

**BAN ON PLASTIC BAGS USAGE: IS IT A RIGHT MOVE?**  
**AN EMPIRICAL STUDY ON CONSUMER PERCEPTION AND PRACTICE**

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**UNIVERSITI SAINS MALAYSIA**

**Research Report in partial fulfillment of the requirements for the degree of**

**Master of Business Administration**

**2010**

## **ACKNOWLEDGEMENTS**

I would like to thank my supervisor, Associate Professor Dr. K. Jeyaraman, for insightful conversations during the development of the ideas in this thesis, for valuable inputs on the analysis of the project, and for helpful comments on the text. I acknowledge his help and expertise with gratitude. I am also grateful to the Graduate School of Business, the Institute of Post Graduate Studies and Library of University Science Malaysia for providing me with various facilities during the tenure of my thesis.

I thank Dr Lim and Dr Yahya for providing helpful comments during the forming of the questionnaire. I would like to express my appreciations to my families, friends, colleagues and course mates for their support, patience, tolerance and understanding for my tendency to let this research project takes over all else..

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**BAN UNTUK PEMAKAIAN BEG PLASTIK: ADAKAH INI TINDAKAN BETUL?  
SATU EMPIRIK PENYELIDIKAN PADA PERSEPSI DAN PRAKTIK UNTUK  
PENGGUNA**

**ABSTRAK**

Penggunaan beg plastik telah menyebabkan manfaat dan kerugian dalam kehidupan kita sehari-hari. Beg plastic juga menyebabkan bahaya bagi persekitaran. Kebersihan dan sisa juga menjadi masalah besar kerana beg plastik boleh dilihat bertaburan di seluruh bandar. Penggunaan beg plastik untuk makanan panas tidak hanya menyebabkan ketidakselesaian tersebut tetapi juga boleh menyebabkan bahaya pada kesihatan. Beg plastik umumnya digunakan untuk makanan panas di warung jajanan, kedai makanan dan kedai kopi di Penang. Bahaya muncul jika jenis plastik yang salah digunakan kerana penghijrahan kimia antara plastik dan makanan yang disebabkan oleh suhu dan kandungan makanan. Menurut konsep pemasaran hijau, stakeholder seperti pelanggan memainkan peranan penting dalam persekitaran dan kesedaran kesihatan. Perniagaan pemilik perlu selaras dengan pendapat pelanggan tentang isu hijau untuk memastikan perniagaan mereka tidak akan terjejas. Oleh kerana itu, kajian ini sedang dilakukan untuk memahami persepsi dan amalan bagi pengguna di Penang berdasarkan isu ini. Faktor-faktor yang mempengaruhi persepsi dan amalan juga akan dikenalpasti until menbolehkan cadangan yang betul dibuat untuk meningkatkan kesedaran awam dan meminimumkan penggunaan beg plastik akhirnya.

**BAN ON PLASTIC BAGS USAGE: IS IT A RIGHT MOVE?**  
**AN EMPIRICAL STUDY ON CONSUMER PERCEPTION AND PRACTICE**

**ABSTRACT**

The usage of plastic bag has causes both convenience and inconvenience in our daily lives. It causes environmental hazards as most plastic bags are not bio-degradable. Hygiene and wastage issue are also being alarmed as plastic bag can be seen littered all across the town. Usage of plastic bag for hot edible items not only causes such inconveniences but it may also cause health hazards of the consumer. Plastic bag is commonly used to pack hot edible items in hawker stall, food court and coffee shop in Penang. The danger arises when wrong type of plastic is being used as chemical migration between plastic and food can be maximized by temperature and content as there is direct contact between the hot edible items and the plastic itself. According to green marketing concept, stakeholders such as the consumer play a pivotal role in the environmental and health consciousness. Business owner will have to align with consumer's opinion on green issue so that their business will not be affected. Therefore, this study is being conducted in order to understand the consumer perception and practice in Penang based on this issue. Factors influencing the perception and practice will also be identified so that recommendation can be made to raise public awareness and minimize the usage of plastic bag ultimately.

Keywords: plastic bags, perception, practice, waste management, health hazards, environmental hazards, green marketing, stakeholder theory

## **Chapter 1**

### **Introduction**

#### **1.1 Background of the Study**

The environmental consciousness of the public and consumer has been increasing due to emergence of campaigns through media and public education during the century. The green concept is embraced by a lot of organizations and rabid environmentalists. Green product such as product without hazardous materials, energy saving components or recyclable items is very common in the society. There are also individuals who give priority to green product which bears eco-labels during their purchase. One of the more well known “green” consumer products is Body Shop who claims their products to be non-animal tested with recycling/refillable policies.

In order to be compatible in this business world, a lot of company has succumbed to practice green concept due to customer pressure and government regulation. For example, there is a regulation in EU countries called RoHS (Restriction of Hazardous Substances Directive). This regulation restricts the use of six hazardous materials in manufacturing of electronic and electrical equipment in EU countries. Therefore, manufacturers who export their products to EU have to be compliance to this regulation as well. Thus in this case, government becomes a power stakeholder which enforces the company to practice green concept.

However, even though bigger organizations have started to take notice and participate in green concept, one must not ignore the smaller business owner. In Malaysia, small businesses can be seen all around the street – the most prominent being hawker who sells foods and drinks in coffee shop or even at roadside. The most common packaging that

hawker uses for their business is normally plastic bag. It's even used to pack boiling hot food or drinks. This raises the concern for some individuals and even the authorities since this practice not only affects the environment, but might cause health issues as well. For example, misuse of plastic bag in direct contact with high temperature food or drink might causes chemical migration between the food and plastic.

In conjunction with green marketing concept, it's noted that stakeholders such as government, consumer and business owner are very important for a successful plastic bag reduction implementation. This study will concentrate on one of the most important stakeholders which is the consumer. Consumer plays a very important role as their opinion affects another stakeholder which is organization or even government to react on the issue in order to maintain the good reputation in public eyes. In this case – the small business owner is the stakeholder who might be affected if the consumer has opinion regarding the packaging material of their products. Therefore, in order to reduce the usage of plastic bags which are used to pack hot edible items, the perception and practice of the consumer should be studied in order to understand the influencing factors so that strategy can be planned to moderately reduce the usage of plastic bags in Malaysia.

## **1.2 Problem Statement**

Plastic bag is a serious problem all around the world for destroying environment. It creates wastages problem, harms the environment and causes health hazards if being misused. However, people are still using it due to easy availability, small storage place, weight convenience and cost effectiveness. As city being swarmed with plastic bag which causes flood, environmental and even health hazards, actions are being taken in a lot of countries to minimize the usage of plastic bag. Some countries have imposed strict law and regulation to

overcome this issue. For example, it's illegal to use plastic bag in some countries and whoever uses it will be jailed or fined.

In Malaysia, Penang is having its "No Plastic Bag Day" every Monday since 2009 and starting from 2010, the "No Plastic Day" is being extended to Monday, Tuesday and Wednesday. However, it's noted that scientific research in this area for Malaysia is still lacking. More researches should be conducted in this area as 24% of Malaysian wastages are consisted of plastic.

Plastic bags can be seen all around Malaysia for grocery, retail and food stall. In Penang, take away foods or drinks packed in plastic bags are a very common occurrence. Plastic bag applications for hot edible items can be dangerous as misusing of wrong type of plastic bag may causes chemical migration from the plastic to the food. Those chemicals include Styrene, Bisphenol A and Phthalates which cause cancer, heart disease and reproduction issue. A lot of public figures in Malaysia have also urged the public to avoid using plastic bags to pack hot edible items due to health and environment issues.

Therefore, the consumer perception and practice in Penang for the issue should be studied to investigate the differences between perception and practice in order to understand the consumer opinion of plastics bag which is being used to pack hot edible items. The factor causing the differences will be studied in order to understand the situation so that recommendation can be made. According to green marketing concept, one of the stakeholders in making a successful environmental and health awareness and practice are the consumer itself as consumer power can be strong if they make their voices heard. In this study, the respondents will be consisting of the consumer who parcel hot food or drink from the stalls. The perception and practice of consumer is important in this study as according to

stakeholder concept, business owner normally react to consumer's opinion so that their business won't be affected.

### **1.3 Research Objectives**

There are two major research objectives for this research based on the current or lack of literature on the plastic bags issue in Malaysia. The two major objectives are listed below:

1. To investigate the differences between the perception and practice of the consumers who are using plastic bags to pack hot edible items
2. To find out the influencing factors to the perception and practice of the consumers regarding plastic bags which is used to pack hot edible items

### **1.4 Research Questions**

This study will examine the factors which contribute to perception and practice and the relationship between these two viewpoints of the usage of plastic bags for hot edible items. Therefore, the two major research questions of the study are:

1. What are the differences between perception and practice of the consumer in Penang regarding plastic bags which is used to pack hot edible items?
2. What are the factors that contribute to the perception and practice of the consumer in Penang regarding plastic bags which is used to pack hot edible items?

### **1.5 Significance of the Study**

Plastic bags can be a nuisance in the society. It can cause wastage problem as most plastic bag is not bio-degradable if buried. It may releases unhealthy gases when burned. It

may cause hygiene problem on the street which at the end causes diseases. Even though the Malaysian government has now trying to raise awareness on this issue, plastic bags are still widely used in shopping mall, retail shops and small business owners such as hawkers. Plastic bags in Malaysia are particularly used by hawkers to pack hot edible items. In this study, plastic bags which are used to pack hot edible items will be studied as there is no previous study on this area at all. The differences between a normal plastic bag study and this study are due to the additional health issue which may be caused. A normal plastic bag might causes environment hazards but a plastic bag which is used to pack hot edible items has a direct contact of food and plastic which might cause chemical migration which is harmful to the consumer's health directly.

In order to get to the catalyst of the issue, the perception of the consumer in Penang is studied to understand the consumer opinion on the issue. This research will investigate whether the consumer is aware of the danger of plastic bags which has direct contact with hot edible items in several different perspectives such as health, environment, awareness, spoilage and regulation. It's hoped that this will bring more awareness to the consumer on this issue.

However, it should be noted that a perception does not translate into practice. Therefore, consumer practice will be examined in order to understand the actual action of the consumer in aforementioned perspectives as well. With this research, the more important factors can be identified so that action can be planned to overcome the factors which restrict the public from practicing the appropriate endeavor in plastic bag issue so that plastic usage can be reduced.

This will help to improve the environmental and wastages overflow concern in Penang as plastic bag has become a hot issue with the government lately specially in Penang



which practices “No Plastic Day” on Monday until Wednesday. There is also comment that plastic bags which clogged in the sewer actually contributes to flash flood in Penang. This research will hopefully help to improve the health of the public from avoiding eating any food or drink which might have chemical migration from the plastic bags.

## **1.6 Definition of Key Term**

In an effort to better aid the understanding of the findings in this study, a conceptual definition of key terms from all the variables of study is provided. The following shows the definition of key terms and the sources of the definition.

### *Plastic bags*

Plastic bags in this study consist of plastic bags used to pack hot edible items from small business such as hawkers, restaurant, coffee shop and food court.

### *Perception*

The process of attaining awareness or understanding, conscious understanding of something – one’s perception may base on past experiences, culture and one’s own interpretation.

### *Practice*

Translating an idea into action and actively engage, the act of engaging in an activity, a customary way of operation or behavior

### *Waste Management*

The collection, transport, processing, recycling or disposal and monitoring of waste materials (EPA, 2008).

### *Health Hazards*

Substances that pose a health hazard through either acute (immediate) or chronic (long-term) toxicity (University of Maine, 2006).

### *Environmental Hazards*

A situation or event which poses a threat to the surrounding environment.

### *Green Marketing*

Marketing of products that are presumed to be environmentally safe.

### *Stakeholder Theory*

The theory that an organization can enhance the interests of its stockholders without damaging the interests of its wider stakeholders.(Business dictionary, 2009)

## **1.7 Organization of Remaining Chapters**

This section will explain the organization of the chapters for easy viewing.

### *Chapter 1*

This chapter presents the overview and the direction of the study. The background of the study, problem statements, research objectives, the purpose of conducting the study and the significant of the study also has been highlighted in this chapter.

### *Chapter 2*

This chapter discusses the relevant theories and literature from past research in order to strengthen the framework of the study. Most of the topics will cover the perception and practice, plastic issues, waste management, green marketing, health hazards and environmental hazards. Framework and justification of the variables are also being presented in this chapter.

### *Chapter 3*

The chapter discusses the methodology and research design of the study which includes measures, questionnaire design, units of analysis, sampling and pilot testing. The questionnaire design will be presented in detail with relevant reference to the literature.

### *Chapter 4*

This chapter will include the findings and results of the study which includes the relationship between perception and practice for the usage of plastic bags for hot edible items and the factors that influence the perception and practice.

### *Chapter 5*

A detailed discussion of the findings will be discussed with concluding remarks and recommendation of future research.

## Chapter 2

### Literature Review

#### 2.1 Introduction

The amount of municipal solid waste in Malaysia has been increasing over the year. Malaysian generates approximately 18,000 metric tons of municipal waste a day and is expected to reach 31,000 metric tons per day in 2020. As environmental awareness is rising around the world, Malaysian government has prioritized solid waste management under the 9<sup>th</sup> Malaysian Plan. The “Solid Waste and Public Cleansing Management Act 2007” was gazetted in 2007 to set up a National Solid Waste Management Department (under the Ministry of Housing and Local Government) as the regulatory body to manage solid waste from the local authorities and to come up with strategies to implement a better waste management system. Datuk Seri Ong Ka Ting mentions that this bill is important for recycling, reducing and reusing (3Rs Concept).

It should be aware that insufficient or ineffective Municipal Solid Waste Management (MSWM) not only causes environmental pollution, it also causes health hazards to residents as well. According to a medical research by Rushton (2003), waste management with landfill or incinerator can cause potential health hazards which depend on the waste characteristics. This is particularly harmful to those living in proximity to the sites.

In Malaysia, all wastes are disposed in municipal landfill. There are 261 landfill sites in Malaysia as of April 2007. However, it should be noted that about 111 of these sites are closed which left only 150 operating landfills. There are also issues that some of the landfills are not sanitized. Therefore, one of the 9<sup>th</sup> Malaysian Plan’s goals is to upgrade the unsanitary

landfills and construct new sanitary landfills with material recovery facilities to fulfill the 3Rs concept.

Due to lack of literatures which is concentrated on plastic on this issue, a more general theme of literature review on municipal solid waste will be discussed. However, it should be noted that the relationship between municipal solid waste and plastic is very much related as plastic is also categorized as a type of solid municipal solid waste. The discussion will gradually turn into a more specific aspect in plastic bags for hot edible items at the end of this review. The business issue related will also be discussed.

This section will be divided into 4 main categories:-

- Factors influencing public behavior

This section will discuss on the factors which influence public behavior when it comes to issue related to environment such as government enforcement, education and perception.

- Public perception and practice

As per the research title, the relationship between public perception and practice will be discussed as it should be noted that perception may not necessarily lead to practice.

- Plastic – type, manufacturing process, health hazards, usages and controls

As this research is related to plastic, thus the introduction of plastic will be provided and discussed thoroughly.

- Business related concept of the study – green marketing and stakeholder theory

## **2.2 Factors Influencing Public Behavior on Environmental Issue**

In Taiwan, the government has successfully implemented their zero-waste goal in which they manage to reduce the average daily per capita weight of MSW from 1.14kg to 0.81kg in 2002. In this study by Lu *et al.* (2006), the most important factors of the minimization of the MSW are the government's policy which combines the MSW collection with reduction and recycling programs and the policy of extended producer responsibility. For example, waste recycling is mandatory by law and setting up environmental education for the public to promote waste reduction and recycling by enforcing mandatory public participation. Moreover, they also set up restriction on the use of plastic bags as well.

In Malaysia, a recent study from Manaf *et al.* (2009) evaluates that this new step of solid waste management will promote sustainable development and resolve the resource depletion and environmental pollution. However, few challenges are also identified such as lack of infrastructure, process inefficiency, and communication issues among relevant agencies, inadequate legal provision and lack of skilled manpower. These factors may jeopardize the 3Rs concept.

Other than those factors, public awareness is also very important especially when there is no comprehensible law and regulation from the government on the waste disposal or 3Rs by each individual currently. This is supported by a study by Troschinetz and Mihelcic (2009) on the municipal solid waste management (MSWM) in 23 developing countries which includes Malaysia. This paper identifies 12 factors that influence the recycling of MSWM as household education, household economics, government policy, government finances, waste characterization, waste collection and segregation, MSWM administration, MSWM Personnel education, MSWM plan, local recycled-material market, technological and human resources and land availability. It also stressed that these 12 factors are interrelated to each

other. For example, government policy can be influential to the household education on waste characteristics. This paper has similarity from the previous Taiwan case study in which government law enforces public awareness and practices on waste reduction.

Another study was done by Shekdar (2009) for a sustainable solid waste management for Asian countries and he also come up with seven factors to maintain or improve MSWM which is public participation, policy, financial, institutional arrangement, operations and appropriate technology. From all the studies in MSWM, it's noted that public participation does have a crucial role to the success of 3Rs no matter whether it's being enforced or voluntary. This is because public is the main catalyst as every single effort will roll up to big achievement nationally.

It also should also be noted that public awareness and government regulations are featured prominently in these studies, these two factors will be incorporated into the framework of this study and detail discussion will be provided in later section.

### **2.3 Public Perception and Practice**

There are a few studies to examine the perception of the public regarding MSWM. A study by Huang *et al.* (2006) in Ningbo, China discovers that 31% of the respondents perceived that individual is obliged to environmental management. Since MSW is chosen as the major environmental problem in the city, there is a survey on whether the respondents are willing to participate in household waste sorting for reuse and recycling. From the survey, 60% of the respondents are willing to participate. However, there are also respondents mentions participation will only possible if the government makes it mandatory. Some were mentioning there is no point to separate household waste because there was simply insufficient system and awareness in the city. However, it will be an interesting study to

gather on the percentage of actual participation of the 60% respondents earlier. Unfortunately there is no follow up on this actual participation of the respondents.

In Malaysia, a similar study was conducted to investigate the household attitude of towards MSW recycling by Omran *et al* (2009). In this survey done in Kedah, Omran had discovered that race, occupational and house type plays a significant role in the hypothesis. 25.7% respondents have given the reasons for not practicing recycling are due to inconveniency and not enough time to do so, 32.66% states that it's due to facility distance and inadequacy. Some simply mention that they do not know what to do at all or have no interest to practice at all it's concluded in this study that even though some households are aware of recycling generally, it does not translated to practicing. . Education of awareness from early age about the possible benefits of recycling and to create practical knowledge should be enforced and facility accessibility should be prioritized to create convenience to the residents.

Therefore, it should be realized that both awareness/perception and practice are crucial for a successful implementation of waste management. As mentioned in previous article, even if one is aware and perceive that the task is important or beneficial to the environment or health, one does not necessarily practice the task. It will be interesting to see the correlation between these two dimensions and to find out the factors which influence on the correlation for this case study which concentrated on plastic in Penang.

#### **2.4 Plastic Problem**

As mentioned in previous section, it's noted that Malaysian generates 18,000 metric tons a day. Table 2.1 shows the breakdown of the waste category in accordance to the 9<sup>th</sup> Malaysian Plan. The waste in Penang Island is about 1500-1600 tons a day – which is about 1kg per person. According to Penang Chief Minister Mr. Lim Guan Eng, the local councils



had spent RM57.6 million to pay for waste disposal in 2007 (Chong, 2009). It should be pointed out that plastic issue not only post dangerous in environment such as wastages as discussed in length in pervious section, it also can post health hazards to the consumer as well.

Plastic is one of the trickiest wastes because most of the plastic is not biodegradable. Even though plastic manufacturer has since came up with biodegradable plastic, there are still some question that whether this degradable plastic can eliminate the environmental hazard or just act as a marketing tool for plastic manufacturer.

Table 2.1  
*Percentage by Waste Category in Malaysia (Economic Planning Unit, 2006)*

<b>Category</b>	<b>Percentage</b>
Food Waste	45%
Plastic Waste	24%
Paper Waste	7%
Iron and Glasses	6%
Others	18%

In Delhi India, officials have announced that the penalty for carrying a polythene shopping bag would be five years in prison as they decide that this is the only way to reduce the plastic bag usage. The Indian Officials decided that this is the only way to reduce wastages. The "use, storage and sale" of plastic bags of any kind or thickness will be banned.

In Penang, plastic can be seen littered or clogged in water channel, drainage and streets. On July 01, 2009, Penang declares that Monday as a “No Plastic Bags Day” in order to fight off the 25.2 millions plastic bags given away in 2008 in Penang from six major groups of supermarkets. However, this number does not account for the plastic distributed by retailers, hawkers and other traders. With this “No Plastic Day” Campaign, the government estimates that 2.1 million plastic bag can be reduced each month. (Filmer & Chin, 2009). In 2010, “No Plastic Bags Day” in Penang has been extended from Monday until Wednesday in

order to further reduce the usage of plastic bags. However, one should notices that not all business owners participate in this campaign. Plastic Bags are still being used in retail shop and other small businesses.

## **2.5 Plastic Components, Types and Usages**

According to USEPA (2008), plastics are polymers which are chains of molecules. Each link of the chain is usually made of carbon, hydrogen, oxygen, and/or silicon. It made by combining monomers into polymers under great heat and pressure in a process called polymerization. Plastics can be divided in to two major categories: thermosets and thermoplastics. A thermoset is more durable and strong thus is used primarily in automobiles, construction applications, adhesives, inks, and coatings. A thermoplastic is weaker and softer and is used to produce milk jugs, floor coverings, credit cards, and carpet fibers.

Each manufacturer has its own proprietary formula for each plastic. And each uses a variety of additives such as plasticizers for flexibility, UV filters for protection from sunlight, antistatic agents, flame-retardants, colorants, antioxidants, and more. Heavy metals such as cadmium, mercury, and lead are common additives (Rosato, 2000).

This plastic identification code (PIC) was introduced by the Society of Plastics Industry to provide a uniform system for identification. There are seven groups of plastics which are used worldwide but in food related context as in Table 2.2.

According to US Food and Drug Administration (FDA), these plastics are being defined as “Food Contact Substances”. Some of the toxins might migrate from the plastic to the substances they contacted. Even though there are rules set that the plastic should be tested for safety for approval by FDA, there are still doubts on the testing method of the plastic due to conflict of interest and lack of knowledge in plastic migration process. Other than

migration, it may also include chemical changes in the food, package, or both thus causing food contamination, loss of package integrity, or decrease in quality. The most common food and plastic interactions are the migration of low molecular weight substances such as stabilizers, plasticizers, antioxidants, monomers, and oligomers from plastic packaging materials into food (Arvanitoyannis & Bosnea, 2004 as cited in Khaksar & Khansari, 2009). Table 2.3 shows the commonly migrated chemical into food when plastics is being misused to handle hot edible items.

Therefore, it's important that vendor or consumer does not misuse the plastics in order to minimize the health hazards. For example, plastic cling film should not be used to overly hot food and plastic packaging for takeaway plastics is only safe for one time use if the correct plastic is applied. There is also doubt that whether food stall owner on the street has knowledge in choosing the 'best' plastic bag to pack the food to the customer. Study is yet to be done in this area in Penang to test the awareness and perception of the public in plastic knowledge especially for street vendor.

In Dubai, a case study was done to test the vendor's ability to select the suitable plastic cup in serving hot drinks. It's noted that the cup which is PS plastic (group 6) is non suitable at all because its maximum serving temperature only 85 degree Celsius while the hot drink which was poured in the cup might be hotter than that. It's mentioned that there might be migration probability of styrene in this case. In order to minimize the risk, the recommendation was to prohibit the use of PS plastic cup in serving hot beverages and to guide the consumers to use the correct cups. Recommendations are also made to organize more consumer awareness through media and schools (Mohammed, 2007).

Table 2.2

*Plastic Identification Code and Its Attributes for Food Items (Source: Agri-Food & Veterinary Authority of Singapore, 2008)*







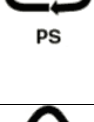
Plastic Identification Code	Type of plastic polymer	Properties	Common Packaging Applications
	Polyethylene Terephthalate (PET, PETE)	Clarity, strength, toughness, barrier to gas and moisture.	Soft drink, water and salad dressing bottles; peanut butter and jam jars
	High Density Polyethylene (HDPE)	Stiffness, strength, toughness, resistance to moisture, permeability to gas.	Milk, juice and water bottles; yogurt and margarine tubs; trash and retail bags.
	Polyvinyl Chloride (V)	Versatility, clarity, ease of blending, strength, toughness.	Juice bottles; cling films
	Low Density Polyethylene (LDPE)	Ease of processing, strength, toughness, flexibility, ease of sealing, barrier to moisture.	Frozen food bags; squeezable bottles, e.g. honey, mustard; cling films; flexible container lids.
	Polypropylene (PP)	Strength, toughness, resistance to heat, chemicals, grease and oil, versatile, barrier to moisture.	Reusable microwaveable ware; kitchenware; yogurt containers; margarine tubs; microwaveable disposable take-away containers; disposable cups and plates.
	Polystyrene (PS)	Versatility, clarity, easily formed	Egg cartons; disposable cups, plates, trays and cutlery; disposable take-away containers; yoghurt and margarine containers
	Other	Dependent on polymers or combination or polymers.	Beverage bottles; baby milk bottles.

Table 2.3  
*Chemicals from Migration and their Health Hazards*

<b>Chemical</b>	<b>Health Hazards</b>
Styrene - a monomer used in the production of polystyrene.	potential human carcinogen
Bisphenol A - a monomer used in the production of polycarbonate.	heart disease, diabetes, and abnormally high levels of certain liver enzymes
Phthalates - an additive used in the manufacture of plastic cling films to increase their flexibility.	adverse male reproduction problems.

Another test is also done to investigate the determinants of migration of chemical from polystyrene (PS group 6) cup as well. It was found that styrene monomer will migrate into the hot beverages depending upon the fat content, temperature and time. However, temperature is the most crucial factor as the level of migration increases when temperature increases (Khaksar & Khansari, 2009)

In Penang, there are still a lot of retailers and hawkers who do not practice this “No Plastic Bags Day”. Therefore, even though Penang has “No Plastic Bags Day”, it does not affect or reduce the plastic bags for edibles items at all. This plastic not only affects environment, it also might causes health hazards directly towards consumers from chemical migrated into the food which then the food is being consumed by people as mentioned in above section. This means that the plastic is getting into the body of the consumer itself.

Hot edible items can be seem to be wrapped in plastic bags in food court in major shopping mall, hawker center or café especially for take out food or drinks in Penang. Below are a few examples of hot edible items being packed in plastic bag for take-out:-

- In a major mall food court, take out food such as hot soup can be seem to be packed in soft plastic bags when it’s steamy hot.

- Local hawker stall all across Penang can be seen using soft plastic bags to pack all kind of hot soups, hot noodles and similar items straight from the wok, hot drinks such as coffee, tea and any other hot drink available.
- Some local café packing hot drink with plastic bags

It should be alarmed that normally those plastic bags from food court or hawker stall does not have any plastic identification code on it to prove that it's safe for hot items. Therefore, the consumer has little choice to determine whether it's safe to eat those foods after being packed. Another concern is whether the consumers are aware of the type of plastic for hot items packaging at all. The knowledge and the sense of responsibility and integrity of food safety from those vendors are also questionable. Even though some might have the plastic identification code, but the concern is still the consumer and vendor's knowledge and awareness of the food safety. The source of the plastic bag is also a concern because some might be sold cheaply but being banned in other countries.

As the usage of plastic is high, one must wonder the reason plastic bag is so popular or frequently used in the world. A study was done in Kenya by Njeru (2006) in which the respondents feel that plastic bags are popular due to:-

- Easy availability – plastic bag is everywhere because it's cheaper than other alternative such as paper bag or metal container. Furthermore, it's easier to be sealed or made parcel.
- Easy storage – the size of plastic bag is very small if compared with other container. In this case, the people don't need a big storage place for plastic bag.
- Weight convenience – a very light plastic bag can carry at least some amount of weight due to its resiliency.

Like Malaysia, Kenya's fast food outlets, street vendors and vegetable markets also provides plastic bags for the customers. According to the interview, 50% of the respondents are unaware or do not understand the environmental consequences. Majority of them also perceives that education and awareness campaigns as important to overcome this problem but are frustrated because lack of action of the government.

There are also a lot of public figures in Malaysia who has urged the public to be more aware of plastic bag hazards and they are constantly commenting on this issue in newspaper. According to Prof Dr Mustafa Ali Mohamad, deputy dean of Faculty Medicine , Universiti Malaya, plastic bags are not meant for storing hot drinks and or other liquid at all unless the plastic is made for heat resistant. The use of these plastic which was made from cheap material would promote chemical seepage from the plastic. It's particularly serious if the drink contained milk which had fat that could further promote the migration. Former Health Minister Datuk Seri Dr Chua Soi Lek says "*that it was crucial for consumers not to misuse packaging materials in an "unintended or unanticipated manner"*" (Edwards, 2007).

The Consumer Association of Penang (CAP) advisor Dr. T. Jayabalan who is also a member of the National Poison Center also urged the consumers to avoid using plastic bags, polystyrene boxes and cling wrap to package their food due to the fear of high heat from food causing migration from the plastic. The Federation of Malaysian Consumers Associations (FOMCA) chief executive officer Mohd Yusof Abdul Rahman also hoped that Malaysian authorities would conduct more research in this matter and to set up a stricter regulation on plastic bags especially for hot food on Malaysian's street stalls (StarOnline, 2008).

Unfortunately, currently there is also no study in Malaysia to investigate the public perception on plastic bag issue. Malaysian's study is more on general approach of municipal solid waste rather than focusing on plastic bag specifically. As established in municipal solid

waste section earlier, public participation which include their perception and the actual practice are not always the same. One can perceive that they should recycle but at the end did not practice it due to factors such as convenience. Therefore the same may happen to public perception and practice of plastic bag usage as well. For example, one may perceive that hot food in plastic bag is hazardous to health but at the end they still buy the food in the same plastic bag due to some factors. This is the area which this paper will be investigated on in Penang base on environment consciousness, health hazards, spoilage and awareness/accessibility and regulations.

## **2.6 Plastic Issue Containment**

There are a lot of countries having their own control over the usage of plastic. As mentioned, Penang is having 'No Plastic Day' every Monday until Wednesday. Table 2.4 shows a summary of some of the more drastic actions being taken in all around the world to reduce plastic bag usage.

In China, plastic bags under their compulsory national standard (less than 25 microns) will be banned and retailers will be prohibited from providing customers with free plastic bags. A research has been done to follow up the policy and it was found that the use of plastic bag has reduce by two third and public awareness has been improved. However, there is still some problem existing as there is still traders providing prohibited plastic bag to consumers especially at market. The study also suggested a few recommendations to improve the control of plastic bag in China such as strengthen the environmental education for general public in the country (Xing, 2009).



Table 2.4 *Country and Action of Plastic Bags Containment (Clean Up Australia, 2008)*

Country	Action
Africa	
Botswana	A ban on the use of plastic bags took effect in 2006
Eritrea	A ban on the use of plastic bags took effect in 2005
Kenya	Imposing a ban on bags less than 30 microns thick
Rwanda	Ban the use of plastic bags, however some traders continue to use the banned plastic bags
Somalia	Ban the use of all types of plastic bags in 2005
South Africa	Plastic bag tax. A tax on thicker bags is in place to discourage use
Tanzania	Ban on thin plastic bags
Uganda	Ban on plastic bags as of July 1st 2008. Bags thinner than 30 microns will be banned, all other Polythene will be taxed 20%
Zanzibar	Plastic Bags banned in 2008
Asia Pacific	
Australia	Currently considering a ban or a levy
Bangladesh	In March 2002, Bangladesh slapped an outright ban on all polyethylene bags in the capital, Dhaka
Bhutan	Ban the use and sale of plastic carry bags in 1999
China	Ban thin plastic in 2008
India	Prohibit plastic bags thinner than 20 microns in the cities of Bombay and Delhi, along with the entire states of Maharashtra and Kerala Himachal Pradesh, a new law states that anyone found even using a polythene bag could face prison or a stiff fine
Japan	12 major operators of convenience stores have set up five-year plans to reduce the consumption of plastic bags
Nepal	Ban all kinds of plastic bags and bottles in the Khumbu region in 1999
Taiwan	EPA banned and then lifted the ban
Europe	
Denmark	Tax on plastic bags
Finland	Supermarkets pay a levy on the amount of plastic bags used
France	The French island of Corsica was the first to ban plastic bags in 1999 The city of Paris has decided to ban non-biodegradable plastic bags in large stores as of 2007
Germany	Extra charges for plastic bag
Holland	Incinerate the bags in accordance with strict environmental rules and use the resulting energy to heat hospitals
Ireland	PlasTax – a charge to customers of 22 cents
Italy	Tax on plastic bags
Scotland	Bill to tax plastic bags was withdrawn, but its initial conception succeeded in raising awareness for voluntary efforts
Sweden	Tax on plastic bags
Switzerland	Switzerland requires supermarkets to charge \$.15 to \$.20 per paper bag
Americas	
Canada	Investing millions of dollars into "bag to bag" recycling programs
USA	Some local governments have enacted regulations, and many stores allow customers to return the bags for recycling

Israel is also having plastic issue in their country as plastic bags is free of charge and available everywhere. In a study with scientific survey conducted by Ayalon *et al.* (2009) for Israel public, it has concluded that even though total prohibition of a levy on plastic bags may not contribute to sustainable waste management or rational policy. However, a stronger and more rational policy is needed for containment such as charging cost for plastic bag. Education and technologies are also important in improving on public awareness.

Due to lack of study in Malaysia, it's noted that public awareness education and government policy play the most important role in containment of the issue from the literature in other countries in plastic context. However, Malaysian studies on general waste context also have the same recommendation. It will be interesting to investigate whether Penang public has the same opinion when it comes to plastic bags for hot edible items. It's hoped that this study can provide the factors for further understanding.

## **2.7 Green Marketing and Stakeholder Theory**

Starting from 1980s, a green concept started to emerge in the world as people are becoming more and more green-conscious. A lot of green product such as renewable energy, product with reduced energy usage and greenhouse gases and product without hazardous materials are being introduced in the market. However, most of these products are being initiated by the corporate companies. There are doubts on the participation of smaller business and also the green conscious of the consumer purchasing products from those small businesses. For example for the case in Malaysia, plastic bag – which is not environmentally friendly, can be seen everywhere being used to pack groceries and food. Even though the government has some campaign to prevent the use of plastic bag, the effects are yet to be determined especially for small businesses.

According to Ottman, Stafford and Hartman (2006), a green product should consist of three major criteria which are consumer value positioning, calibration of consumer knowledge and credibility of product claims. These criteria actually applied to the case of plastic bag issue in Malaysia. For example, the consumer positioning and knowledge of the plastic bag usage should be researched in order to study which group of consumer are greener conscious and to engage more activities on educating the consumer on the concept. As for credibility of product claims in this case, plastic itself is considered as non-environmental and health friendly, thus through this study, alternatives container might be suggested. However, it should also be noted that other than green issue, consumer is also concern on the cost and convenience issue as well. Therefore, more research on consumer's need and behavior is encouraged (Rex & Baumann, 2007). It's also noted by Gossling *et al.* (2005) that target group marketing is one of the important factor in enlarging the green conscious at the lowest cost. Therefore, research on the target group (demographic) is needed to identify the target so that action can be planned in the case of media or campaign against the usage of plastic bag.

There are a few stakeholders identified on the effectiveness of green issue implementation. The most common stakeholders being identified are consumers, shareholders, organizations, communities, regulations and media (Greenley & Foxall, 1996; Clarke & Clegg, 1998; Henriques & Sadosky, 1996). Henriques and Sadosky (1996) especially mentions that even though regulations might be considered as the most important variable in the theory, the power of consumer cannot be ignored as they are the bread and butter for business organization so consumer pressure will cause an organization to re-think about their green marketing strategy.

Lynes, J.K. & Andrachuk, M. (2008) also examines the motivation of a company's interest in participating in corporate social and environmental responsibility and they identify