242	.009	-34.0594	-5.0869
		Between 76-100 tons per month	6.0569	5.95142	.314	-5.9299	18.0436
		Between 101-200 tons per month	10.8594*	5.22145	.043	.3428	21.3759
	Between 26-50 tons per month	Below 25 tons per month	-8.7385	4.37125	.052	-17.5427	.0656
		Between 51-75 tons per month	-28.3117*	8.07751	.001	-44.5806	-12.0427
		Between 76-100 tons per month	-2.6817	6.99533	.703	-16.7710	11.4076
		Between 101-200 tons per month	2.1208	6.38583	.741	-10.7409	14.9826
	Between 51-75 tons per month	Below 25 tons per month	19.5731*	7.19242	.009	5.0869	34.0594
		Between 26-50 tons per month	28.3117*	8.07751	.001	12.0427	44.5806
		Between 76-100 tons per month	25.6300*	9.03093	.007	7.4408	43.8192
		Between 101-200 tons per month	30.4325*	8.56749	.001	13.1767	47.6883

Multiple Comparisons

LSD

Dependent Variable	(I) Waste volume generated per month	(J) Waste volume generated per month	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Type of waste disposal	Between 76-100 tons per month	Below 25 tons per month	-6.0569	5.95142	.314	-18.0436	5.9299
		Between 26-50 tons per month	2.6817	6.99533	.703	-11.4076	16.7710
		Between 51-75 tons per month	-25.6300*	9.03093	.007	-43.8192	-7.4408
		Between 101-200 tons per month	4.8025	7.55582	.528	-10.4157	20.0207
	Between 101-200 tons per month	Below 25 tons per month	-10.8594*	5.22145	.043	-21.3759	-.3428
		Between 26-50 tons per month	-2.1208	6.38583	.741	-14.9826	10.7409
		Between 51-75 tons per month	-30.4325*	8.56749	.001	-47.6883	-13.1767
		Between 76-100 tons per month	-4.8025	7.55582	.528	-20.0207	10.4157

*. The mean difference is significant at the .05 level.

Explore
Length of the use of current service

Tests of Normality

	Length of the use of current service	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Price	Less than 6 months	.222	7	.200*	.880	7	.227
	6 months - 1 year	.150	9	.200*	.940	9	.580
	1 - 2 years	.137	9	.200*	.964	9	.836
	More than 2 years	.158	25	.110	.927	25	.075
Service Quality	Less than 6 months	.172	7	.200*	.973	7	.917
	6 months - 1 year	.162	9	.200*	.963	9	.829
	1 - 2 years	.240	9	.142	.864	9	.106
	More than 2 years	.147	25	.169	.915	25	.039
ISO 14000 Standard	Less than 6 months	.202	7	.200*	.936	7	.604
	6 months - 1 year	.146	9	.200*	.929	9	.470
	1 - 2 years	.277	9	.045	.839	9	.056
	More than 2 years	.138	25	.200*	.973	25	.712
Equipment provide	Less than 6 months	.146	7	.200*	.968	7	.886
	6 months - 1 year	.214	9	.200*	.935	9	.527
	1 - 2 years	.259	9	.083	.857	9	.089
	More than 2 years	.163	25	.086	.918	25	.046
Type of waste disposal	Less than 6 months	.208	7	.200*	.945	7	.681
	6 months - 1 year	.165	9	.200*	.959	9	.792
	1 - 2 years	.303	9	.017	.818	9	.033
	More than 2 years	.173	25	.052	.898	25	.016

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Oneway

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Price	2.684	3	46	.058
Service Quality	1.502	3	46	.227
ISO 14000 Standard	.765	3	46	.520
Equipment provide	1.366	3	46	.265
Type of waste disposal	1.486	3	46	.231

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Price	Between Groups	75.258	3	25.086	.239	.869
	Within Groups	4827.853	46	104.953		
	Total	4903.111	49			
Service Quality	Between Groups	173.419	3	57.806	.592	.624
	Within Groups	4493.187	46	97.678		
	Total	4666.606	49			
ISO 14000 Standard	Between Groups	467.475	3	155.825	1.754	.169
	Within Groups	4087.564	46	88.860		
	Total	4555.040	49			
Equipment provide	Between Groups	244.502	3	81.501	.819	.490
	Within Groups	4578.099	46	99.524		
	Total	4822.600	49			
Type of waste disposal	Between Groups	359.463	3	119.821	.960	.419
	Within Groups	5738.620	46	124.753		
	Total	6098.083	49			

Explore
Department of respondent's position hold

Tests of Normality

	Department of respondent's position	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Price	Purchasing	.152	21	.200*	.946	21	.282
	Environmental & Safety	.142	10	.200*	.917	10	.329
	Administration	.268	12	.017	.883	12	.096
	Other	.229	5	.200*	.916	5	.505
Service Quality	Purchasing	.155	21	.200*	.913	21	.063
	Environmental & Safety	.157	10	.200*	.959	10	.777
	Administration	.204	12	.180	.892	12	.126
	Other	.150	5	.200*	.997	5	.997
ISO 14000 Standard	Purchasing	.121	21	.200*	.959	21	.504
	Environmental & Safety	.211	10	.200*	.884	10	.144
	Administration	.111	12	.200*	.972	12	.929
	Other	.275	5	.200*	.861	5	.231
Equipment provide	Purchasing	.161	21	.160	.936	21	.183
	Environmental & Safety	.261	10	.053	.886	10	.154
	Administration	.265	12	.020	.832	12	.022
	Other	.137	5	.200*	.993	5	.989
Type of waste disposal	Purchasing	.133	21	.200*	.948	21	.314
	Environmental & Safety	.185	10	.200*	.959	10	.773
	Administration	.212	12	.142	.910	12	.213
	Other	.269	5	.200*	.889	5	.352

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Oneway
Department of respondent's position hold

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Price	3.688	3	44	.019
Service Quality	1.314	3	44	.282
ISO 14000 Standard	.182	3	44	.908
Equipment provide	.246	3	44	.864
Type of waste disposal	2.486	3	44	.073

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Price	Between Groups	242.563	3	80.854	.769	.518
	Within Groups	4627.614	44	105.173		
	Total	4870.176	47			
Service Quality	Between Groups	427.530	3	142.510	2.025	.124
	Within Groups	3096.834	44	70.383		
	Total	3524.364	47			
ISO 14000 Standard	Between Groups	156.010	3	52.003	.544	.655
	Within Groups	4204.676	44	95.561		
	Total	4360.686	47			
Equipment provide	Between Groups	150.682	3	50.227	.512	.676
	Within Groups	4317.459	44	98.124		
	Total	4468.141	47			
Type of waste disposal	Between Groups	433.471	3	144.490	1.577	.209
	Within Groups	4032.614	44	91.650		
	Total	4466.085	47			

Explore
Decision Role of Respondents

Tests of Normality

	Decision Role of Respondents	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Price	Influencer	.109	28	.200*	.954	28	.248
	Decision Maker	.183	12	.200*	.919	12	.275
	User	.127	10	.200*	.978	10	.951
Service Quality	Influencer	.178	28	.023	.936	28	.086
	Decision Maker	.112	12	.200*	.956	12	.718
	User	.224	10	.167	.892	10	.181
ISO 14000 Standard	Influencer	.076	28	.200*	.973	28	.657
	Decision Maker	.227	12	.089	.953	12	.677
	User	.180	10	.200*	.904	10	.242
Equipment provide	Influencer	.131	28	.200*	.943	28	.133
	Decision Maker	.172	12	.200*	.900	12	.160
	User	.165	10	.200*	.905	10	.246
Type of waste disposal	Influencer	.098	28	.200*	.928	28	.054
	Decision Maker	.209	12	.157	.886	12	.104
	User	.171	10	.200*	.930	10	.452

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Oneway
Decision Role of Respondents

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Price	.670	2	47	.517
Service Quality	2.286	2	47	.113
ISO 14000 Standard	.668	2	47	.517
Equipment provide	2.161	2	47	.127
Type of waste disposal	.463	2	47	.632

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Price	Between Groups	104.598	2	52.299	.512	.602
	Within Groups	4798.514	47	102.096		
	Total	4903.111	49			
Service Quality	Between Groups	483.372	2	241.686	2.715	.077
	Within Groups	4183.234	47	89.005		
	Total	4666.606	49			
ISO 14000 Standard	Between Groups	194.160	2	97.080	1.046	.359
	Within Groups	4360.879	47	92.785		
	Total	4555.040	49			
Equipment provide	Between Groups	101.768	2	50.884	.507	.606
	Within Groups	4720.832	47	100.443		
	Total	4822.600	49			
Type of waste disposal	Between Groups	495.799	2	247.900	2.080	.136
	Within Groups	5602.284	47	119.198		
	Total	6098.083	49			