ADDIS ABABA UNIVERSITY
COLLEGE OF EDUCATION
SCHOOL OF GRADUATE STUDIES

A SURVEY STUDY OF PLASTIC PACKAGING PRACTICES IN ADDIS ABABA AND OROMIA REGIONS

BY

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COLLEGE OF EDUCATION
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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MATER OF ARTS IN MARKETING MANAGEMENT EDUCATION

BY

AYALEW SEID



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DECLARATION

I, the undersigned, declare that this thesis is my original work, and has not been presented in any other University, and that all the sources of materials used for the thesis have been fully acknowledged.

Name: Ayalew Seid

Signature: _____

Date: 11/02/10

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LIST OF ABBREVIATIONS

CSA: Central Statistical Agency

DEFRA: Department for Environment, Food and Rural Affairs

EIA: Ethiopian Investment Agency

EPA: Environmental Protection Authority

FDRE: Federal Democratic Republic of Ethiopia

HDPE: High Density Polyethylene

LDPE: Low Density Polyethylene

PE: Polyethylene

PET: Polyethylene Terephthalate

PP: Polypropylene

PS: Polystyrene

PVC: Polyvinyl Chloride

QSAE: Quality and Standards Authority of Ethiopia

UK: United Kingdom

UK CEED: United Kingdom Center for Economics and Environmental Development

USA: United States of America

ABSTRACT

The most environmentally criticized package types are plastic and paper, the former for litter, ingestion, and disposal problem and the latter for deforestation. The Ethiopian government enacted not to produce or import plastic bags with a thickness of 0.03 millimeters and below for they are major causes for the environment to litter. Besides, in the proclamation (Proclamation No. 513/2007), it has been indicated that "as of the date fixed under a directive to be issued by the Authority, it shall be unlawful to put on the market any plastic bag that is not labeled to show whether it is biodegradable or not". Despite all these efforts, it is common to see used plastic packages on curb-sides. The overall purpose of this study is, therefore, to investigate plastic packaging practices in Addis Ababa and Oromia Regions and suggest some possible ways of remedy to mitigate the problem.

The methodology employed for this study is a descriptive survey and is both qualitative and quantitative in nature. The study population basically included eleven package manufacturers and 235 of their respective customers. Of these groups of populations, five and 150 samples were respectively drawn and surveyed. Besides, views of government officials concerned were included. In collecting the relevant data, questionnaires and interviews were used as primary sources. Policy and other documents were used as secondary sources. In this study, probability sampling procedure was used with stratified simple random sampling techniques. The data analysis employed is descriptive and focused on frequencies, percentages, and standard or interpolated median measures.

The survey result indicated that very little attention has been given to packaging in general and plastic packaging in particular. No packaging policy has been formulated so far. Plastic bags with a thickness of 0.03 millimeters or below were found to be produced, and plastic packages in the form of roll and shopping bags were found to be the most dominant packages being used. Plastic package wastes are not managed in an environmentally friendly manner, there is an increasing demand for plastic packages by users. Government and product users are found to be the most responsible bodies for environmental pollution specific to plastic package waste. There is inadequate number of skilled personnel in package design. Environment is given the least packaging consideration in comparison with other considerations such as packaging cost and convenience to use and distribute a product.

In the light of the major findings, recommendations forwarded include: to have packaging policy in order to utilize the most out of packaging, to create awareness among the public to care for environment and to dispose used packages safely. Besides, government must enforce the already existing regulations (proclamation No. 513/2007) and issue some other additional packaging related policy as well as regulations including implementation strategies that will consider efficient utilization of packaging resources, environment, package producers, package users, and the society at large.

CHAPTER ONE

1. INTRODUCTION

In this chapter, an effort is made to address issues such as organization of the study, background of the study, statement of the problem, objective of the study, significance of the study, delimitation of the study, and operational definition of key terms. These issues are discussed in the order they are presented.

1.1 Organization of the Study

This research is organized into five chapters. Chapter one is about the introductory part of the study where organization of the study, background of the study, statement of the problem, objective of the study, significance of the study, delimitation of the study, and operational definition of key terms are dealt with. Chapter two deals with the review of the related literatures consisting of such themes as development of plastics, brief history of packaging, functions of packaging, importance of packaging, packaging criticisms, packaging considerations, packaging policy and regulations, and managing packaging wastes. Chapter three is about the research design and methodology used in addressing the problem. It includes such topics as subjects of the study, data sources, data collection instruments, pilot test, sampling procedures and techniques, and methods of data analysis. Chapter four is about data presentation, analysis, and interpretation of the results. Chapter five presents summary of the findings, conclusions, and recommendations of the study. Then, the bibliography, questionnaires, interview guides, and other relevant documents that support data presentation, analysis, and interpretation of the results are included as appendices.

1.2 Background of the Study

Marketing is a multi-disciplinary area of study composed of knowledge from social as well as natural sciences. It is a process by which a product originates and is then priced, promoted, and distributed to consumers (Robbt, 2008). Products can be tangible goods,

services, or s ideas. One marketing decision as important as the product itself especially for tangible goods is, therefore, the packaging decision.

The term packaging refers to a physical container or wrapper used to hold and protect a product (Kotler and Armstrong, 2004). It is the preparation of goods for distribution and sale in bottles, boxes, cans, and other containers. Packaging also represents the size, shape and final appearance of a product at a time of sale.

Labeling is also regarded as part of packaging (Kotler and Armstrong, 2006). This is true because a label mostly appears on the package of an item. It is very difficult to think labeling without packages. If not on the package, labels may be put inside the package together with the product. The main difference between a label on the package and the one inside the package is that the latter contains more detailed information than the former.

The origin of using packaging is traced back to the time when people began producing surplus product. This was so because storage and transportation of the surplus product necessitated the use of packaging. The packages at that time, however, were more of natural in form such as shells and leaves. Later, people began to produce packages from natural materials like hollowed logs, woven grasses, etc. As people discovered ores and chemical compounds, they developed packages made of metal. The development was from metal to glass, to paper, and then to plastic (Welt, 2005).

Though several plastics such as styrene, vinyl chloride, and celluloid were discovered and developed in the 19th century, none of these materials became practical for packaging until the twentieth century. Before the use of plastics for packaging, paper and paperboard packaging was dominant. Plastics as a significant player in packaging, especially in 1970s and 1980s, replaced paper and some other related packaging material. Lately, however, that trend has slowed because designers have tried to respond to the perception that plastic is environmentally unfriendly (Welt, 2005).

With a package, we hold, promote, distribute, and price products by considering the package for it has also cost implication.

As for the use of packaging, Cyr and Gray (1994, p. 49) forwarded the following.

> *Years ago, packaging was a minor part of marketing; today it is important and serves many purposes. It protects goods from breaking, shrinking, and spoiling. It reduces the cost of transportation of the goods. It can create the impression of a "new product" by changing the shape or quantity of the goods. It can be a valuable promotional tool by attracting attention and describing the product, and it can attract your target market by using appealing colors, styles, shapes, and textures.*

When plastic packages are evaluated for factors such as above, they are found to be more suitable than any other packaging type. They are flexible, attractive, and can be made with different colors. They can also be acquired relatively at lower cost, have eye-catching power, and allow customers to see the product through them. It is difficult to think of ways to get products reach consumers without packaging. This is true because everything that is grown, processed, or made must be packaged for protection, convenience, and communication. Overall, packaging is an industrial and marketing technique for containing, protecting, identifying, and facilitating the sale and distribution of agricultural, industrial, and consumer products. For these and many other reasons, companies especially in developed nations take much care in designing packages.

The package must maintain not only the above functions but also the purity and freshness of the product's contents and protect them from the outside environment. If the contents are harmful, corrosive, or poisonous, the package must also protect the outside environment from being polluted. Besides, the packaging itself must present no chemical hazard to the environment as well (Ariev, 2008).

Though packaging has the merits mentioned above, it has been criticized for environmental pollution as a result of package wastes. For instance, once packages have served their purpose, they present a serious disposal problem. Besides, seeing curbsides in our locality with full of plastic debris is a common thing. This might be due to lack of dwellers' consciousness to the well-being of their environment. By environment, here it is to mean the biosphere of the earth that is capable of supporting our life.

needs to consider due to various reasons such as the country's need to be industrialized, little public awareness about the adverse effects of package wastes, and marketers seem little worried about the adverse effects of their marketing activity to the present or future of the society. This shows that still a lot remains to be done regarding product packaging in general, and plastic packaging in particular, in Ethiopia.

Plastic packaging has adverse environmental effects. These adverse effects may occur in the process of producing the package, when the package is in use, and after the package has served its purpose. This study does not intend to address adverse effects of plastic packages in the process of producing the package. Instead, it tried to address plastic packaging issues when the plastic package is in use and after serving its purpose. During usage, packages may not be strong enough to hold the product and other marketing requirements such as convenience to customers, promoting the product, convenience for storage, and the likes. After serving the purpose, plastic packages are criticized for pollution as they are thrown away as waste. For instance, littering the environment and the fact that it requires hundreds of years to decompose are the major ones. According to an official web site, for instance, "plastic bottles take 700 years before they begin to decompose in a landfill" (http://earth911.org/recycling/plastic bottle-recycling/ plastic bottle-recycling-facts/).

A survey in UK shows that consumers believe that packaging is the top environmental problem in relation to the products they buy. Less packaging, and more recyclable, recycled or biodegradable packaging came at the top of their wish list (DEFRA, 2009).

The Ethiopian government enacted not to produce or import plastic bags with a thickness of 0.03millimeters and below for they are the major causes of environmental pollution. Besides, in the proclamation (Proclamation No. 513/2007), it has been indicated that "as of the date fixed under a directive to be issued by the Authority, it shall be unlawful to put on the market any plastic bag that is not labeled to how [SIC] whether it is biodegradable or not" (Federal Negarit Gazeta, 2007).

For these and many other related points, plastic packaging is a serious issue that needs to be addressed to meet customers' needs and wants while at the same time maintaining criticism to the minimum. The overall purpose of the study is, therefore, to investigate plastic packaging practices in Ethiopia and come up with some suggestions, if any, that would improve the current practice. Overall, the study attempts to find answers to the following specific questions:

1. Is there packaging policy in Ethiopia? If so, how actionable is it?
2. What is the extent of value given to plastic packages by sellers of products with plastic packages in boosting their sale?
3. To what extent do plastic package manufacturers, as well as, their respective customers consider packaging requirements?
4. Are there plastic package related regulations that such package manufacturers should be abided by?
5. What is the attitude of package customers and their respective plastic package manufacturers towards each other?
6. What is the extent of the environmental threat that plastic package wastes have in the regions understudy?

1.4 Objectives of the Study

The general objective of this study is to examine plastic packaging practices in Addis Ababa and Oromia Regions considering manufacturers and their respective customers. Moreover, the specific objectives of this study include the following:

- To identify packaging policy and requirements and see how workable they are.
- To identify values of plastic packages to sellers of tangible products packed with plastics.
- To identify some factors which are given more weight than others by plastic package manufacturers, as well as, by their respective customers.

- To examine the kind of attitude those plastic package manufacturers and their respective package customers have towards each other.
- To identify the extent and possible environmental hazards caused by plastic packaging practices in Addis Ababa and Oromia Regions.

1.5 Significance of the Study

This study is assumed to be important because it deals with packaging issues which every marketer of goods needs to consider. All agricultural and industrial products must be packaged to get them reach consumers safely. We often see manufacturers, wholesalers, retailers, and customers with packages to manufacture, pack, distribute, store, and use tangible products respectively. Environment, resellers' requirements, product image and promotion, customers' convenience, and cost of packaging are factors that good packaging needs to fulfill. These factors are, and will remain to be, sensitive and complex marketing issues requiring thorough understanding, close follow-up, and control to address them. Therefore, the significance of this study includes the following:

- To create awareness among plastic package manufacturers, their customers, government, and the societies at large, by pointing out how they can extract maximum benefit from plastic packaging keeping the present and future needs of society in mind.
- To serve as an input to consumerism and environmental policy making bodies with specific to plastic packaging and enlighten all concerned bodies about what measures to be taken to make good packaging.
- It will serve as a springboard for those who wish to conduct further research and analysis in related marketing issues.

1.6 Delimitation of the Study

The scope of this study is limited both in terms of time and depth. In terms of time, the study explores only those plastic package manufacturers that were established and are in operation since January 1992 up to January 2008. According to data obtained from

Ethiopian Investment Agency (EIA) and regional investment agencies of Addis Ababa City Administration and Oromia region, this period was the time in which significant growth of investment was observed.

In terms of depth, the study tried to address plastic packaging practices specific to firms producing plastic packages and those in need of acquiring these packages (their corresponding customers). Moreover, the study does not address the technical issues as to how plastic packages are processed and the chemistry used in making them in the factory. It simply evaluates the fulfillment of package requirements practiced by plastic package manufacturers and their respective customers. Though there are three parties: package manufacturers, package customers, and users of products packed with plastic package and that packaging issue is associated with them all, this study addresses only packaging practices of package manufacturers and their respective customers.

Besides, according to the Central Statistical Agency report on Large and Medium Scale Manufacturing and Electricity Industries Survey (Statistical Bulletin No. 431, October 2008), the Addis Ababa City Administration takes the lead (about 52%) and the Oromia Region follows (about 16%) in terms of investment projects licensed in Ethiopia so far. Similarly, plastic package manufacturers licensed in these areas follow the same trend. Thus, it is preferred to survey plastic packaging practices in these areas.

1.7 Operational Definition of Key Terms

Environment: All the conditions or circumstances that surround and influence life on earth, including atmospheric conditions, food chains, and the water cycle (Agnes, 2000)

Package: Container in which goods are packed for sale, storage, or transportation.

Package Customers: Firms that sale their products packing with plastic package to resellers or final consumers.

Package manufacturers: Industries that produce and sale plastic packages to package customers.

Plastic Packaging: All activities including the production, acquisition, or use of plastic packages for the purpose of storage, transportation, and promoting tangible goods.

Region: Any of those parts of Ethiopia specified as regions under Article 47(1) of the Constitution of the Federal Democratic Republic of Ethiopia including the Addis Ababa and Dire Dawa Administrations.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURES

As a component of any research work, a review of related literatures must be done to get an insight to the problem and its solution. With this in mind, this chapter provides a theoretical framework for plastic packaging practices through the explanation of concepts and research works that are carried out so far both at national and international levels. In this regard, related topics such as overview of packaging, development of plastics, brief history of packaging, functions of packaging, importance of packaging, packaging criticisms, packaging considerations, packaging policy and regulations, and managing packaging waste are reviewed hereunder.

2.1 Development of Plastics

Plastics have been used for many and varied purposes for about centuries. They are used for packaging, construction, automobiles, boats, pipes, consumer goods, and electronics, to mention a few.

The development of plastics can be viewed into two major categories as natural plastics and man-made plastics. Humans were using natural plastics for various purposes since many years ago. Egyptians, for instance, soaked burial wrappings in natural resins to help preserve their dead for long (Richardson, 2008). Humans were also using animal horns and tortoise shells, which contain natural resins, for centuries to make such items as spoons, combs, buttons, and the likes.

However, natural plastics have many shortcomings. For one thing, many of them were in short supply. For another, they were difficult to mold. Due to these and many other drawbacks, scientists began to find more efficient ways and reliable plastic source materials than they were having. Hence, scientists began conducting experimentations in their laboratories. After numerous repeated trials, a British scientist Alexander Parkes introduced the first man-made plastic, called Parkesine in 1862

(http://www.inventors.about.com/od/pstartinventions/a/plastics). Parkesine, once heat is applied on it, could be molded and retained its shape when cooled. Due to the high cost of raw materials needed in its production, Parkesine was getting lost its luster. Moreover, during the latter part of the 19th century, elephants were killed for ivory in making billiard balls. This had initiated one American scientist, John Wesley Hyatt, to replace ivory billiard balls by some other plastic product. Finally, he came upon the solution in 1869 with a plastic, called Celluloid (http://www.americanchemistry.com/s_plastics). This material is still in use today under its chemical name, called cellulose nitrate.

Since the early 20th, it is possible to say that substantial improvements of plastics were observed in every consecutive decade. In the year 1909, an American chemist, Leo Hendrik Baekeland, came up with the first completely synthetic man-made plastic, which he named Bakelite and most popularly known as Phenolic. This liquid, Bakelite once hardened and took the shape of its container, would form and remain the exact replica of the vessel that contained it. One major quality of a plastic made of Bakelite is that it would not burn, boil, or melt. That is, once it was firmly set, it would never change its shape. This quality stands it out from those of the previous plastics. Dr. Jacques Edwin Brandenberger, a Swiss textile engineer, is the first person who came up with an idea of clear protective packaging (http://www.americanchemistry.com/s_plastics). He came up with this idea because he saw the waiter removing the cloth that the customer pours a bottle of wine and replacing it with another one. Brandenberger thought that the cloth could easily be cleared if a flexible film were applied to it. After his repeated trial, he found Viscose, also known as Rayon, to be added to cloth yet the result was a brittle material that was too stiff for any use. This led him to develop a new machine which he called Cellophane that could produce Viscose sheets in an improved form. This time was the mark of having a clear layer of packaging for any product. In other words, that was the time for the first fully flexible and waterproof wrap to emerge.

Another remarkable improvement in the development of plastics in the 1920s was the introduction of Polyvinyl Chloride (PVC or Vinyl for short) and Nylon. It has good

chemical resistance and has a resin identification code of "3". It has also a resistance to grease, oil, and chemicals (http://www.polymerplastics.com/history_plastics.shtml).

In the 1930s another important innovation took place: the development of polystyrene (PS) which was great for food packaging. It is a versatile plastic that can be rigid or foamed. Relatively, it has a low melting point. Its typical applications include protective packaging, foodservice packaging, bottles, and food containers. Polystyrene can be recycled and has the number "6" as its recycling symbol. The 1930s, generally, was regarded as a period of revolution for modern package manufacturers to emerge.

Still another development in plastics is the introduction of Polyethylene (PE) in the 1940s (http://www.polymerplastics.com/history_plastics.shtml). Polyethylene is commonly used to make many types of bottles such as soda bottles, milk jugs, grocery and dry-cleaning bags, and similar other food storage containers (http://www.americanchemistry.com/). This is the most widely used plastic today. Basically, there are two forms of polyethylene: high density polyethylene (HDPE) and low density polyethylene (LDPE). HDPE is characterized by excellent resistance to most solvents, higher tensile strength compared to other forms of polyethylene, and relatively rigid with useful temperature capabilities. HDPE has number "2" as a resin identification code. LDPE, on the other hand, is characterized by excellent resistant to acids and vegetable oils, toughness, flexibility, and relative transparency. This quality makes it appropriate for packaging applications that require heat sealing. LDPE has number "4" as a resin identification code.

In the 1950s Polypropylene (PP) was introduced. PP has good chemical resistance. It is strong and has a high melting point (400 degrees Farahanite or more) making it good for hot-fill liquids (http://www.polymerplastics.com/history_plastics.shtml). This plastic is found in flexible and rigid packaging, fibers, and large molded parts of automotive, and consumer products. It is commonly recycled and has "5" as a resin identification code.

The 1960s and 1970s also share the introduction of new plastics such as Polyethylene Terephthalate (PET, PETE) and similar others. PET, also known as Polyester, is clear,

tough, and has good gas and moisture barrier properties. This plastic is commonly used in making bottles for soft drinks, water, juice, sports drinks, beer, and for many injections-molded consumer product containers. Though most thermoplastics can, in principle be recycled, PET bottle recycling is more practical in most developed nations than many other plastic applications. To identify recyclability, PET has a resin identification code of "1".

Plastics have been growing into a major industry: from providing improved packaging, to giving new textiles, and permitting the production of such items as televisions, cars, and computers. They become component of almost all tangible products. For these and many other reasons, their recognition by users is increasing from time to time.

2.2 Brief History of Packaging

The history of packaging is highly associated with the beginning of surplus production and use of tangible products by humans. The packaging era can best be viewed by categorizing it into two major phases: traditional packaging and modern packaging where the latter again is sub divided into two phases as before and after World War II. Traditional packaging is the use of packages in their natural form such as gourds, shells, and leaves (Welt, 2005). As humans get civilized, because packages in natural form do not fully meet the growing demand of packaging, they began producing packages made of hallowed logs, woven grasses, pottery, and animal organs (Welt, 2008).

Modern packaging is generally believed to have begun since industrial revolution. In the first phase of modern packaging era, people began to use packages made of paper, glass, metal, and plastics. Of the packaging forms mentioned, plastics are the newest packaging material ever used. The era of modern packaging before World War II is basically characterized by the package's product protection requirement during storage, transportation, and distribution. The second phase of modern packaging is characterized by another important improvement of packaging: the promotion and consumer concern requirements.

Though there were concerns for packaging before World War II, as evidenced by the establishment of such federal agencies as Federal Trade Commission in 1914 and Food and Drug Administration in 1938 by US government, the War diverted the national attention from consumer problems. Major consumer protection activities, therefore, did not begin until 1960s (Karpatkin and Been, 2008). Yet, 1962 is regarded as the re-birth of consumer concern. There were such considerable activities as setting forth basic rights of consumers by the then U.S. President John F. Kennedy in 1962 and the formation of Consumer Federation of America in 1967. Moreover, there were increased numbers of consumer activism in 1960s and 1970s that cause the issuance of Fair Packaging and Labeling Act in 1966 and the Consumer Product Safety Act in 1972 respectively.

Industrialization, too, has brought significant contribution for nations to respond to packaging problems. Among the measures that governments of various nations have taken include product testing and consumer education, establishing organizations that test consumer product and report important matters pertinent to products offered to consumers, and the likes.

Though the birth of modern packaging industry occurred in 1810 when two inventors Heine and Durand took out patents on cans for preserving foods, more advances in the fabrication of containers was observed in the late 19th and early 20th centuries (Ariev, 2008). Moreover, the packaging industry gained advancement with the introduction of plastic technology. Several plastics, though they were not used for packaging, were discovered in the 19th century. For instance, styrene introduced in 1831, vinyl chloride in 1835, celluloid in the late 1960s, and polyethylene terephthalate (PETE) in 1977 (Welt, 2005). Though the use of plastics for packaging purpose began since 1835, they were largely used since World War II in a more advanced way.

2.3 Functions of Packaging

Some scholars regard packaging as a fifth P, along with price product, place, and promotion (Kotler and Armstrong, 1996). This shows that packaging and labeling are the

most important aspects of a product that require managerial decision. Packaging is intended to serve several vital purposes. The most common ones include protecting the product on its way to the consumer, communicating the product to consumers, and meeting the purpose of convenience for resellers and consumers.

Packaging also protects the product after it is purchased by customers. That is, unlike unpackaged items, packaged goods generally are more convenient, cleaner, and less susceptible to losses from evaporation, spilling, and spoilage (Etzel et al, 2005). A product is packaged not only to meet containment role but also to gain acceptance of the product from middlemen. In other words, a product must be packaged to meet the needs of wholesaling and retailing middlemen. A package could be well-designed and made attractive for customers. If it does not meet the shelf requirements of the resellers, it is unlikely for them to purchase it.

A package has also a power to persuade consumers to buy the product. A well-designed packaging has a power to catch consumers' attention easily. At the point of purchase such as a supermarket aisle, the packaging can serve as a "silent salesperson" (Etzel, et al. 2005). In market places such as supermarket and groceries, where a product is little advertized, packaging serves as the means of communicating with shoppers.

In the past, packaging was intended mainly to provide protection. Today with its marketing significance fully recognized, however, packaging is a major factor in gaining distribution and customers (Etzel, et al. 2005).

2.4 Importance of Packaging

One thing as important as a product itself for marketers of tangible items to consider is packaging. Packaging is considered a vital part of a product because it promotes and protects the product, is valuable both for sellers and customers in that it makes product more convenient to use or store, it prevents spoiling or damage, it makes product handling easier, and it promotes a brand both at the point of purchase and even in use.

Package characteristics have a power to create inferences. As cited by Hoyer and McInnis (in Carl McDaniel and R. C. Baker, 1977) a study on "Convenience Food Packaging and Perception of Product Quality", it is reported as consumers inferred that Potato chips packaged in polyvinyl bags were crisper and better testing than chips packed in wax-coated bags, even though the bags contained the exact same chips. Besides, it is indicated that not only the package but also the way a given product is packed can create inferences. Consumers can subjectively comprehend aspects of an offering based on inferences they make from the product and the way it is packed (Hoyer and McInnis, 2000). This shows that a less quality product, if packed properly and in an attractive way, has the power to gain the attention of customers in a shelf. Or a quality product, if packed poorly and unattractively, fails to gain the attention of customers in a shelf.

A package has a power to improve a product and hence creates a new market. It can make an important difference in a new marketing strategy for it meets customers' needs better.

Better protective packaging is very important to manufacturers, wholesalers, and retailers. For wholesalers and retailers, it prevents them from costs that would incur for goods damaged in shipment as a result of poor packaging. Again, for retailers, protective packaging can reduce storing costs by cutting breakage, spoilage, and theft. When packages are easier to handle, they can cut costs by speeding price marking, improving handling and display, and saving space.

2.5 Packaging Criticisms

Packaging, despite has many benefits, has also certain criticisms. Hence, marketing managers are required to make professional and ethical decisions. For instance, some firms have been criticized for designing packages that conceal the weakness of a product (giving consumers less for their money) (Perreault and McCarthy, 2006), some firms copy their competitor's popular packaging innovation without violating the patent, used package wastes pollute environment, paper packages are criticized for deforestation, and

plastic packages will not decompose even if they lie in a city dump for decades (http://earth911.org/recyclinf/plastic bottle-recycling/).

The other point for which packaging is criticized is that it depletes natural resources (some firms use larger-than-necessary containers) (Etzel, et al. 2005), it is hazardous (packages made from aerosol that used chlorofluorocarbons as propellants) (Etzel, et al. 2005), it might mislead (the package size may convey the impression of containing more than the actual content it can hold), and it is expensive (for some products, a package costs more than the product itself) (Etzel, et al. 2005).

Some publics in most developed nations perceive packaging as wasteful and unnecessary (http://www.incpen.org). This negative image emanates from the fact that the package is usually thrown away after use. It should, however, be noted that reducing the amount of packaging with the sole purpose of reducing packaging wastes potentially risks the goods we consume to damage and become waste due to breakage, spoilage, and contamination (http://www.incpen.org). Use of insufficient packaging for goods so that they are not properly protected means more wasteful than otherwise.

Another criticism for packaging is that we often have too much of it. That is, there are too many different layers of packaging on some products. This is usually done so because goods that are not packaged are more likely prone to damage than goods properly packaged. In order to reduce costs and increase profits, companies try to spend as little as possible on packaging and other expenses related to production (http://www.incpen.org). There would be no reason to use more packages and incur costs for no purpose. The purpose of using different layers of packaging by firms that offer goods is, therefore, to reduce the total packaging required and to meet different purposes of packaging needs.

Still another criticism of packaging is that certain goods are 'over-packaged' (http://www.incpen.org) so that they deceive public and cause waste as a result of more material usage. This issue is more reflected especially in luxurious items than every-day items (http://www.incpen.org). Because the nature of luxurious goods requires this to

happen, packaging has to reflect this requirement as one of its function. This, however, does not mean that there are little causes of over packaging. For instance, there are cases where small multi-packs are sold together for a special promotion being over packaged. If the package on the individual item is designed in such a way that it meets all the packaging demand, an additional layer of packaging around outside of the items is unnecessary for protection. Over packaging usually happens as a result of lack of keeping up with packaging developments. A research report published by the UK Center for Economics and Environmental Development (UK CEED) has indicated that "a perception that goods are over-packaged is due to lack of understanding of the comprehensive role of the pack."

2.6 Packaging Considerations

Packaging considerations may differ from package to package depending on the purpose and type of packaging material to be used. According to Robert D. Hisrich (1990), packaging requirements such as these must be considered while designing packages: (1) functional requirements, (2) marketing requirements, and legal requirements.

Under the functional requirements of packaging design factors such as (1) in-home, (2) in store or warehouse, and (3) production must be taken into consideration. In-home requirements need packaging to be convenient to use and store. Warehouse criteria require that packaging should attract attention on the shelf, identify the product or brand and differentiate it from other competing products, communicate benefits and uses, and attract customers to purchase the item. In-store requirements also dictates that the package must be designed in such a way that it meets the need of retailers to store on the shelves or on the floor and to process at the check out counter.

Production requirement of a package is concerned with the production cost of the package. No matter a package designer creates a fantastic package that will meet all its requirements well. If, however, a firm cannot produce the package cost-effectively, the design becomes useless. Another package production consideration is the production line

speed. If a container is too long, wide, or short, it could significantly slow the speed of the production machine (Hisrich, 1990).

The marketing requirement of packaging dictates that a package should be capable enough to promote and distribute a product. The promotion requirement refers to apparent size, attention drawing power, impression of quality, brand name readability, use of consumer friendly language labels, and the overall attractiveness of a package (Hisrich, 1990).

By apparent size, it is to mean that a package should look as large as possible without misrepresenting the actual content of a product. That is, the dimensions or panels of the package most likely to be viewed by the consumer should be large enough and the brand name should be shown on the most visible areas printed in large letters.

Based on the product type, nature, and marketer's objective, a package should be made to appear attractive, exiting, pure, soft, sexy, or stimulate some other emotion. This can be materialized by displaying the product on the front of the package in the form of either a picture or a see-through window.

Quality impression can be achieved through packaging. Because people may judge a product by its package, packaging is required to meet this criterion. One way to impress quality through packages is by making them attractive. Another is by labeling them using consumer friendly and understandable language. For instance, packaging mistakes that convey low quality or poor value include faded lettering or colors, cheap package construction, and shabby designs (Hisrich, 1990).

The distribution requirement of packaging relates to the transportation of goods being offered. With reference to distribution consideration of a package, a package should be capable enough to keep the items safe during transportation. Besides, packages must withstand the pressure of several other crates stored on top of them, resist moisture, adapt to temperature changes, and withstand rough handling (Hisrich, 1990).

Finally, the marketing requirement of a package is with regard to safety in usage. Packaging should meet product usage requirements for future sales could be lost or the company could be liable for the damage if the package injures the user. Usage requirements include (1) clear instructions, (2) easy to open, and (3) easy to handle features of a package.

Still another packaging consideration is to see whether it meets its legal requirement or not. In most developed nations like Western and Europe, labels on the package are required by law to include such information as company name, company address, net weight, quantity, ingredient label, nutrition label, and the likes. The most influential law in the United States of America that affect packaging is related to labeling. The Fair Packaging and Labeling Act of 1966 and the 1990 Nutrition Labeling Act in USA are the most pressing ones.

The Fair Packaging and Labeling Act in USA mandates that every product package or label must display or specify information such as the product type, the producer's name and location, the quantity of the product (if applicable), and the number and size of serving (if applicable), on its part where most likely consumers can see it. The Nutrition Labeling Act, on the other hand, required packages to contain more nutritional information. It also requires labels on edible products must provide sodium content if other nutritional information is shown. In this case, ingredients on the label must be shown in descending order: from the one of the highest quantity to the one of the lowest quantity.

2.7 Packaging Policy and Regulations

2.7.1 Packaging Policies and Regulations in Developed Countries

Many countries in the world, be it developed or underdeveloped, have environmental laws in order to keep their nations life sustainable. These laws, however, may vary from country to country or even from state to state depending on the nature and type of

economy, knowledge towards the environment, the political system, and the degree of concern that a given country has.

Packages must be made in a socially responsible manner. Because of consumers' criticism of misleading packages in the U.S., the US government passed Federal Fair Packaging and Labeling Act of 1966 (Perrault and McCarthy, 2006). This Act requires that consumer goods be clearly labeled in easy-to-understand terms so that consumers could get more information.

It is not only in USA that packaging acts were regulated, but in United Kingdom as well. The UK government has formulated packaging policy to minimize the environmental impact of packaging over its whole lifecycle, without compromising its ability to protect the product. This can be achieved through optimizing packaging by designing it in line with sustainability principles. Here, by sustainability principle, it is to mean that packages should be designed with re-usability, recyclability or recovery in mind as a standard (www.defra.gov.uk). Besides, when the right amount of packaging is used, fewer packaging raw materials are required and transportation costs can be reduced. When it is so, it will be good for people, business, and for the planet as well (www.defra.gov.uk).

2.7.2 Environmental Laws in Ethiopia

Ethiopia is one of those countries having an environmental law. So far, it has issued such environmental proclamations as (1) Environmental Protection Organs Establishment (Proclamation No. 295/2002), (2) Environmental Impact Assessment (Proclamation No. 299/2002), (3) Environmental Pollution Control (Proclamation No. 300/2002), and (4) Solid Waste Management (Proclamation No. 513/2007). City Government of Addis Ababa on its part has issued Waste Management, Collection, and Disposal (Regulation No. 13/2004).

Of these proclamations and regulations, it can be noted that only Solid Waste Management Proclamation (Proclamation No. 513/2007) and Waste Management,

Collection, and Disposal Regulation (Regulation No. 13/2004) are directly related to packaging. Others focus on general concerns for environment.

2.7.2.1 Environmental Protection Organs Establishment Proclamation

The Environmental Protection Authority (EPA) of Ethiopia was first established in 1995 by Proclamation No. 9/1995. After having gone through several restructuring, it became to have the present structure on October 31, 2002 by Proclamation No. 295/2002. The Authority has been re-established with the objective to formulate strategies, laws, and standards that enable to foster social and economic developments while keeping the safety of the environment sustainable and to ensure that their implementation is natural (http://www.epa.gov.et).

The Authority has numerous powers and duties such as (1) preparation of environmental policies, strategies, and laws, (2) establish a system for environmental impact assessment, (3) execute or supervise projects subject to federal licensing or review environmental impact study reports of projects and notify its decision to the concerned licensed agency if the project involves inter-regional impacts, (4) in consultation with competent agencies, formulate environmental safety policies and laws on the production, importation, management and utilization of hazardous substances or wastes and discourage malpractices that may hamper sustainable use of natural resources or the prevention of environmental degradation or pollution (Proclamation No. 295/2002) , are few of them.

In order to execute its duties and responsibilities, the Authority is organized in such a way that it has (1) one Environment Information Center, (2) seven Services, where Regional Affairs Co-ordination Service is one, and (3) six Departments that include Environmental Policy and Legislation Department and Pollution Control Department. Besides, there are Director General and Deputy Director General Offices that are responsible for the overall supervision of the Center, the Services, and the Departments (http://www.epa.gov.et).

According to the proclamation, environment means the totality of all materials whether in their natural state or modified or changed by human; their external spaces and the interactions which affect their quality or quantity and the welfare of human or other living being including but not restricted to, land, atmosphere, weather and climate, water, living things, sound, odor, taste, social factors, and aesthetics (Proclamation No 295/2002). This shows that the marketing activity of packaging should be conducted in an environmentally friendly manner for it cannot be implemented out of the scope of this definition. Moreover, Authority and Competent Agency respectively means the Environmental Protection Authority re-established under Article 3 of this proclamation and any federal and regional government organ entrusted by law with responsibility related to the subject specified in the provisions where the term is used (Proclamation No. 295/2002). The word protection in the proclamation is defined as sustaining of the essential characteristics of nature and enhancing the capacity of the natural resource base with a view to safeguarding the interest of the present generation without compromising the opportunity for the future (Proclamation No. 295/2002).

2.7.2.2 Environmental Impact Assessment Proclamation

The second environment related proclamation is the Environmental Impact Assessment (Proclamation No. 299/2002). According to this proclamation, assessment of possible impacts on the environment prior to approval of a public instrument (a policy, a strategy, a law or an international agreement) is important in promoting sustainable economic, cultural, and social developments. It is also indicated that environmental impact assessment is used to predict and manage the environmental effects by a proposed development activity which is to be implemented or being implemented.

In the proclamation document, it is also indicated that pollutants are any substance whether liquid, solid, or gas which directly or indirectly alters the quality of any part of the environment. Though one of the functions of packaging is protecting the product from polluting or being polluted, packages after the use of products are considered as waste and have to be well managed not to pollute the environment.

Proclamation No. 299/2002 mandates that no person shall commence implementation of any project that requires environmental impact assessment without authorization from the authority or from the relevant regional agency. It also dictates that any licensing agency shall, prior to issuing an investment permit or a trade or an operating license for any project, ensure that the Authority or the concerned regional environmental agency has authorized its implementation.

The proclamation also specifies the duties of proponents to include the following:

1. A proponent shall undertake an environmental impact assessment, identify the likely adverse impacts of his/her project, incorporate the means of their prevention or containment and submit to the authority or the relevant regional environmental agency the environmental impact study report together with the documents determined as necessary by the Authority or the relevant regional environmental agency.
2. A proponent shall ensure that the environmental impact of his/her project is conducted and the environmental impact study report prepared by experts that meet the requirements specified under any directive issued by the Authority.
3. The cost of undertaking an environmental impact study report shall be borne by the proponent.
4. When implementing his/her project, a proponent shall fulfill the term and condition of authorization (Proclamation No. 299/2002).

According to this proclamation, the proponent is required to undertake an environmental impact assessment and bear all related costs. Besides, the intent of this proclamation is to prevent the environment from pollution instead of monitoring and controlling projects for their environmental cause after implementation.

2.7.2.3 Environmental Pollution Control Proclamation

The third environment related proclamation is the Environmental Pollution Control (Proclamation No. 300/2002). According to this proclamation, pollution is any condition which is hazardous to human health, safety, or welfare or to living things created by

altering any physical, radioactive, thermal, chemical, biological, or other property of any part of the environment. In the proclamation, it is stated that control of pollution shall include mechanisms such as (1) enforcing a person engaged in any field of activity which is likely to cause pollution, when the Authority or the relevant regional environmental agency so decides, install a sound technology that avoids or reduces to the required minimum, the generation of waste and, when feasible, apply methods for the recycling of waste, (2) enforcing a person who causes any pollution to clean up or pay the cost of cleaning up the polluted environment in such a manner and within such a period as shall be determined by the Authority, (3) taking all necessary measures up to the closure or relocation of any enterprise that is believed to have cause a risk by the Authority or concerned regional environmental agency, among others.

The management and control of pollution is not left to the Environmental Protection Authority of Ethiopia or the respective Regional Environmental Agencies alone. Rather, all urban administrators are also responsible for managing municipal wastes. Hence, as indicated in the proclamation, municipal wastes shall be managed in the manners indicated below:

1. All urban administrations shall ensure the collection, transportation, and, as appropriate, the recycling, treatment or safe disposal of municipal wastes through the institution of an integrated municipal waste management system.
2. In collaboration with the relevant regional environmental agency, the authority shall monitor and evaluate the adequacy of municipal waste management systems and ensure the effectiveness of their implementation.
3. Any person responsible for the maintenance of any premises to which the public has access shall, at all times, ensure that adequate and suitable toilets and containers and other required facilities are provided for the disposal of waste.
4. The Authority shall, in collaboration with the relevant regional environmental agencies and any other competent agencies, monitor the situation with regard to the availability of waste disposal facilities and take the necessary measures to ensure that their availability is satisfactory (Proclamation No. 300/2002).

2.7.2.4 Solid Waste Management Proclamation

The fourth and the last, as of this paper, environment related proclamation is the solid waste management (Proclamation No. 513/2007). The objective of this proclamation, as stated in the document, is to enhance at all levels, capacities to prevent the possible adverse impacts while creating economically and socially beneficial assets out of solid waste. According to this proclamation, plastic packages are recognized as one of the solid wastes and shall be well-managed.

The proclamation defined solid waste as "any thing that is neither liquid nor gas and is discarded as unwanted." Moreover, solid waste management means "the collection, transportation, storage, recycling or disposal of solid waste, or the subsequent use of a disposal site that is no longer operational."

The solid waste management dictates, in clear terms, the following with specific to plastic bags.

1. As of the date fixed under a directive to be issued by the Authority, it shall be unlawful to put on the market any plastic bag that is not labeled to how [SIC] whether it is biodegradable or not.
2. It is prohibited to grant permit for the manufacture or importation of any non biodegradable plastic bags with wall thickness of 0.03 millimeters and less than 0.03 millimeters.
3. Without prejudice to Sub-Article (2) of this Article (Article No. 8), the Authority shall, though the issuance of a directive, determine the conditions under which plastic bag with wall thickness of 0.03 millimeters and less than 0.03 millimeters may be imported or manufactured locally for specific purpose (Proclamation No. 513/2007).

2.8 Managing Packaging Waste

Open landfill or dumping is the predominant disposal route for waste in Ethiopia. Waste management and disposal give rise to a number of environmental risks and related issues

in most developed nations. These include landfill pollution risk, incineration pollution risk, and insufficient disposal site (Brady, 2006). The basic principle in the waste management strategy of UK is the waste hierarchy. The hierarchy in increasing desirability is reduction, reuse, recovery (recycling, composting, etc), and disposal (Brady, 2006). In the strategy, waste reduction is indicated as the first priority and disposal as the last option.

As packaging waste reduction strategy, it is important to avoid over packaging and reduce the use of single-use packages. Designing packages in such a way that they could serve various purposes is a strategy indicated second in the waste management option. Recycling is the third strategy in the hierarchy. Because plastics are one of the materials that lend themselves to recycling, plastic packaging wastes can be reduced to the minimum level required through this method.

For efficient management, wastes can be classified into similar types. According to European Union legislation, they are identified as controlled waste, hazardous waste, and special waste (Brady, 2006). Controlled waste includes household, industrial, and commercial wastes with little harmful property. Hazardous wastes are controlled wastes with various toxic or harmful properties. Special wastes are sill controlled wastes with hazardous properties so that they require extra controls. They are considered to be capable of harming the environment at most or are dangerous to human life unless they are properly managed.

According to Addis Ababa Solid Waste Administration Policy, solid wastes are classified as (1) household wastes, (2) commercial house wastes, (3) institution wastes, (4) medical institution wastes, (5) road wastes, (6) remnants of construction wastes, (7) industrial wastes, and (8) liquid remnant wastes. In the document, plastic packages are identified as household wastes, commercial house wastes, and medical institution wastes (Solid Waste Administration Policy document, 1995).

Management of waste is about storage, handling, transfer, and disposal of wastes throughout their entire lifecycle. Wastes should be stored in suitable containers, properly

handled, transferred only to the authorized body, and disposed of with very little economic and environmental risk.

One best method of waste management is minimization. By minimization it is to mean that reducing or preventing wastes before they are generated. This brings about both environmental and financial benefits (Brady, 2006). Specific to managing packaging wastes, it is important to avoid unnecessary packaging or over packaging, where possible use packaging that can be returned to the supplier for reuse, and use recyclable and environmentally friendly packages. Moreover, packaging wastes can be minimized through integrated efforts between and among those that convert material into packaging, manufacture packaging materials, pack and fill packaging with product, and sale products with packaging.

Waste disposal may be done in such ways as dumping, land-filling, incineration, or recycling. Dumping is collecting and putting wastes in a site where they are stored for specific period of time. Land-filling is placing solid wastes on or under the ground in a manner not harmful to human health. Incineration is a method of disposing solid wastes using special burning instrument for such intended purpose. Incineration should be done in a manner that safeguards air pollution. Recycling is a means of extracting valuable materials from solid wastes for the purpose of manufacturing new but similar or different from the original product.

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

In this chapter, the research design and methodology used for the study are described. The research design determines the way the study is approached in surveying plastic packaging practices. The research methodology, on the other hand, is about the study population, the source of data, the data collection instruments, the pilot test, the sampling procedures and techniques, and how data are analyzed.

3.1 The Research Design

To reiterate, the objective of this study is to survey the practices of plastic packaging in Addis Ababa and Oromia Regions. Because there are many plastic package manufacturers throughout Ethiopia and the time limit set for writing the thesis is one year, it is difficult to include all these firms in the study. Hence, the survey is limited to two selected regions, namely Addis Ababa City Administration and Oromia Region. The survey is on packaging policy, contribution of plastic packages in boosting a sale, packaging requirements, plastic package related regulations, attitudes of plastic package manufacturers and their customers towards each other, and threat of plastic package wastes on environment in the regions mentioned above. To address these issues, both qualitative and quantitative data are required. Primary data are obtained from plastic package manufacturing owners or representatives, plastic package users, and concerned government officials. For secondary data, relevant documents such as policy and legal documents are reviewed. Finally, related literatures are reviewed to highlight various concepts, issues, and practices of packaging.

3.2 The Research Methodology

3.2.1 Subjects of the Study

The population of this study consists of plastic package manufacturers, their respective customers, and concerned government officials. Based on the information obtained from the respective Investment Agencies of the two Regions, there are eleven plastic package manufacturers in the selected regions. As per the information obtained from plastic manufacturers sampled for the study, there are as many as 235 plastic package customers. Government officials from Environmental Protection Authority and Quality and Standards Authority of Ethiopia are also part of the population for addressing the environmental aspect of packaging.

3.2.2 Data Sources

The data sources for this study are plastic package manufacturer representatives, plastic package users, and concerned government officials for primary data and policy and other related documents for secondary data. The student researcher's personal observation is also another source of the primary data. In obtaining the primary and secondary data, various data collection instruments were used.

3.2.3 Data Collection Instruments

The instruments used for collecting the primary data were questionnaires, guided interviews, and observations by the student researcher. Questionnaires were designed in such a way that they would enable the student researcher gather pertinent information about the subject under study. The questionnaires include both open and close ended items. The purpose for which questionnaires were designed is to collect relevant data from package manufacturers and users of their product. Guided interviews were developed specific to EPA, QSAE, and Investment officials. Policy documents, profile of plastic package manufacturers, periodic reports, and other similar written legal documents like FDRE Negarit Gazeta and Addis Negari Gazeta were instruments employed for gathering secondary data.

3.2.4 Instrument Reliability Test

To see how appropriate the instruments are in meeting their purpose, questionnaires were tested for reliability. Though there are many ways of testing instruments for appropriateness, the approach used here is the expert judgment. To do so, the instruments were given to two experts with similar educational background and experience. These experts were provided with a dichotomous categorical rating scale: "1" for appropriate and "0" for not appropriate, for both instruments developed for package manufacturers as well as package customers. Then, the consistency of the two raters' response (the inter rater reliability) was calculated. The result was found to be 0.56 for the instruments of package manufacturers and 0.66 for the instruments of package customers (See Appendix 11A, 11B, and 11C). Based on the possible inter rater reliability test interpretation, the first one has moderate agreement while the second one has good agreement. This indicates that both instruments have acceptable degree of reliability. Besides, experts had commented the need for translating the questionnaire for package customers into Amharic language for customers may not be as good as package manufacturers to understand it. The questionnaire was translated as per the comment. Having done all the necessary adjustments, instruments were prepared and administered.

3.2.5 Sampling Procedures and Techniques

In this study, probability sampling with stratified and simple random sampling techniques was used. The reason for using a stratified sampling procedure is to take proportional samples both from each stratum, namely Addis Ababa and Oromia regions. The number of Plastic package manufacturers operating in Addis Ababa and Oromia regions is eight and three, respectively. Of all the plastic package manufacturers, five manufacturers (four from those operating in Addis Ababa and one operating in Oromia region) were randomly drawn. Similarly, as per the information obtained from sampled package manufacturers' officials, it becomes evident that, in aggregate, there are about 235 active plastic package customers. Before the sample package customers were drawn, they were stratified into five mutually exclusive groups based on product type for which they use a given plastic package. Based on the stratification, 125 use the plastic package for food,

18 for beverages and water, 15 for cosmetic, 14 for drug, and 63 for packaging miscellaneous items. According to Krejcie and Morgan (1970), a sample size of 144 is recommended as sufficient for a population size of 240. Based on this, a sample size of 150 package customers; 12 from beverages and water, 10 from cosmetic, 8 from drug, 80 from food, and 40 from miscellaneous plastic package users were proportionally drawn from each stratum with a separate draw using simple random sampling techniques.

3.2.6 Methods of Data Analysis

In the study, both qualitative and quantitative methods of data analysis are employed to produce a valid research report. The data are summarized in tables in the form of frequencies, percentages, and standard or interpolated median measures, wherever appropriate, and are described qualitatively and quantitatively. Besides, one of the popular rank correlation statistics known as Spearman's rank correlation coefficient is applied to measure the relationship between two rankings on the same set of items and assess its consistency and significance. Moreover, to analyze the Likert scale of opinion survey items, the median value is applied as it is the midpoint or fiftieth percentile value of a variable (half of the values of the variable fall below the median and the other half above it) and this is assumed to be more appropriate among the most used central tendency measures. As the distributions are not symmetrical in the Likert scale opinion survey items, the standard median does not reflect the skewed distribution of the scores. For this reason, interpolated median; slight median adjustment of the standard median according to the distribution of the scores is more appropriate, and is chosen over the standard median. Therefore, these methods of data analysis are used to interpret, summarize, conclude, and suggest appropriate recommendations.

CHAPTER FOUR

4. PRESENTATION, ANALYSIS, AND INTERPRETATION OF THE RESULTS

In this part of the thesis, data gathered through questionnaires and interviews are presented, analyzed, and the results of the analysis are interpreted using frequencies, percentage, and standard or interpolated median measures. To collect relevant data, five questionnaires were distributed to plastic package firm owners or officers and 150 questionnaires were distributed to plastic package customers. All questionnaires distributed to package manufacturers were collected. However, it was possible to collect only 142 questionnaires from those distributed to plastic package customers. When the response rate is calculated, it is found to be 95%. Data obtained through interviewing key officials and practical observations are also included.

This chapter is divided into two major sections: Results based on questionnaires and results based on guided interviews. In the discussion of results based on questionnaires, themes such as common plastic package forms, role of a package designer, product wastage and its damage extent, plastic package contribution in boosting a sale, packaging functions and considerations, views of customers and package manufacturers and their customers towards each other, customers' overall service satisfaction level, and plastic packaging versus concern for environment are looked at. In the discussion of the results based on guided interviews, on the other hand, subjects such as packaging policy in Ethiopia, the environmental threat of plastic package wastes in Addis Ababa and Oromia Regions, investment demand for plastic packages, collaboration and complaint reporting, and packaging standard issues are dealt with.

SECTION ONE: DISCUSSIONS OF RESULTS BASED ON THE QUESTIONNAIRES

4.1 Common Plastic Package Forms

Plastic packages can be produced in different forms to serve various purposes. They can be made colorful or colorless. They can also be shaped into almost any form. Table 1 below shows the common types of plastic package forms that are being produced by package manufacturers and are also used by package customers in Addis Ababa City Administration and Oromia Region.

Table 1: Plastic Package Forms

Plastic package forms	Respondents Category		
	Package Manufacturers n=5	Package Customers n=142	
	n	n	%
Plastic bottle	2	28	19.72
Plastic jar	1	4	2.82
Plastic pot	1	19	13.38
PP woven bag	1	23	16.20
Low density polyethylene	1	25	17.60
Plastic shopping bag	4	33	23.24
Plastic roll	3	82	57.74
Total	**13***	**214***	**150.70***

**Total responses obtained are higher than "n" due to multiple responses.*

***Source**: Responses summarized from the study questionnaire*

As indicated in Table 1, the most frequently used package type by package customers is plastic roll (57.74%). Plastic shopping bags (23.24%) and plastic bottles (19.72%) are the second and third type of packages being used, respectively. The least used plastic package type is the jar (2.82%). From the perspective of plastic package manufacturers, four replied that they produce shopping bags, three replied that they produce plastic roll package forms, and two replied that they produce plastic bottles. This shows that the

most commonly produced plastic package by the manufacturers is "shopping bags". The second is "plastic roll" and the third is "plastic bottles". From plastic package manufacturers, as well as, from the users perspective, plastic roll, shopping bag, and plastic bottle stand out more vividly than all the other forms of plastic packages. This is so because the production of plastic packages in the form of roll as well as shopping bag might not require a much sophisticated technology or perhaps the market demand for these packages is more than the demands for the other forms of plastic packages. This is an indication that there is greater degree of environment pollution vulnerability in the form of litter. For one thing, in most cases such package wastes are difficult to collect. For another, the nature of such packages does not lend itself to re-usability as well as recyclability.

4.2 Role of a Packaging Designer

A packaging designer for package manufacturers is one who is responsible for the production of a specific package as per the specification set by a customer. From customers' perspective, this person is one who is responsible for the overall design such as shape, size, color, and the type of package form to be used.

Table 2: Need for Packaging Designer

Question	Response Category	Respondent Category		
		Package Manufacturers n=5	Package Customers n=142	
		n	n	%
Do you have plastic packaging designer?	Yes	3	69	48.59
	No	2	73	51.41
Total		**5**	**142**	**100**

***Source**: Responses summarized from the study questionnaire*

As indicated in Table 2, three of the package manufacturers replied that they have plastic packaging designer while two package manufacturers replied that they do not. Perhaps

this is either because of lack of skilled personnel in the packaging field or the necessity of having a packaging designer has not been felt by some package manufacturers.

It is also indicated that the majority of the respondents in package customers (51.41%), replied that they do not have plastic package designers. Besides, plastic package manufacturers were asked what they would like to do so that their customers' needs are fulfilled to maximize gain out of packaging. Most of them replied that customers do not come up with packaging specification while ordering the production of the package. This might also be partly because package customers did not have a designer so that packaging requirements such as cost, shape, color, size or similar other package specifications are not put forward. Most of plastic package customers do not have packaging designer probably because either they might have assumed that quality product will sale itself regardless of the type of package and the way it is packed or because they might have assumed that consumers in less developed countries do not give credit to a package provided that they can acquire a product at minimum price. This indicates that package manufacturers as well as package customers are not fully getting packaging benefits that could be gained from proficiency.

4.3 Product Wastage Due to Poor Packaging

There might be cases where a package fails to meet any of its functions for various reasons. Some of them are first, when the material from which a package is made is of poor quality; second, when package customers fail to realize appropriate package for their product; third, when there is defect in the package production process by package manufacturers, and fourth, defect in the packing process by package customers. Therefore, package manufacturers and their respective customers were asked to see whether product wastage cases have occurred or not. Besides, an attempt has been made to see how serious the damage was or otherwise.

Table 3: Product Wastage, Damage Frequency and Extent

Question	Response Category	Respondents Category		
		PM n=5	PC n=142	
		n	n	%
Are there cases reported from your customers so far regarding product wastage as a result of improper plastic packaging?	Yes	4	-	-
	No	1	-	-
Total		**5**	**-**	**-**
Have you ever reported to your supplier product wastage cases due to improper plastic packaging?	Yes	-	128	90.14
	No	-	14	9.86
Total		**-**	**142**	**100**

PM = Package Manufacturers, PC = Package Customers
***Source**: Responses summarized from the study questionnaire*

As per the information indicated in Table 3, four package manufacturers replied that product wastage cases were reported from their package customers. Of the package manufacturers that replied product wastage cases were reported from their customers, two of them replied that the cases were reported rarely, and the other two stated that the cases were reported very rarely. Again, package customers were asked if they reported similar cases to their respective package manufacturers. The majority (90.14%) replied that they have reported product wastage cases due to improper plastic packaging and the remaining (9.86%) replied that they did not. Those package customers who replied product wastage cases to their respective package manufacturers were further asked to indicate the frequency and extent of the damage. With respect to frequency of the damage, 92 (71.88%) replied the damage happened rarely and four (3.12%) replied that the damage happened very often (See Appendix 12). Again, as for the extent of the damage, 118 (92.19%) of them replied that the damage was bad and ten (7.81%) replied that it was worse (See Appendix 12). However, there were none who replied the damage as worst.

The reported product damage might have been due to various reasons. Some of the important ones could have been due to absence of packaging designer both in the package manufacturers and in package customers, lack of technical skills of employees producing the package, availability of technological gap between the package producing firm and the respective package user, or lack of the required skill by employees of package manufacturers or package customers as well.

4.4 Plastic Packaging and Sales Volume

One of the strategies used by marketers to sale their product is through the use of attractive packaging. When a package is capable of attracting the attention of consumers, it is highly likely that consumers will buy a product. Plastic packages are known for their eye-catching ability. In this regard, package customers were asked to assess the extent of plastic packaging contribution in increasing their sales volume.

Table 4: Plastic Packaging Contribution in Boosting a Sale

Question	Response Category	Package Customer (n=142)	
		n	%
How do you rate the contribution of the plastic package in boosting your sale?	Very high	106	74.65
	high	29	20.42
	Not high	7	4.93
	Not at all	0	0
Total		**142**	**100**

***Source**: Responses summarized from the study questionnaire*

As can be seen in Table 4, 106 (74.65%) package customers replied that the contribution of plastic packages in boosting their sale is "very high". None of the respondents replied that a plastic package has little or no contribution for a product to sale. Besides, plastic

package customers were asked to list what makes plastic packages stand out from other forms of packages. Most of them replied that plastics are transparent and have the power to clearly display what they have contained; they are relatively light in weight; they are not fragile, and have the power to attract consumers on the shelf in space or at display. This shows that plastic packages might remain to be dominantly used in the coming years provided that they satisfy packaging functions as well as marketing requirements.

The above finding is also in conformity with the views of Etzel et al (2005) that packaging can serve as a "silent salesperson". They also pointed out that in market places such as supermarket and groceries, where a product is little advertized, packaging serves as the means of communicating with shoppers. Therefore, the view of package manufacturers as well as package users is found to be the same as and in line with the concepts discussed in the related literatures.

4.5 Packaging Functions and Considerations

It is a well known fact that packaging has many functions. The most important ones are commonly grouped as the packages ability to protect the product from damage, its convenience for use and storage, and its ability to communicate or inform the product to users. According to Robert D. Hisrich (1990), packaging must be designed to meet functional requirements (convenience to use and store, attracting the attention of customers on shelf, communicating product benefits, and production cost of the package), marketing requirements (Appearance, size, attention drawing power, brand name readability, and use of consumer friendly language labels), and legal requirements (the label to include information such as name and address of company, net weight, quantity, ingredient label, and the like). Table 5 attempts to explore plastic package functions and considerations of their manufacturing and use by manufacturers, as well as, their respective customers, respectively.

Table 5: Packaging Functions and Considerations

No.	Statement	Weighted Scores		Ranks	
		PM	PC	PM	PC
1	**Packaging Functions**				
	a. Communicating the product to users	7	198	3rd	3rd
	b. Convenience for usage & distribution	8	252	2nd	2nd
	c. Protecting the product from damage	15	402	1st	1st
2	**Packaging Considerations**				
	a. Convenience to use and store	10	425	2nd	1st
	b. Cost of making or acquiring the package	15	280	1st	2nd
	c. Concern for environment	5	147	3rd	3rd

PM = Package Manufacturers, PC = Package Customers

***Source**: Responses summarized from the study questionnaire*

Package manufacturers and package users were asked to rank packaging functions based on their degree of importance (See Appendix 7A). Both groups of respondents ranked the package's ability to protect the product from damage as first and communicating the product to users as last. To measure the consistency between the rankings of the two groups, the Spearman's rank correlation coefficient was calculated and is found to be 1 (See Appendix 7B). This indicates that the agreement between the two rankings is consistent. Therefore, from this it is possible to infer that the primary function of packaging for both groups is protecting the product from damage.

Moreover, there are certain things that either package manufacturers or package users must take into account while they are producing or acquiring a package. For this reason both groups of respondents were asked to rate such considerations as concern for environment, convenience to use and store, and cost of making the package while producing or acquiring it. As can be seen from Table 5, concern for environment is the least consideration given both by package manufacturers and users. The groups, however, rate the other two considerations differently. Package manufacturers rank cost of making

or acquiring the package as their prime consideration while it is second for package users. Similarly, package users rank convenience to use and store as their prime consideration while it is second for package manufacturers. The environment is least valued by both groups of respondents probably because its adverse effect to humans is not immediately apparent or it might be because the groups' level of consciousness about the eminent danger of environmental pollution is low. Again, to measure the consistency between the rankings of the two groups, the Spearman's rank correlation coefficient was calculated and is found to be 0.5 (See Appendix 7B). This indicates that the agreement between the two rankings is not completely consistent. The reason for package manufacturers and package customers have a different view in considering the cost of making or acquiring the package and convenience to use and store might be the purpose for which a given package is produced or used. For manufacturers, what matters most is usually the cost of production. For package customers, on the other hand, what matters most is the purpose for which they would like a given package to serve. This difference is also reflected in how they view each other as revealed hereunder.

4.6 Views of Package Manufacturers and Customers to Each Other

In order to see to what extent plastic package manufacturers and their respective customers know each other, both groups were asked to express their agreement or disagreement to the statements indicated in Table 6A and 6B. The more the packaging firm knows what its customers want, the better it will serve its customers. Similarly, the more package customers know their package producer, the better the package they could get for their product. Table 6A is about customers' view to their respective package manufacturer while Table 6B is package manufacturers' views to their customers.

Table 6A: Customers' View of Package Manufacturer

No.	Statement	Level	n	%	IM
1.	The producer can supply all the quantity ordered timely	*Above*	92	64.79	1.9
		Below	50	35.21	
2.	The producer has limited capacity of producing the required package	*Above*	86	60.56	2.7
		Below	56	39.44	
3.	Delivery is often delayed	*Above*	85	59.86	2.7
		Below	57	40.14	
4.	The producer can produce packages with every kind of shape you want	*Above*	38	26.76	2.1
		Below	104	73.24	

IM = Interpolated Median

***Source**: Responses summarized from the study questionnaire*

Table 6A indicates customers' view of their respective manufacturers. In this table, the dichotomies above and below the interpolated median represent those respondents who agree and disagree to the statements, respectively (See Appendix 9). Accordingly, 92 (64.79%) of the respondents agreed to the statement that the producer is able to supply the required amount of packages timely while 50 (35.21%) disagreed. The majority of the respondents 86 (60.56%) agreed that the producer has limited capacity of providing the required package, and 85 (59.86%) agreed that delivery is often delayed. These data indicate that manufacturers neither have the capacity to provide the required package nor supply the required amount of package on time. One thing to note here or point out is that there was an electricity power shortage during the period the study was conducted. For this reason, a shift system of supplying electric power was introduced by the Ethiopian Electricity Power Authority during the period. Hence, this might be one of the reasons for which package manufacturers were assumed by their customers to have limited capacity of producing the required package and for the delivery to delay often times.

Regarding the shapes of the packages, 104 (73.24%) of the respondents disagreed with the statement that the producer can produce packages with every kind of shape customers order while 38 (26.76%) of the respondents agreed. These data indicate that it might be either because package manufacturers did not effectively communicate their capability to package customers or because package customers' needs or wants for the package are different from the purpose that package manufacturers perceived.

Table 6B: Package Manufacturers' View of Customers

No.	Statement	Level	n	Median
1.	Customers order plastic packages repeatedly	*Above* *Below*	0 1	*Md* = 3 (n = 4)
2.	Customers' order is increasing from time to time	*Above* *Below*	0 0	*Md* = 3 (n = 5)
3.	The number of customers is increasing from time to time	*Above* *Below*	0 0	*Md* = 3 (n = 5)

Md = Median

***Source**: Responses summarized from the study questionnaire*

Package manufacturers were also asked to express their views on their respective customers regarding repeated package order and whether order and the number of customers are increasing from time to time or not. Of the five sampled package manufacturers, four replied that customers place orders repeatedly while only one replied that customers do not make orders repeatedly. In all other cases, package manufacturers replied in unison that customers order for packages and the number of their customers are increasing from time to time (See Appendix 8). Unlike package customers' view of their package manufacturers, package manufacturers seem to have relatively positive attitude to their respective customers. As the data in Table 6A indicate, the majority of plastic package customers replied that they face delayed delivery problems and limited supply. Package manufacturers, however, replied that package order as well as the number of their customers is increasing from time to time. Perhaps this could be due to an increased plastic package demand due to shortage of raw material as well as electricity power supply at the time the data were collected.

4.7 Package Manufacturers and Their Customers Relationship

For a package manufacturing company to stay competitive and in operation, it must satisfy package customers better than what its competitors do. When customers are dissatisfied with their package producers, they have a chance to shift to another package producer especially in a competitive market situation. With a positive relationship, both groups have a lot to gain from each other. Therefore, in order to see the relationship that package manufacturers have with their customers, package customers were asked to express their agreement or disagreement to the statements indicated in Table 7.

Table 7: Manufacturer-Customer Relationship

No.	Question/Statement	Level	n	%	IM
	How do you describe the relationship you have with plastic package manufacturers?				
1.	You are satisfied with their service	*Above*	46	32.39	1.2
		Below	96	67.61	
2.	You place orders to a specific producer repeatedly	*Above*	42	29.58	2.2
		Below	100	70.42	
3.	You are obliged to look for new manufacturers now and then	*Above*	88	61.97	1.9
		Below	54	38.03	

IM= Interpolated Median
***Source**: Responses summarized from the study questionnaire*

Table 7 indicates manufacturer-customer relationships. In the table, the dichotomies above and below the interpolated median represent those respondents who agree and disagree to the statements, respectively (See Appendix 9). As can be seen from the table, the majority of the respondents (67.61%) replied that they are not getting satisfying level of service from their respective package manufacturers. However, there are other customers (32.39%) who replied that they are satisfied with the service they are provided. The majority of the respondents agreed that they are not getting quality service from their

respective customers probably because package manufacturers give more weight to the tangible product, in this case the package, than the accompanying services.

There are various service quality issues depending on the nature and type of business. Besides, service quality survey requires more detailed elements to consider. Therefore, it is difficult to conclude service quality issues based on only the data indicated in Table 7. However, it might serve as a cue for the prevalence of customer service dissatisfaction in package manufacturers.

Plastic package customers were also asked if they place orders to specific package manufacturers repeatedly or not. Some respondents (29.58%) replied that they place orders repeatedly and the majority (70.42%) replied that they did not.

Still customers were asked if they were obliged to look for new package manufacturers for any reason. Most of the respondents (61.97%) agreed to this statement while some others (38.03%) disagreed. A significant number of package customers seems to have a stand on not placing orders to package manufacturers repeatedly and are obliged to look for new package manufacturers. For one thing, this is probably because customers usually favor least cost bidders. For another, existing package manufacturers might be intending to raise prices due to factors such as more package demand, shortage of raw material from time to time, and world economic downturn while this research was being conducted. The other issue this research probed into was that plastic waste and related environmental pollution. This is dealt with as follows.

4.8 Plastic Package Waste Issues and Concern for Environment

As has been indicated in the review of related literature, one of the requirements in designing packages is taking the environment into consideration. This issue has got a deep-rooted acceptance in most developed nations. In order to find out the level of environmental concern of package manufacturers as well as package customers, environmental issues in relation to packaging were raised to both sample groups in the study. They were asked to express their agreement or disagreement to environment-related statements indicated in Table 8A and 8B. Table 8A is about package

manufacturers' and customers' perception regarding plastic package wastes on environment. Table 8B, on the other hand, is about assessing possible plastic package waste effects on environment, who the responsible body or agent for these effects is, and, in the eyes of both groups, who would be the possible environmental pressure groups in the near future.

Table 8A: Package Manufacturers' and Customers' Views for Plastic Package Wastes

Statement	Category	n (%)	Respondents PM, n=5, PC, n=142			Total
			Disagree	Undecided	Agree	
Plastic package wastes have an adverse environmental effect	PM	n	3	0	2	5
	PC	n	5	23	114	142
		%	3.52	16.20	80.28	100

PM = Package Manufacturer, PC = Package Customer

***Source**: Responses summarized from the study questionnaire*

Plastic package manufacturers and their customers were asked to indicate their agreement or disagreement with the adverse environmental effects of plastic package wastes. Three of the plastic package manufacturers replied that plastic package wastes do not have adverse environmental effect and two of them, however, agreed. Most respondents of package customers, 114 (80.28%) replied that they agree while five (3.52%) respondents disagree with this idea. Besides, the remaining (16.20%) respondents neither agreed nor disagreed. The proportion of disagreed and undecided group of respondents in package manufacturers (3) and package customers (19.72%) indicate that still a lot remains to be done on environmental pollution regarding plastic package wastes. On the whole, however, it is possible to infer that environmental effects of plastic package wastes are well recognized by plastic package users.

Table 8B: Plastic Packaging and Concern for Environment

No.	Statement/Question	Weighted Scores		Ranks	
		PM	PC	PM	PC
1	The possible adverse environmental effect of plastic package wastes is:				
	a. Littering	--	426	--	1st
	b. Resource wastage	--	238	--	2nd
	c. Toxicity	--	237	--	3rd
2	Who should, you think, be blamed for seeing plastic package wastes on curb-sides?				
	a. Product users	12	340	3rd	2nd
	b. Plastic package manufacturers	10	180	4th	4th
	c. Those who pack their products	14	196	2nd	3rd
	d. Concerned government authorities or agencies	15	415	1st	1st
3	The possible environmental pressure group in the near future is:				
	a. Customer preference	10	186	3rd	3rd
	b. NGO's campaign	14	332	2nd	2nd
	c. Government's campaign	15	415	1st	1st

PM= Package Manufacturers, PC= Package Customers

***Source**: Responses summarized from the study questionnaire*

As indicated in Table 8B, both package manufacturers and package customers were asked about the possible adverse environmental effects of plastic package wastes. Then, their responses are summarized and weighted for ranking purpose (See Appendix 10A). Respondents ranked adverse environmental effects of plastic packages such as littering, resource wastage, and toxicity first, second, and third, respectively. They did so because litter might be easier to visualize than the other two adverse effects. Another possible reason might be inefficient plastic package waste management system. Still another reason could probably be plastic litters have more power to catch eyes than any other form of waste litters.

Another question which plastic package customers or users asked was who should be blamed for seeing plastic package wastes on curb-sides? Based on the data shown in Table 8B, government is the first, those who consume a product packed in a plastic package are the second, those who pack products using plastic package are the third, and plastic package manufacturers are the fourth to be blamed. Similarly, plastic package manufacturers view the government as the first to be blamed for plastic package wastes that are seen on curb-sides and they view themselves as the fourth to be blamed for the same. Unlike plastic package customers, however, plastic package manufacturers ranked product users the third, and those who pack products with plastic package as the second to be blamed. To measure the consistency between the opinions of the two groups of rankings, the correlation coefficient was calculated using Spearman's rank correlation. The value of the correlation coefficient obtained is 0.8 (See Appendix 10B). This indicates that the agreement between the two rankings is highly consistent. This might be because people view government as everything and has a supreme power in its hands to take action. The other reason could be because in most cases it is not common for people in least developed countries to take the blame for their own wrong doing.

Another question posed to plastic package customers or users was to identify who they anticipate would be the possible environmental pressure group in the near future. As can be seen from Table 8B, government's campaign is their first anticipation, NGO's campaign is the second one, and customer preference has got the last anticipation. Similarly, plastic package manufacturers were asked who they anticipate would be the possible environmental pressure group in the near future. In this regard, they share the same view with plastic package customers. Both plastic package customers and plastic package manufacturers did so because they might have seen or heard some sanitation activities that can be viewed as a threat for them through mass media or due to the assumption that in an economically poor nation, consumers have little power to coerce one who did wrong so long as they could obtain a product at a least price.

4.9 Efficient Utilization of Plastic Packages and Quality Issues

Package production requires sophisticated technology and huge investment. Technology and investment create competitive power not only to the package producing industry but also to those firms that use plastic packages produced by such industries. In most cases the quality of the package depends on the raw material used and the technology employed. Moreover, the technology used by a package manufacturer alone may be useless unless the package customer also uses a packaging machine with similar technology. Despite these technologies and quality raw materials, there might be flaws if packages acquired by the package customer are not fully used. To address such packaging issues, package customers were asked the following questions to assess the overall plastic package quality.

Table 9: Efficient Utilization of Plastic Packages

No.	Questions/Statements	Response Category	Responses (n=142)	
			n	%
1	Do you completely, without any wastage, use all the plastic packages acquired?	Yes	30	21.13
		No	112	78.87
	Total		**142**	**100**
2	If your response for the above question is "No", what would be the possible reason(s)?			
	a. Due to flaws in producing the package		97	68.31
	b. Due to flaws in packaging process		87	61.27
	Total		**184***	**129.58**

**Total responses obtained are higher than "n" due to multiple responses.*

***Source**: Responses summarized from the study questionnaire*

Package customers were asked whether they are able to fully utilize the package they acquired from their respective package manufacturers or not. As can be seen from Table 9, 112 (78.87%) replied that they were not completely using packages and 30 (21.13%) responded that they are using. When indicating the reasons why they are not able to use

all the plastic packages acquired, 97 (68.31%) replied that they were unable to use the package because of flaws in producing the package, and 87 (61.27%) replied that is is due to flaws in packaging process. From this, it is possible to infer that there are packaging flaws either during production and/or in the packaging process. Hence, package quality cannot only be a package producer responsibility but it is also a package user issue.

4.10 Plastic Bag Regulations and Environmental Impact Assessment

Because plastic debris may cause the environment to be littered or polluted, plastic packaging specific regulations are enacted by government or the concerned Environment Authority. Solid Waste Management Proclamation can be cited as the case in point in Ethiopia. In this proclamation, it is clearly indicated that the production and placing of a plastic bag in the market, unless it is labeled to how whether it is biodegradable, is unlawful as of the date fixed by the Authority. As per the proclamation, too, it is prohibited to grant permit for the manufacture or importation of any non-biodegradable plastic bags with a wall thickness of 0.03milimeters and less than 0.03milimeters. Besides, the Environmental Impact Assessment Proclamation requires the proponent to undertake an environmental impact assessment and submit the report to the concerned Authority before a proposed project is implemented. To see how owners or officers of plastic package firms are aware of plastic package specific regulations such as those mentioned above, they were asked some questions and the responses obtained are indicated in Table 10.

Table 10: Plastic Bag Regulations and Environmental Impact Assessment

No.	Questions	Response Category	n
1	Are there plastic packaging related regulations which you, as a package producer, shall be abided by?	Yes	0
		No	5
	Total		**5**
2	As a proponent, have you undertaken an environmental impact assessment and submitted the report to the concerned authority before implementing the manufacturing of plastic packages?	Yes	0
		No	5
	Total		**5**

***Source**: Responses summarized from the study questionnaire*

As can be seen indicated in Table 10, no package manufacturer is aware of the enactment of the production of plastic packages with a wall thickness of 0.03milimetere or less which is not biodegradable. Similarly, no proponent of a packaging firm has undertaken an environmental impact assessment and submitted a report about the same to the concerned Authority. This implies that either proponents of the plastic package firms do not know about the enacted regulation or the regulating body and concerned authority are not following up the enforcement of the regulation.

SECTION TWO: DISCUSSION OF RESULTS BASED ON THE GUIDED INTERVIEWS

4.11 Packaging Policy in Ethiopia

Concerned government officials have been interviewed whether Ethiopia has a packaging policy or not. Besides, plastic package manufacturers were asked if they know that Ethiopia has packaging policy. However, data from the interview and the question revealed that Ethiopia does not have packaging policy. Absence of packaging policy has many drawbacks. Resource wastage, shortage of foreign currency exchange as a result of reduced export due to poor packaging, and product wastage are a few of these drawbacks.

Perhaps this indicates that Ethiopia is losing what it could gain by having a packaging policy.

4.12. Threat of Plastic Package Waste on Environment in Ethiopia

Officials from Environmental Protection Authority (EPA) were interviewed in order to obtain information about which of the plastic packages used are regarded as environmentally harmful by the authority. They replied that there is no such an official classification by the authority so far. However, the Ethiopian government has regulated plastics with a thickness of 0.03milimeters or less as environmentally harmful. Officials also disclosed that they are working closely with Ethiopian Customs Duty and Quality and Standards Authority of Ethiopia. According to the interview, the Customs Duty is responsible to refer, if any, imported plastics with the indicated thickness that it has suspected to the Quality and Standards Authority of Ethiopia for test. Unlike the controlling mechanism for imported plastics with the regulated thickness, it was possible to learn from the interview that no such mechanism has been set by EPA for plastics with similar thickness produced within the country.

Though it has been enacted and the officials concerned say so, it is common to see plastic bags within the enacted limit in the market place (See Appendix 6B). One can get them for cash or for free as shopping bags from retailers. Moreover, according to EPA officials, the threat of other forms of plastic packages to the environment, especially plastic bottles, is found to be almost minimal. Their justification is that there is a strong tendency that most people especially those residing in the countryside as well as those with low economic status in towns or cities have strong tendency to reuse plastic bottles. However, they have said nothing about the adverse effect of plastic roll package wastes.

4.13. Investment Demand for Plastic Packages

Officials from investment agencies were asked if the investment demand for plastic package manufacturing is on increase, maintains the current status quo, or shows the tendency to decrease in the future. They replied that it is increasing. They were also asked if there were measures taken on proponents of plastic package manufacturers for

protect the environment or they are not being enforced as they were supposed to by the executing body. Therefore, unless some environmental measures such as enacting additional regulations and enforcing them are done, it is inferred that the package's environmental requirement remains to be neglected both by plastic package manufacturers and their respective customers for the years to come.

Most of the package customers as well as package manufacturers blame the government for environmental pollution that emanate from used plastic package wastes. The plastic package manufacturers and customers feel that they are not part of the problem. From this, it is possible to conclude that the public has little understanding of its responsibility for environmental concern, and it is evident that a lot remains to be done from the government side.

5.3 Recommendations

1. All plastic package wastes are not equally bad for the environment. That is why the government of Ethiopia passed a regulation not to produce or import plastics with a wall thickness of 0.03 millimeter and is not easily compostable. This is a good thing, but regulating alone is not enough if we are to keep our environment safe from pollution from plastic wastes. It is common to find plastic shopping bags that are within the range of the stipulated thickness in every shop or supermarket (See Appendix 6B). These shopping bags are either imported from abroad or produced within the country. Besides, the regulation does not say anything about products that are produced within the country or imported from abroad with a plastic package of the same range of thickness as the regulated plastic. Therefore, policy makers should revise the regulation accordingly and the government should strictly follow up how such regulations are enforced.

2. Packaging designers for package manufacturers as well as for package customers are not a matter of options. In package manufacturers, the designer is responsible for the production and delivery of plastic packages as per the specifications provided by package customers or might advise customers on packaging matters. For package

customers, package designers are responsible for overall packaging requirement. Hence, absence of a designer might greatly contribute to mal-packaging. Therefore, it is important both for package manufacturers as well as package customers to have professional packaging designer either by employing one or outsourcing as part-timer.

3. As the population of Ethiopia is increasing from time to time, it is evident that more and more product will be consumed. This again means that we need more packaging. Unless we have a packaging policy, it is certain that we will run out of packaging resources and packaging waste problem will be beyond our ability to manage. Therefore, the government must formulate such a practicable packaging policy that will enable to reduce, reuse, recycle, and dispose packaging wastes in an efficient and environmentally friendly manner.

4. In many developed nations, governments are doing their best to reduce packaging wastes from the source following an integrated and coordinated package waste management approach. Though the government in Ethiopia is not believed to be the sole responsible body to manage package wastes, the initiative should come from it. It must, therefore, not only regulate package waste issues but also follow up their proper enforcement, promote awareness, involve public to take part, identify those groups that cause the package waste to be generated, and discharge its overall responsibility about the same.

5. Plastics have eye-catching, low cost, light-weight quality. Unless some other new preferable packaging material is invented, it seems impossible to stop the present generation from using packages made of plastic. In order to protect the environment from the adverse effects of used plastic package wastes, therefore, efforts should be made to produce and use biodegradable plastics, avoid over-packaging, or avoid single-use packages. Moreover, there must be a mechanism of collecting and sorting plastic package wastes so that economic and health values can be gained through reduction, re-use, and recycling of these wastes.

6. The major sources of used plastic package wastes are plastic package manufacturers, users of these packages (business customers), and households (those using products packed with plastics). One of the strategies to be used in order to minimize used plastic package wastes is to reduce the waste from the source. Moreover, the cooperation and collaboration that EPA officials have with plastic package manufacturers to reduce the waste from the source are weak. Hence, a strategy without implementation might not bring the desired change. To properly manage used plastic package wastes to the minimum level required, systems must be developed so that plastic package manufacturers, users, and households must cooperate in an integrated manner.
7. The existing laws, regulations, practices, control mechanisms, etc need to be thoroughly examined and improved in light of the benefits, contributions, or undesirable effects of all plastic package types.

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APPENDICES

Appendix 1: Questionnaire for Plastic Package Customers

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLEGE OF EDUCATION

DEPARTMENT OF BUSINESS EDUCATION

Questionnaire to be Filled by Plastic Packaging Customers

Purpose of the Questionnaire:

The purpose of this questionnaire is just to collect relevant data regarding plastic packaging practices. The credibility of a research such as this one basically depends on the genuine data you provide. Hence, you are kindly requested to answer each item properly.

"Your concern is highly appreciable."

How to Fill the Questionnaire:

Responses in this questionnaire can be given either in the form of a simple **yes/no** or in a brief written description. Items with yes/no responses are preceded by a box. For such items, put a tick mark (√) in the box. For items that require written description, however, write your response briefly on the space provided. Please use each case where appropriate.

1. Which plastic packaging item(s) do you use for packing your product? (You may choose more than one)

   ☐ Plastic bottle ☐ Plastic jar ☐ Plastic pot ☐ PP woven bag

   ☐ Low density polyethylene ☐ Plastic shopping bag ☐ Plastic roll

   ☐ Others (please specify)_____

2. Do you have a plastic package designer?

   ☐ Yes ☐ No

3. Have you ever reported to your supplier product wastage cases due to improper plastic packaging?

☐ Yes ☐ No

4. If your response for question No. 3 is **yes**, how frequent is it?

☐ Very Often ☐ Sometimes ☐ Very rarely

5. If your response for question No. 3 is **yes**, how do you express the extent of the damage?

☐ Bad ☐ Worse ☐ Worst

6. How do you rate the contribution of the plastic package in boosting your sale?

☐ Very high ☐ high ☐ Not high ☐ Not at all

7. Please indicate your priority of consideration in acquiring plastic packages by ranking from 1 to 3 where 1 is most desirable and 3 is the least.

a. Convenience to use and store..... ☐
b. Cost of making or acquiring the package..... ☐
c. Concern for environment..... ☐

8. Which language do you use for labeling your package?

☐ English only ☐ Amharic only ☐ Afaan Oromoo only
☐ English and Amharic ☐ English and Afaan Oromoo
☐ Amharic and Afaan Oromoo ☐ Other_____

9. Nowadays packaging has various functions to meet. The most common ones are the following. Please indicate their degree of importance, from the perspective of your activity, by ranking from 1 to 3 where 1 is most desirable and 3 is the least.

a. Communicating the product to users..... ☐
b. Convenience for usage as well as distribution... ☐
c. Protecting the product from damage ..... ☐

10. How do you describe the capability of your plastic package supplier(s)? Use tick mark (√) on appropriate column.

S/No	Statement	Disagree	Undecided	Agree
a.	The producer can supply all the quantity ordered timely			
b.	The producer has limited capacity of providing the required package			
c.	Delivery is often delayed			
d.	The producer can produce a package with every kind of shape you want			

11. How do you describe the relationship you have with plastic packaging manufacturers? Use tick mark (√) on appropriate column.

S/No	Statement	Disagree	Undecided	Agree
a.	You are much satisfied with them			
b.	You place orders to a specific producer repeatedly			
c.	You are obliged to look for new manufacturers now and then			

12. What did your consumers say about the plastic package used for the product they are consuming? Use tick mark (√) on appropriate column.

S/No	Statement	Disagree	Undecided	Agree
a.	It is convenient for consuming the product			
b.	It is easy to open			
c.	It is easy to carry			
d.	Complain for the quantity of pack			
e.	Complain for the quality of pack			

13. Do you completely, without any wastage, use all the plastic packages you acquire?

☐ Yes ☐ No

14. If your response for question No. 13 is **no**, what would be the possible reason(s)? (Marking one or more boxes is possible)

☐ Due to flaws in producing the package

☐ Due to flaws in product packaging process

☐ Others (please specify)_____

S/No	Item	Disagree	Undecided	Agree
15	Plastic package wastes have an adverse environmental effect			
16	Who should, you think, be blamed for seeing plastic package wastes on curb-sides?			
	a. Product users			
	b. Plastic package manufacturers or suppliers			
	c. Those who pack their products with plastic packages			
	d. Concerned government authorities or agencies			
17	The possible adverse environmental effect of plastic package wastes is:			
	a. Littering			
	b. Resource wastage			
	c. Toxicity			
18	The possible environmental pressure group in the near future is:			
	a. Customer preference			
	b. NGO's campaign			
	c. Government's campaign			

19. What do you think are the basic advantages that plastic packages have over other forms of packages?

.....

.....

.....

.....

20. Do you have something to mention that is invaluable for plastic package suppliers to fulfill in order to gain the most out of the plastic package?

.....

.....

.....

Appendix 2: Questionnaire for Plastic Package Manufacturers

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF BUSINESS EDUCATION

Questionnaire to be Filled by Plastic Package Manufacturing Officers

Purpose of the Questionnaire:

The purpose of this questionnaire is just to collect relevant data regarding plastic packaging practices. The credibility of a research such as this one basically depends on the genuine data you provide. Hence, you are kindly requested to answer each item properly.

"Your concern is highly appreciable."

How to Fill the Questionnaire:

Responses in this questionnaire can be given either in the form of a simple **yes/no** or in a brief written description. Items with yes/no responses are preceded by a box. For such items, put a tick mark (√) in the box. For items that require written description, however, write your response briefly on the space provided. Please use each case where appropriate.

1. What kind of plastic packages are you producing? (You may tick more than one)
   ☐ Plastic bottle ☐ Plastic jar ☐ Plastic pot ☐ PP woven bag
   ☐ Low density polyethylene ☐ Plastic shopping bag ☐ Plastic roll
   ☐ Others (please specify) _____
2. Are there packaging policies at the national or regional level?
   ☐ Yes ☐ No
3. Do you have a packaging designer?
   ☐ Yes ☐ No
4. Are there cases reported from your customers so far regarding product wastage as a result of improper plastic packaging?
   ☐ Yes ☐ No
5. If your response for question No. 4 is **yes**, how frequent is it?
   ☐ Very often ☐ Sometimes ☐ Very rarely

6. Nowadays a package has various functions to meet. The most common ones are the following. Please rank them, from the perspective of your firm, 1 to 3 where 1 is the most important and 3 is the least.

   a. Communicating the product to users..... ☐
   b. Convenience for usage as well as distribution.... ☐
   c. Protecting the product from damage..... ☐

7. Please indicate your priority of consideration, from the perspective of your firm, in producing a plastic package by ranking 1 to 3 where 1 is most important and 3 is the least.

   a. Convenience to store..... ☐
   b. Cost of making the package..... ☐
   c. Concern for environment..... ☐

8. How do you describe your plastic package customers? Use a tick mark (√) on the appropriate column.

S/No	Statement	Disagree	Undecided	Agree
a.	Customers order plastic packages repeatedly			
b.	Customers' order is increasing from time to time			
c.	The number of customers is increasing from time to time			

9. Do you provide whatever quantity demanded of plastic packages by your customer exactly on the date agreed upon?

   ☐ Yes, often times.
   ☐ Yes, but sometimes.
   ☐ Yes, but very rarely.

10. If your response for question No. 9 is **"yes, but sometimes" or "yes, but very rarely"**, what would be the possible reason(s)?

    ☐ Quantity demanded is more than production capacity.
    ☐ There is limited supply of raw materials for producing plastic packages.
    ☐ There is space limitation to store produced packages until delivery.
    ☐ From experience, customers buy less of their initial order.
    ☐ Others (please specify)_____.

11. Are there plastic packaging related regulations which you, as a package producer, shall be abided by?

☐ Yes ☐ No

12. If your response for question No. 11 is **yes**, please list them down on the space provided below.

.....

.....

13. As a proponent, have you undertaken an environmental impact assessment and submitted the report to the concerned authority before implementing the manufacturing of plastic packages?(Please substantiate this by attaching an evidence)

☐ Yes ☐ No

14. If your response for question No. 13 is **yes**, please list:

A. **The identified adverse impacts of the firm**:

.....

.....

B. **The means of their prevention**:

.....

.....

15. Seeing used plastic packages on curb-sides here in Ethiopia is common. Who should, you think, be blamed for that?

S/No	Statement	Disagree	Undecided	Agree
a.	Product users			
b.	Plastic package manufacturers			
c.	Those who pack their products			
d.	Concerned government authorities or agencies			

S/No	Statement	Disagree	Undecided	Agree
16	The possible environmental pressure group in the near future is:			
	a. Customer preference			
	b. NGO's campaign			
	c. Government's campaign			

S/No	Statement	Disagree	Undecided	Agree
17	Plastic package wastes have an adverse environmental effect			

18. Do you have something to advice your business customers in order to gain the most out of the plastic package? If yes, please indicate it briefly on the space provided below.

    .....

    .....

    .....

19. Do you have something to comment on Government agencies or authorities to take corrective measures on issues that hinder your business activity? If **yes**, please indicate it on the space provided.

    A. **Regarding Environmental Authorities**:

    .....

    .....

    .....

    .....

    B. **Regarding Licensing Agencies**:

    .....

    .....

    .....

    .....

    C. **Regarding Investment Agencies**:

    .....

    .....

    .....

    .....

Appendix 3: Interview Guides for Investment Officials

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACULTY OF EDUCATION

DEPARTMENT OF BUSINESS EDUCATION

Interview Guide for Investment Officials

Purpose of the Interview:

The purpose of this questionnaire is just to collect relevant data regarding plastic packaging practices. The credibility of a research such as this one basically depends on the genuine data you provide. Hence, you are kindly requested to answer each item properly.

"Your concern is highly appreciable."

1. How many plastic packaging manufacturers are currently in operation in your respective region?
2. How do you project the investment demand for plastic package manufacturing in the future?

   ☐ Increasing ☐ Decreasing ☐ Maintain the current status quo

3. Would you mention the ratification measures, if any, taken by the agency as a result of failure of the proponent to implement the authorized plastic packaging business in compliance with commitment entered into or obligations imposed upon?

4. Please write down some of the cases, if any, reported as a challenge from plastic package manufacturing owners so far in producing and supplying their product.

5. Please note down your opinion or observation that would be helpful for policy makers what to consider or reconsider on regulations specific to plastic package issues?

Appendix 4: Interview Guides for EPA Officials

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACULTY OF EDUCATION

DEPARTMENT OF BUSINESS EDUCATION

Interview Guide for EPA Officials

Purpose of the Interview:

The purpose of this questionnaire is just to collect relevant data regarding plastic packaging practices. The credibility of a research such as this one basically depends on the genuine data you provide. Hence, you are kindly requested to answer each item properly.

"Your concern is highly appreciable."

1. Is there packaging policy in Ethiopia? If so, how actionable is it?
2. Which form of plastic packages, do you think, would take the lion share of packaging solid wastes?
   ☐ Bottles ☐ Shopping bags ☐ Low density polyethylene
3. Do licensing agencies consult you prior to their issuance of an investment/or operation permit to plastic package manufacturers?
   ☐ Yes ☐ No
4. If your response for question No. 2 is **no**, please write down possible reasons briefly on the space provided below.
5. To what extent does your office receive a complaint(s) from public against any person or organization causing actual or potential damage to the environment specific to used plastic package waste?
   ☐ Frequently ☐ Sometimes ☐ Rarely ☐ Not at all
6. If your answer for question No. 4 is "***Frequently***", "***Sometimes***", or "***Rarely***", please indicate the type of complaints in terms of damage and their extent on the table below. (You may use more serious, medium, less serious as appropriate for extent).

S/No	Type of damage	Extent
1		
2		

7. Which plastic packages are considered by the authority as environmentally harmful?
8. How do you describe the degree of cooperation with plastic packaging manufacturers and plastic package users to get their environment free from solid wastes in general and plastic packaging wastes in particular?
   A. Regarding plastic packaging manufacturers
   B. Regarding plastic package users

Appendix 5: Interview Guides for QSAE Officials

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
FACULTY OF EDUCATION
DEPARTMENT OF BUSINESS EDUCATION

Interview Guide for Quality and Standards Officials

Purpose of the Interview:

The purpose of this questionnaire is just to collect relevant data regarding plastic packaging practices. The credibility of a research such as this one basically depends on the genuine data you provide. Hence, you are kindly requested to answer each item properly.

"Your concern is highly appreciable."

1. One of the duties of the Quality and Standards Authority of Ethiopia (QSAE) is to provide product certification. When doing so, do you treat the package separately or consider it as part of the product?
2. Suppose that the product hundred percent meets the standards set by QSAE but its package does not. What would be your measure in such cases?
3. Were there cases so far that the QSAE took necessary measures on products being imported or produced in the country due to poor packaging? If yes, please attach the document that certifies it.
4. Is there an exceptional packaging standard for plastic packages in relation to environment? If yes, please state them and attach the supporting document.
5. As a Quality and Standards responsible body, how do you explain the Ethiopian Standards' contribution to safety, human health, and the protection of environment with specific to plastic packaging?
6. Do you have something to recommend or advice concerned government officials like environment, and plastic packaging manufacturers or importers to have an integrated effort for the well-being of our society and country specific to plastic packaging?

   A. Environment Officials
   B. Plastic packaging manufacturers
   C. Plastic packaging importers

Appendix 6A: Plastic Bag Thickness Examination--Letter

በኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፑብሊክ
THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

የኢትዮጵያ የጥራትና የደረጃዎች ባለሥልጣን
QUALITY AND STANDARDS AUTHORITY OF ETHIOPIA

ቁጥር
Ref. No.

ቀን
Date

ለአያሴው ሰሀይ

አዲስ አበባ

ከነሐሴ 1 ቀን 2010 ዓ.ም. (09/11/09) በተሳሳተ ሀሳብግሎት ከመጀመሪያ ቅጽ ዋጋውተጨ ጉዳዩን ሳጣራ አንዲፈትሽልኝ ከመጠየቃችሁ ይታወሳል።

ለጠየቃችሁ በጥያቄው መሠረት ፌተሳው ኮሚሽን 1 ገጽ የፌተሳ ውጤት በዘህ ደብዳቤ ሰንጎት ያለንን መረጃ አንገልፅለን።

ከሠላምታ ጋር

ሥርጉት ወሰዱ
ሳይንቲስትና የቁጥጥር ውጤቶች ፌተሳ
ዳይሬክቶሬት ዳይሬክተር

አባሪ፡ 1 ገጽ የፌተሳ ውጤት

ግልባጭ፡
በኢትዮጵያ የጥራትና የደረጃዎች ባለሥልጣን
- ለፌተሳ ላቦራቶሪች አገልግሎት ዳይሬክትሬት/ያለአባሪ/
- ለዜተሳ ላቦራቶሪች ዳይሬክትሬት
(ለደንበርያ ከስቶዲያን)
አዲስ አበባ

2310
Addis Ababa
011 6460111
Fax: 251-011 6460880 (81)
E-mail: qsae@ethionet.et
Website: www.qsae.org

Appendix 6B: Plastic Bag Thickness Examination--Result

	Company Name	Document No.
	QUALITY AND STANDARDS AUTHORITY OF ETHIOPIA	FRM/TLG/030
Title		Page No. / Issue No.
TEST REPORT		1 Of 1 / Edition 2

Report No. TLTR/134/09

Test Order No. –

1	Name of client	Ayelew Seid
2	Date and place of sampling	Not specified
3	Sampled and submitted by	Client
4	Date sample received	09/11/09
5	Client's sample code	-
6	Laboratory designated sample No.	206001
7	Type of sample	Plastic bag
8	Test method	ES 410:2001
9	Test date(s)	11/11/09
10	Date of submission of test report	11/11/09

Ser. No.	Characteristics tested	Test result
1	Thickness, mm	0.015

Remarks:-
1. This test result is as per sample submitted by the client, which may not be a representative sample.
2. This test result is only informative it shall not serve as a certificate

Tested by - Eshetu Zergaw

Checked & verified by: - Sergut Wolde

2310 ☎ 646 01 11 Fax 646 - 08 - 80(84) E-mail qsaetesting@ethionet.et

Appendix 7A: Packaging Functions and Considerations-Weighted Scores (Table 5)

Statement		Respondents Category												Weighted Scores	
		Package Manufacturers n=5			Package Customers n=142			Package Manufacturers			Package Customers			Sum	
		1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	Packaging Manufacturers	Packaging Customers
Values Assumed		3 (a)	2 (b)	1 (c)	3 (a)	2 (b)	1 (c)								
(a) Packaging Functions															
Communicating the product to users	(a)	0	2	3	8	40	94	(a)x(a) 0	(a)x(b) 4	(a)x(c) 3	(a)x(a) 24	(a)x(b) 80	(a)x(c) 94	7	198
Convenience for usage & distribution	(b)	0	3	2	8	94	40	(b)x(a) 0	(b)x(b) 6	(b)x(c) 2	(b)x(a) 24	(b)x(b) 188	(b)x(c) 40	8	252
Protecting the product from damage	(c)	5	0	0	126	8	8	(c)x(a) 15	(c)x(b) 0	(c)x(c) 0	(c)x(a) 378	(c)x(b) 16	(c)x(c) 8	15	402
(b) Packaging Considerations															
Convenience to use and store	(a)	0	5	0	141	1	0	(a)x(a) 0	(a)x(b) 10	(a)x(c) 0	(a)x(a) 423	(a)x(b) 2	(a)x(c) 0	10	425
Cost of making or acquiring the package	(b)	5	0	0	1	136	5	(b)x(a) 15	(b)x(b) 0	(b)x(c) 0	(b)x(a) 3	(b)x(b) 272	(b)x(c) 5	15	280
Concern for environment	(c)	0	0	5	0	5	137	(c)x(a) 0	(c)x(b) 0	(c)x(c) 5	(c)x(a) 0	(c)x(b) 10	(c)x(c) 137	5	147

Appendix 7B: Packaging Functions and Considerations- Spearman's Rank Correlation Coefficient (Table 5)

Calculation

In practice, however, a simpler procedure is normally used to calculate **ρ**. The raw scores are converted to ranks, and the differences (d_i) between the ranks of each observation on the two variables are calculated.

ρ is given by:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

Where:

$d_i = x_i - y_i$ is the difference between the ranks of corresponding values x_i and y_i, and n = the number of values in each data set (same for both sets).

The value of **ρ** lies between −1 and 1, and increasing values imply increasing agreement between the rankings.

Packaging Functions	x_i	y_i	$d_i = x_i - y_i$	d^2_i	Correlation Coefficient
Communicating the product to users	3rd	3rd	0	0	$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$
Convenience for usage & distribution	2nd	2nd	0	0	$\rho = 1 - \frac{6 \times 0}{24}$
Protecting the product from damage	1st	1st	0	0	$\rho = 1 - 0$
			$\Sigma d_i^2 =$	0	$\rho = 1$

X_i = Rank given by Packaging Manufacturers, and Y_i = Rank given by Packaging Customers

Packaging Considerations	x_i	y_i	$d_i = x_i - y_i$	d^2_i	Correlation Coefficient
Convenience to use and store	2nd	1st	1	1	$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$
Cost of making or acquiring the package	1st	2nd	- 1	1	$\rho = 1 - \frac{6 \times 2}{24}$
Concern for environment	3rd	3rd	0	0	$\rho = 1 - \frac{1}{2}$
			$\Sigma d_i^2 =$	2	$\rho = 0.5$

X_i = Rank given by Packaging Manufacturers, and Y_i = Rank given by Packaging Customers

Appendix 8: Package Manufacturers' View to Their Respective Customers (Table 6B)

No.	Statements	Packaging Manufacturers			Median (Value)	(n = 5)		
		Disagree (1)	Undecided (2)	Agree (3)		Below Median (f)	Median (f)	Above Median (f)
1	Customers order plastic packages repeatedly	0	1	4	3	1	4	0
2	Customers' order is increasing from time to time	0	0	5	3	0	5	0
3	The number of customers is increasing from time to time	0	0	5	3	0	5	0

f = Frequency

Appendix 9: Industry-customer Relationship -Interpolated Median (Table 6A and Table 7)

Calculating IM for Questions in a Three-Point Likert Scale											
Group Order	1	2	3	1	2	3		1	2	3	
L = Lower limit of the group:	0.5	1.5	2.5								
W = Width of the interval of the group:	1	1	1								
Items	**Frequency of response (F)**			**Cumulative frequency (CF)**			**N**	**Calculating IM**			**IM**
The producer can supply whatever quantity is ordered timely	50	51	41	50	101	142	142	1.9			1.9
The producer has limited capacity of providing the required package	30	26	86	30	56	142	142		2.7		2.7
Delivery is often delayed	23	34	85	23	57	142	142		2.7		2.7
The producer can produce every kind of shape you want	26	78	38	26	104	142	142	2.1			2.1

IM = Interpolated Median

Calculating IM for Questions in a Three-Point Likert Scale											
Group Order	1	2	3	1	2	3		1	2	3	
L = Lower limit of the group:	0.5	1.5	2.5								
W = Width of the interval of the group:	1	1	1								
Items	**Frequency of response (F)**			**Cumulative frequency (CF)**			**N**	**Calculating IM**			**IM**
You are satisfied with them	96	3	43	96	99	142	142	1.2			1.2
You place orders to a specific producer repeatedly	0	100	42	0	100	142	142	2.2			2.2
You are obliged to look for new producer now and then	54	39	49	54	93	142	142	1.9			1.9

IM = Interpolated Media

Appendix 10A: Plastic Packaging and Concern for Environment-Weighted Scores (Table 8B)

Item		Respondents Category												Weighted Scores	
		Package Manufacturers n=5			Package Customers n=142			Package Manufacturers			Package Customers			Sum	
		D	U	A	D	U	A	D	U	A	D	U	A	Packaging Manufacturers	Packaging Customers
Values Assumed		1 (a)	2 (b)	3 (c)	1 (a)	2 (b)	3 (c)								
The possible adverse environmental effect of plastic package wastes is:															
a. Littering	(a)	--	--	--	0	0	142	(a)x(a) --	(a)x(b) --	(a)x(c) --	(a)x(a) 0	(a)x(b) 0	(a)x(c) 426	--	426
b. Resource wastage	(b)	--	--	--	94	0	48	(b)x(a) --	(b)x(b) --	(b)x(c) --	(b)x(a) 94	(b)x(b) 0	(b)x(c) 144	--	238
c. Toxicity	(c)	--	--	--	51	87	4	(c)x(a) --	(c)x(b) --	(c)x(c) --	(c)x(a) 51	(c)x(b) 174	(c)x(c) 12	--	237
Who should, you think, be blamed for seeing plastic package wastes on curb-sides?															
a. Product users	(a)	1	1	3	43	0	99	(a)x(a) 1	(a)x(b) 2	(a)x(c) 9	(a)x(a) 43	(a)x(b) 0	(a)x(c) 297	12	340
b. Plastic package manufacturers or suppliers	(b)	1	3	1	123	0	19	(b)x(a) 1	(b)x(b) 6	(b)x(c) 3	(b)x(a) 123	(b)x(b) 0	(b)x(c) 57	10	180
c. Those who pack their products	(c)	0	1	4	114	2	26	(C)x(a) 0	(c)x(b) 2	(c)x(c) 12	(c)x(a) 114	(c)x(b) 4	(c)x(c) 78	14	196
d. Concerned government authorities or agencies	(d)	0	0	5	0	11	131	(C)x(a) 0	(c)x(b) 0	(c)x(c) 15	(c)x(a) 0	(c)x(b) 22	(c)x(c) 393	15	415
The possible environmental pressure group in the near future is:															
a. Customer preference	(a)	1	3	1	115	10	17	(a)x(a) 1	(a)x(b) 6	(a)x(c) 3	(a)x(a) 115	(a)x(b) 20	(a)x(c) 51	10	186
b. NGO's campaign	(b)	0	1	4	38	18	86	(b)x(a) 0	(b)x(b) 2	(b)x(c) 12	(b)x(a) 38	(b)x(b) 36	(b)x(c) 258	14	332
c. Government's campaign	(c)	0	0	5	10	21	111	(c)x(a) 0	(c)x(b) 0	(c)x(c) 5	(c)x(a) 0	(c)x(b) 10	(c)x(c) 137	15	415

Appendix – 10B: Plastic Packaging and Concern for Environment Spearman's Rank Correlation Coefficient (Table 8B)

Who should, you think, be blamed for seeing plastic package wastes on curb-sides?	x_i	y_i	$d_i = x_i - y_i$	d^2_i	**Correlation Coefficient**
a. Product users	3rd	2nd	1	1	$\rho = 1 - \frac{6\sum d_i^2}{n(n^2-1)}$ $\rho = 1 - \frac{6\times 2}{60}$ $\rho = 1 - \frac{1}{5}$ $\rho = 0.8$
b. Plastic package manufacturers or suppliers	4th	4th	0	0	
c. Those who pack their products	2nd	3rd	-1	1	
d. Concerned government authorities or agencies	1st	1st	0	0	
			$\Sigma d_i^2 =$	2	

X_i = Rank given by plastic packaging manufacturers, and Y_i = Rank given by Packaging Customers

The possible environmental pressure group in the near future is:	x_i	y_i	$d_i = x_i - y_i$	d^2_i	**Correlation Coefficient**
a. Customer preference	3rd	3rd	0	0	$\rho = 1 - \frac{6\sum d_i^2}{n(n^2-1)}$ $\rho = 1 - \frac{6\times 0}{24}$ $\rho = 1 - 0$ $\rho = 1$
b. NGO's campaign	2nd	2nd	0	0	
c. Government's campaign	1st	1st	0	0	
			$\Sigma d_i^2 =$	2	

X_i = Rank given by packaging manufacturers, and Y_i = Rank given by Packaging Customers

Appendix 11A: Inter Rater Reliability-Test

Items	Package Manufacturers		Package Customer	
	Expert - 1	Expert - 2	Expert - 1	Expert - 2
1	Appropriate	Appropriate	Appropriate	Appropriate
2	Appropriate	Appropriate	Appropriate	Appropriate
3	Appropriate	Appropriate	Appropriate	Appropriate
4	Appropriate	Appropriate	Appropriate	Appropriate
5	Appropriate	Appropriate	Appropriate	Appropriate
6	Appropriate	Appropriate	Appropriate	Appropriate
7	Appropriate	Appropriate	Appropriate	Appropriate
8	Not Appropriate	Not Appropriate	Appropriate	Not Appropriate
9	Appropriate	Appropriate	Appropriate	Appropriate
10	Not Appropriate	Not Appropriate	Not Appropriate	Not Appropriate
11	Appropriate	Appropriate	Appropriate	Appropriate
12	Appropriate	Appropriate	Appropriate	Appropriate
13	Appropriate	Appropriate	Appropriate	Appropriate
14	Appropriate	Appropriate	Appropriate	Appropriate
15	Appropriate	Appropriate	Appropriate	Appropriate
16	Appropriate	Appropriate	Appropriate	Appropriate
17	Appropriate	Not Appropriate	Not Appropriate	Appropriate
18	Not Appropriate	Not Appropriate	Not Appropriate	Not Appropriate
19	Appropriate	Appropriate	Appropriate	Appropriate
20	--	--	Appropriate	Appropriate

Items	Package Manufacturers		Package Customer	
	Expert - 1	Expert - 2	Expert - 1	Expert - 2
1	1	1	1	1
2	1	1	1	1
3	1	1	1	1
4	1	1	1	1
5	1	1	1	1
6	1	1	1	1
7	1	1	1	1
8	0	0	1	0
9	1	1	1	1
10	0	0	0	0
11	1	1	1	1
12	1	1	1	1
13	1	1	1	1
14	1	1	1	1
15	1	1	1	1
16	1	1	1	1
17	1	0	0	1
18	0	0	0	0
19	1	1	1	1
20	--	--	1	1

Appendix 11B: Inter Rater Reliability - Formula

		Expert - 1		
		Appropriate	Not Appropriate	TOTAL
Expert - 2	Appropriate	P11	P12	**P1.**
	Not Appropriate	P21	P22	**P2.**
	TOTAL	**P.1**	**P.2**	P

$$Po = P11/(P11+P22)$$

$$Pc = (P.1P1. + P.2P2.)/P2$$

$$\mathbf{K} = \frac{\mathbf{Po - Pc}}{\mathbf{1 - Pc}}$$

Where Po = Percent of Agreement,
Pc = Chance Agreement
K = Kappa Coefficient of Agreement

Note: Possible interpretation of Kappa coefficient of alpha.

- Poor agreement less than 0.20;
- Fair agreement 0.20 to 0.40;
- Moderate agreement 0.40 to 0.60;
- Good agreement 0.60 to 0.80; and
- Very good agreement 0.80 to 1.00

A high degree of agreement between two independent judges will indicate a high level of reliability in classifying the categories (Gwet, Kilem: 2001).

Appendix 11C: Inter Rater Reliability-Calculation

a) Kappa Coefficient of Agreement for the Instruments of Packaging Manufacturers

Packaging manufacturers

		Expert - 1		
		Appropriate	Not Appropriate	**TOTAL**
Expert - 2	Appropriate	15	3	18
	Not Appropriate	4	3	7
	TOTAL	19	6	**25**

Po = P11/(P11+P22) 0.833333333 0.6

Pc = $(P.1P1. + P.2P2.)/P^2$ 0.6144

$$K = \frac{Po - Pc}{1 - Pc} \qquad K = \frac{0.218933333}{0.3856}$$

0.567773367

b) Kappa Coefficient of Agreement for the Instruments of Packaging Customers

Packaging Customers

		Expert - 1		
		Appropriate	Not Appropriate	**TOTAL**
Expert - 2	Appropriate	16	3	19
	Not Appropriate	3	2	5
	TOTAL	19	5	**24**

Po = P11/(P11+P22) 0.888888889

Pc = $(P.1P1. + P.2P2.)/P^2$ 0.670138889

$$K = \frac{Po - Pc}{1 - Pc} \qquad K = \frac{0.21875}{0.329861111}$$

0.663157895

Appendix 12: Product Wastage, Damage Frequency and Extent (Table 3)

Questions	PM n=5			PC n=142									
	Y	N	Total	Y	N	Total	VO	ST	VR	B	WE	WT	Total
Are there cases reported from your customers so far regarding product wastage as a result of improper plastic packaging?	4	1	5										
Have you reported to your supplier product wastage cases ever due to improper plastic packaging?				128	14	142							
If your response for the above question is yes, how frequent is the damage?							4	92	32				142
How do you express the extent of the damage as a result of improper plastic packaging?										118	10	0	142

Y= Yes, N= No, VO= Very Often, ST= Sometimes, VR= Very Rarely, B= Bad, WE= Worse, WT= Worst

Appendix 13: Plastic Packaging Manufacturers' (Classic, Flexible, INOVA, Roha, and Thermo) Pamphlets

Classic Plastic and Paper Packaging Manufacturing PLC—Page 1

For Your flexible packaging needs Classic packaging can provide you with outstanding packaging solution that will give your product maximum shelf appeal and visual impact .We provide a level of quality, customer service, and turn around time that will meet your most demanding requirements.

Our corrugated boxes designed in our modern manufacturing plant with automated designing section, online film and plate processor, high tech 6 color flexographic printing press, and the modern animating machine with the center seal and pouch maker machine choices will insure that your product will exceed your expectations and look great!

We print and produce flexible packaging for a variety of products including food, hygience, cosmetics, Pharmaceutical beverage, and other products.

Our Products Include:-

- Flexible packaging material
- BOPP, PP PET,PVC,LDPE, PE printed and blank films
- Aluminium foil
- Metallized films
- Wax coated paper and film labels
- Polyster films

ADDRESS

Office:-
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Tel:+251-113-725322
Mob:+251-911-204116
Fax:+251-113-725646 P.O.Box:15394
E-mail:classic_packet@ethionet.et
Addis Ababa, Ethiopia

Factory:-
Mecanissa Nefas Silk Lafto
Kifle Ketema

CONTACT US

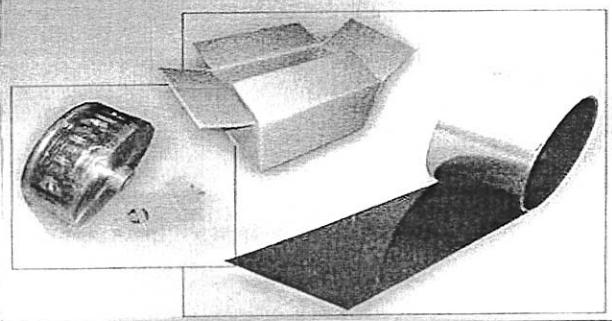
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የፕላስቲክና የካርቶን ማሸጊያ ማምረቻ ፋብሪካ

CP

CLASSIC

Plastic Package And Carton Box Factory

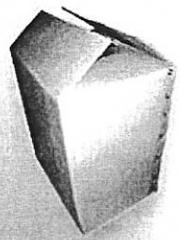


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ክላሲክ የፕላስቲክና የካርቶን ማሸጊያ ማምረቻ ድርጅት በሀገራቱ ንግድ ህግ መሠረት የተቋቋመ ዘመናዊ የንግድ ድርጅት ነው። ድርጅታችን ባስመጣቸው ዘመናዊ ማምረቻ መሳሪያዎች እና ከፍተኛ ብቃት ባላቸው የውጭ ሀገርና የሀገር ውስጥ ባለሙያዎች በመታገዝ የካርቶን ልዩ ልዩ የፕላስቲክ ማሸጊያ ምርቶችን እና ተዛማጅ አገልግሎት ሲያቀርብ በታላቅ ደስታ ነው። ድርጅታችንን ልዩ የሚያደርገው የተፈለገውን አይነት የማሸጊያ ምርት ከዲዛይን ጀምሮ እስከ መጨረሻ ያለውን ሂደት በሙሉ በራሳችን ማከናወናችን ነው። ከምርዩተራይዝድ የሆነውን የቅድመ ህትመት ክፍላችን የዲዛይን የፊልም መቅረጫ እና የፐሌት መስሪያ ባለ 6 ቀለም ዘመናዊ የፍሌክሶ ግራፊክ ማተሚያ ማሳሪያዎችን የመቁረጫ ማጣበቂያ እና የተለያዩ መጠን ያላቸውን የማሸጊያ ቦርሳ መሳሪያዎችን የማሸጊያ ምርታችንን ጥራት አስተማማኝ ያደርገዋል።

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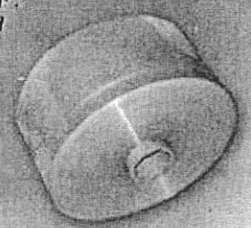


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ለተለያዩ ኢንዱስትሪዎች

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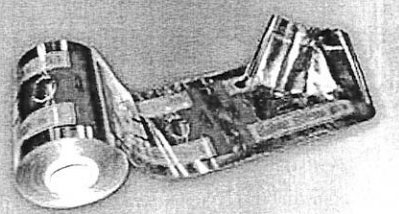
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- የተለያዩ ልሙጥና ባለቀለም የመጠቅለያ ፊልሞች (በጥቅል ወይም በሺት)
- ከአሉሚኒየም ፎይል ከፕላስቲክ ፊልም እና ወረቀት የተሰራ ማሸጊያ
- የተለያዩ መጠን ያላቸው ቋሚ ፓኬቶችን ማሸጊያ ባለማጣበቂያ ቴፕ
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በተጨማሪም

- ለልዩ ልዩ አገልግሎት (ለፈስታል ፣ ለላውንድሪ እና ሌሎች) የሚውል ክርፒ የተሰራ ልሙጥና ባለቀለም የፕላስቲክ ፊልም (በጥቅል በነጠላ)





መግቢያ



የፍሌክሲብልን (ተለማጭ) ማሽኒያዎችና መጠቅለያዎችን ፍላጎት ለሃገር ውስጥም ሆነ ለኤክስፖርት ንግድ ጠቀሚታው ከፍተኛ ነው። ይሁን እንጂ በሃገራችን የሚይመረቱ ስለንበር ተጠቃሚዎች የሚገለገሉት ከውጪ በማስመጣት ነው። በሀገር ውስጥም ሆነ በኤክስፖርት ንግድ ሥራ የተሰማሩ ድርጅቶች በገበያ ላይ ተወዳዳሪ ሆነው ለመቅረብ ከሚያስችሏቸው መሠረቶዎች አንዱ ጥራት ያለው ማሽኒና መጠቅለያ መጠቀም መሆኑን በመስኩ የተሰማሩት ያስማመቡታል።

በመሆኑም በሃገራችን የፍሌክሲብል ማሽኒያዎችና መጠቅለያዎችን የአቅርቦት ችግር ለማቃለል የሚቻለው ቴክኖሎጂውን ወደ ሃገር ውስጥ በማስገባት ብቻ መሆኑን በመገንዘብ ለሃገሪቱ የኢኮኖሚ ዕድገት ጉልህ ጠቀሚታ ያለውን የፍሌክሲብል ማሽኒያዎችና መጠቅለያዎች ማምረቻ ሙሪያዎችን ከአውሮፓ በማስመጣት ለሃገርና ለወገን የሚጠቅም ድርጅት አቋቁመናል።

ይህንኑ እውን ለማድረግ መሣሪያዎቹን ከሸጡልን ድርጅቶች 11 ባለሙያዎችን በማስመጣት ከተከላ ሥራ በተጨማሪ ለሠራተኞቻችን ከ3 እስከ 12 ሳምንት የፈጀ ሥልጠና እንዲሠጥ ተደርጓል።

1. ዓላማ

1.1 ለንግዱ የስራ ዘርፍ መሳልበት ከፍተኛ ድርሻ ያለውን የምርት ማሽኒያና መጠቅለያ ፍላጎትን በማሟላትና በጥራት በማቅረብ አስተዋጽኦ ለማድረግ፡
1.2 ማሽኒያዎችንና መጠቅለያዎችን ከውጪ ሃገር ለማስመጣት የሚወጣውን የውጭ ምንዛሪ ለማዳን የሚባክነውን ጊዜ ለመቆጠብና እንዲሁም ሊያጋጥሙ የሚችሉትን ሌሎች ፈታኝ ችግሮችን ለማስቀረት፡
1.3 በሃገራችን የተቋቋሙትና ወደፊትም ለማቋቋም በጥናት ላይ ያሉት ድርጅቶች ለምርቶቻቸው የሚያስፈልጋቸውን የማሽኒያና የመጠቅለያ ችግርን ለመቅረፍ በመስኩ ለመሰማራት ያላቸውን ፍላጎት ለማበረታታት፡
1.4 ቴክኖሎጂን ወደ ሃገር ውስጥ በማስገባት ለሃገራችን ባለሙያዎችን ማፍራትና የሥራ ዕድል መፍጠር፡
1.5 በሃገሪቱ የልማት እንቅስቃሴ ውስጥ የበኩላችንን አስተዋፅኦ ለማድረግና የመሰለሉትን ያካትታል።

2. የፋብሪካችን ቴክኖሎጂና መሣሪያዎች

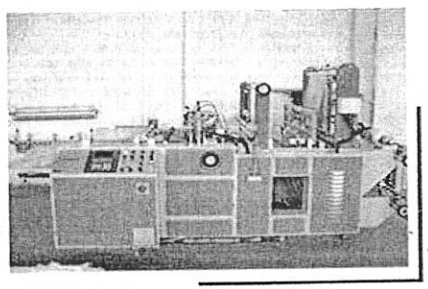
2.1 በዋነኝነት የምንጠቀምባቸው የማምረቻ መሣሪያዎች በአውሮፓ የፍሌክሶግራፊክ የህትመት ሲስተም ላይ የተመሰረቱና በኮምፒውተር የሚታገዙ ጊዜው ያፈራቸውን እስከ 6 ተለም ማተሚያ፡ መለበጀ (laminating) እና መሰንጠቂያና መጠቅለያ መሳሪያዎች፡
2.2 በተጓዳኝ ለማተሚያ ግልጋሎት የሚውሉ ኬሚሺዎችን በጥራት ቀርጽ የሚያዘጋጅና የህትመት ጥራታቸውን ጠብቀው እንዲታተሙ ለማደረግ የሚረዳ የክሊሼ መስጠፊያ መሳሪያዎች በእጅነት ግልጋሎት እየሰጡ ይገኛሉ።
2.3 ከተጨማሪም የንጣስቲክ ፊልም ማምረቻ ፈስታሉችንና ከረጢቶችን የሚያዘጋጁ መሳሪያዎችን ተተክለው በስራ ላይ ውለዋል።

3. የፋብሪካችን የምርት ዓይነቶች

3.1 ፍሌክሲብል ማሽኒያዎች
3.1.1 ለምግብ ውጤቶች
- ለፓስታ፡ ለመኮርኒ፡ ለብስኩት፡ ለዘረሜላ ወዘተ....፡
- ለመቶትና የወተት ተዋጽኦ፡

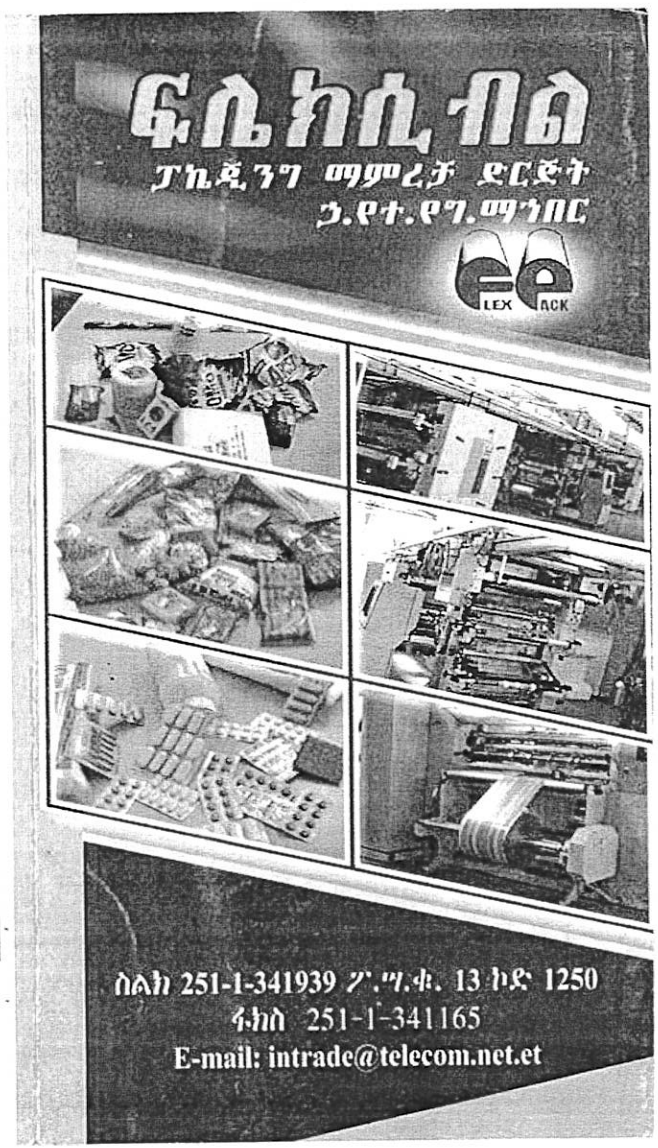


3.1.2 ለመድሃኒቶች
- ለተለያዩ የመድሃኒት እንክብሎች፡
- ለፀረ ሰብል መድሃኒቶች፡
3.1.3 ለቆዳና ለጨርቃጨርቅ ውጤቶች
- ለልዩ ልዩ የጨርቃጨርቅና አልባሳት፡
- ለቆዳ ምርት ውጤቶች፡
3.1.4 ለሌሎች ምርቶች
- ለጽሁትና ለደረቅ ሳሙናዎች፡
- ለሲጋራ፡
- የምግብ፡ የፓስት ካርድና የስጦታ ዕቃዎች መጠቅለያዎችና የመሳሰሉትን በፊልሞችና በወረቀት ላይ ማተም፡



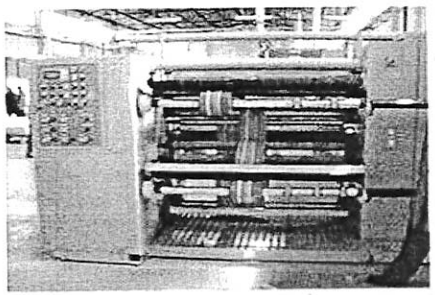
4. ፋብሪካችን ማምረት ስለመጀመሩ

የማምረቻ ድርጅታችን ከሚያዝያ ወር 1996 ዓ.ም. ጀምሮ ከውስጥ ምርት በኋላ መደበኛ የምርት ቅልጥፍን በመቀበል የደንበኞችን ፍላጎት ለማሟላትና በጥራትና በአጪር ጊዜ ውስጥ አምርቶ በማስረከብ ከውጪ ከሚመጡ ተመሳሳይ ማሽኒያና መጠቅለያ አቅራቢዎች ጋር በመወዳደር ተቀባይነት አግኝቷል።





The need for flexible wrapping and long-life packaging solutions for local and export markets is enormous. However the supply of such products from local sources was non-existent, leaving manufacturers with a single alternative that of importing from abroad. This, obviously, is a costly

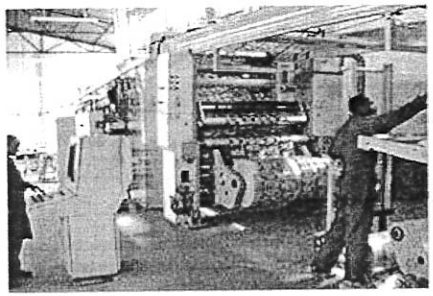


and tedious exercise.

Realizing this well understood need, our company FLEX PACK, initiated the study of the market and the industry, which involved looking into packaging technology, those involved in the design and development of packaging, the various end users such as the food processing companies, and all those involved in marketing packaging materials. Subsequently, this led to sourcing state-of-the-art system for packaging that is versatile enough to supply an array of long-life packaging solutions that lock in the freshness and flavor of foods and pharmaceuticals, as well as secure and ensure the safety of other products.



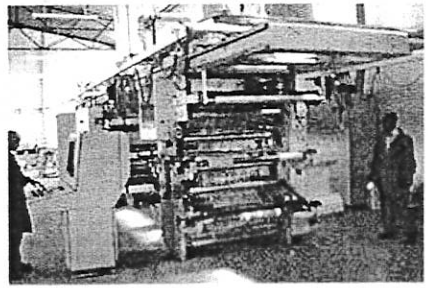
Marketing is key to success in any commercial undertaking. Packaging and presentation are also key to good marketing as good packaging protects the safety and freshness of your product. More than that it insures the confidence of your customers and assures the manufacturers to their



continual business. With the growth of agro-industrial products manufacturing, the need for appropriate, contemporary packaging and presentation materials is a vital.

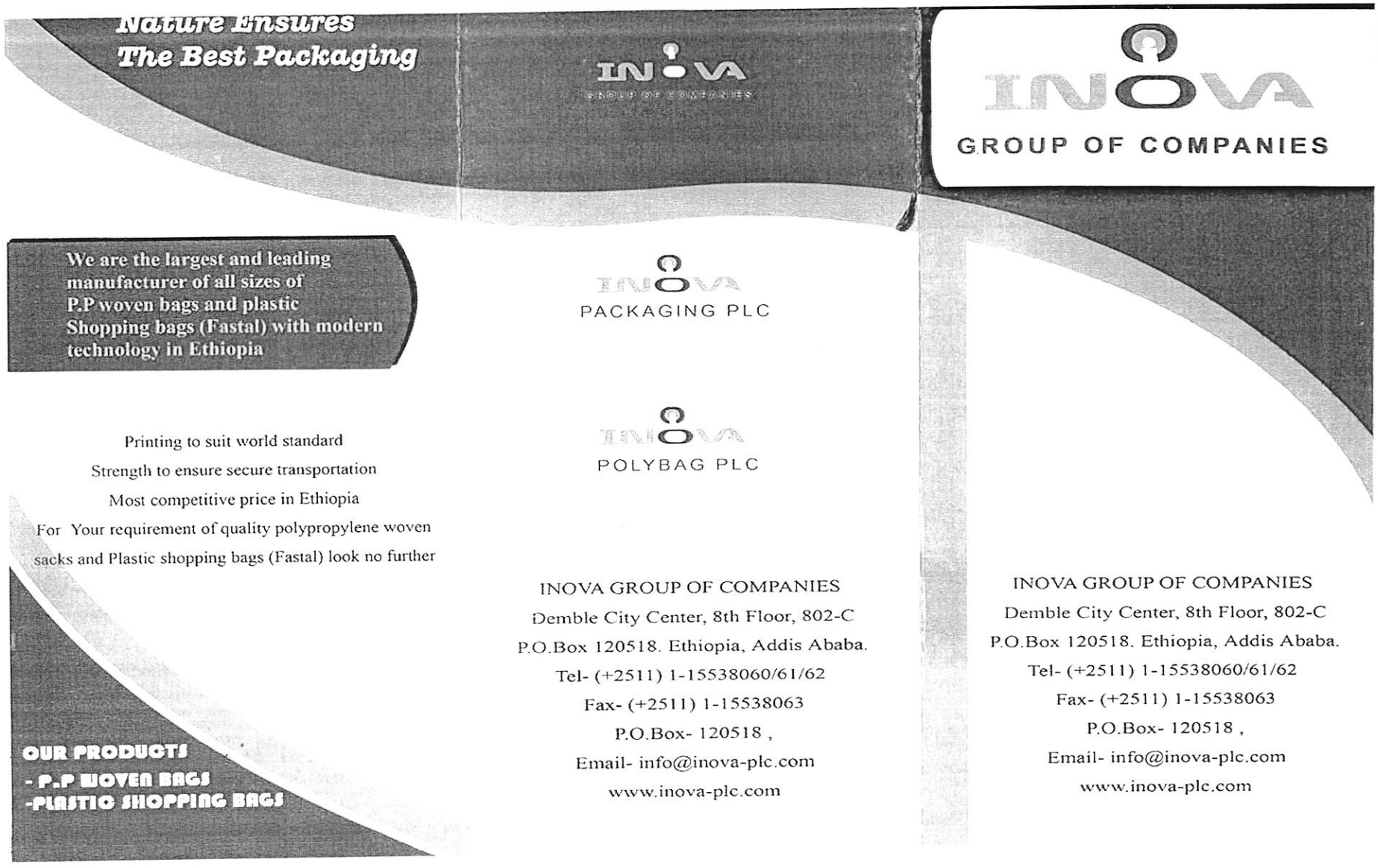
To all manufacturers and producers, we offer complete packaging systems designed to work seamlessly. FLEX PACK is aiming to be an industry leader in the production of flexible packaging, including laminated and printed multi-layered substrates and plastic shrink films.

We also provide customized packaging solutions using a broad range of quality clichés. Our major products include printed and laminated foils that add color and protection to food and other consumer products packaging.



Our factory produces a wide array of products that will be welcomed by processors and manufacturers within the Food and Beverage, Pharmaceutical, Medical, Confectionery, Pesticides, Tobacco, Leather, Soap and Detergent industries.




Nature Ensures
The Best Packaging
INOVA
GROUP OF COMPANIES
We are the largest and leading manufacturer of all sizes of P.P woven bags and plastic Shopping bags (Fastal) with modern technology in Ethiopia
Printing to suit world standard
Strength to ensure secure transportation
Most competitive price in Ethiopia
For Your requirement of quality polypropylene woven sacks and Plastic shopping bags (Fastal) look no further
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Fax- (+2511) 1-15538063
P.O.Box- 120518 ,
Email- info@inova-plc.com
www.inova-plc.com
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GROUP OF COMPANIES
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Demble City Center, 8th Floor, 802-C
P.O.Box 120518. Ethiopia, Addis Ababa.
Tel- (+2511) 1-15538060/61/62
Fax- (+2511) 1-15538063
P.O.Box- 120518 ,
Email- info@inova-plc.com
www.inova-plc.com

INOVA GROUP OF COMPANIES

Is a leading manufacturer of PP woven sacks, HDPE woven sacks, woven fabrics, industrial woven fabrics, PP woven fabrics, PP woven bags, HDPE woven bags, PP woven valve type bags, PP woven gusseted bags & Sand bags, We also manufacture shopping bags in various styles & sizes. Our hi-tech production plant can match the global demand for PP /HDPE fabric for packing of different products in the field of fertilizers, cement, polymers, chemicals, textiles, machinery, automobiles,etc.

INOVA endeavour to serve the industry with optimum quality, with latest products available in the market at the most competitive prices. It is the quality of the products and the services of our company towards its customers that has helped it in scaling great heights. Our experienced staff and associates ensure that all the products are made from the finest material and adopts stringent quality control measures through out production process.

PLASTIC SHOPPING BAGS

- Singlet with different size and colors
- Flowers
- Inova hard wares with three different size & quality
- Rose Jumbo Bags
- LDPE with print and with out print

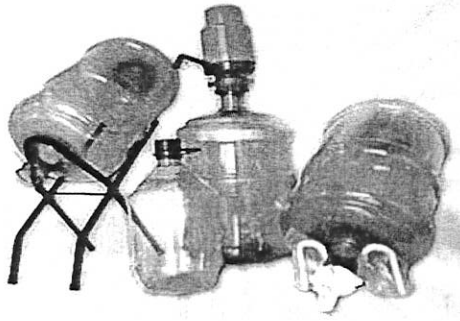


P.P WOVEN BAGS

- Salt Bags
- Sugar Bags
- Flour Bags
- Tea Bags
- Fertilizer Bags
- Cotton Bags
- Cements Bags
- Maccaroni/Pasta Bags
- Hydroscopic Goods Bags
- For Quality export Bags
- Vegetables Bags and other

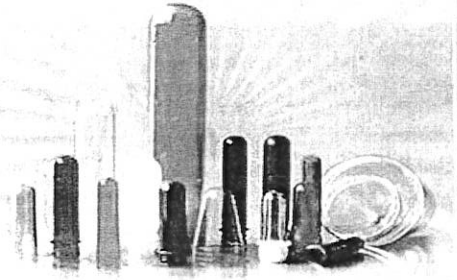


የውሃ ማቅረቢያች / Water Delivery Items

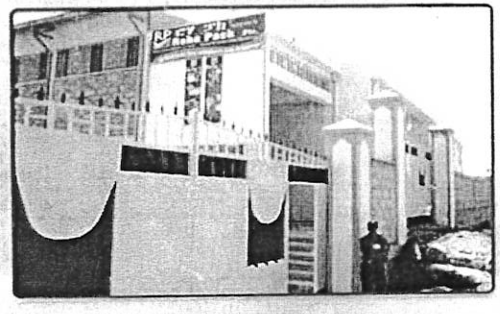




ፕሪፎርሞች / Preforms



ለማናቸውም የፒ.ኤ.ቲ (ፕላስቲክ)
ጠርሙስ ማሸጊያ ፍላጎት
አድራሻችን:
ሮሃ ፓክ ኃ.የ.ተ.የግ.ማ
ንፋስ ስልክ ላፍቶ ክ/ከተማ
(ከሐና ማርያም ድልድይ አለፍ ብሎ-
በቀለበት መንገድ ዳር).
ስልክ: 011-419 51 42/44/46
ሞባይል: 0911-45 24 72/73
ፋክስ: 011-419 51 47
ኢ-ሜይል: rohapack@ethionet.et
አዲስ አበባ



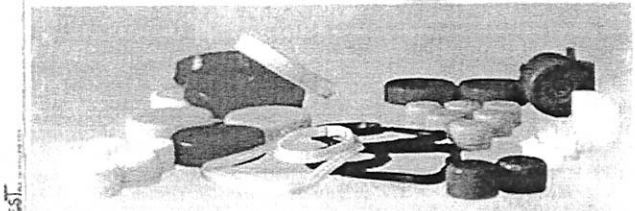
Our Address:

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Nifas Silk-Lafto Sub-city
(Around Hana Mariam bridge, off Ring Road).
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Mobile:0911-45 24 72/73
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Addis Ababa

RP ሮሃ ፓክ
ኃ.የ.ተ.የግ.ማ.
Roha Pack
Plc

ዘመናዊ የኘላስቲክ ጠርሙስ ማምረቻ
Modern PET (Plastic) Bottles Manufacturer





Solutions for Modern Packaging!

ምርቶቻችን

Our Products

ፕላስቲክ (ፔት) ጠርሙሶች / Pet Bottles



* ለውሃ
* ጭማቂ
* ዘይት
* ጠጅ...

For
* Water
* Juice
* Oil...

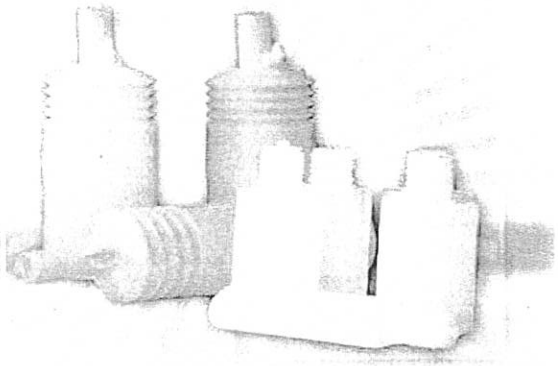
የፕላስቲክ መያዣዎች / PET Jars



* ለማር
* አቾሎኒ
* ኮስሜቲክስ...

For
* honey
* Peanut Butter
* Cosmetics...

ኤች.ዲ.ፒ.ኢ መያዛዎች / HDPE Bottles



* ለበረኪና
* ኮስሜቲክስ...



ፋርማሲቲካል መያዛዎች / Pharmacy Bottles



ክዳኖች / Caps



MA THERMOPLASTICS & MELAMINE INDUSTRY

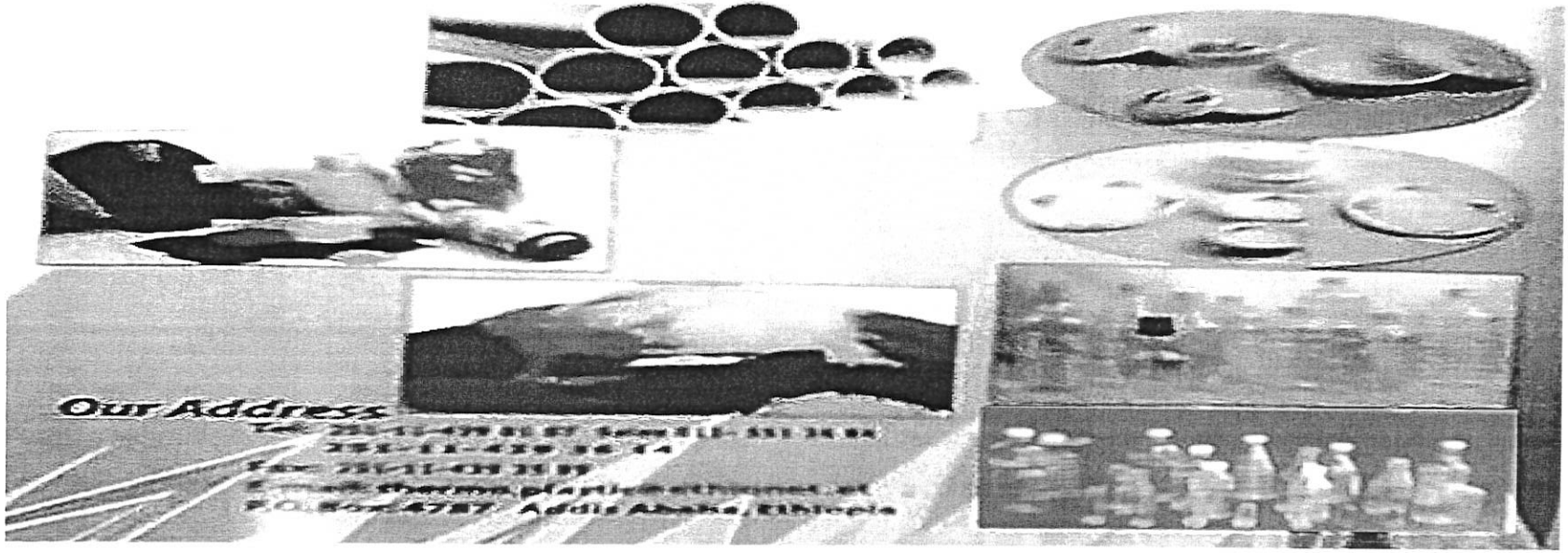
People who Know PLASTIC Best
Plastic for Better Ethiopia

We produce various international standard industrial, agricultural & household articles made of melamine plastics

Some of our products are:-

- UPVC pipes for potable water & irrigation systems
- PVC pipes for underground cable duct
- Poly bags and sheets
- Food grade packaging material
- Beautiful melamine table and kitchen ware
- Electrical conduit
- Colour master batch for the plastic industry
- PET Bottles for packaging water & edible oil, etc
- Cloth Hangers for the dry cleaners

ጥራት ያለው ምርቶችን ያላሰለሰ የተናት ውጤት ነው
Quality Products Through Creative Research!



አዳዲስ ምርቶች

ከ ኤም.ኤ. ቴርሞ ፕላስቲክ ኢንዱስትሪ

New Products

From MA Thermo Plastic Industry PLC

የማይሰበሩ የማይከብዱ ዋጋቸውም እጅግ ዝቅተኛ የሆኑ የፕላስቲክ ፔት ጠርሙሶች በተለያየ መጠን ማምረት ጀምረናል

ከሰፊ አገልግሎቱ በከፊል

- ለምግብ ዘይት ማሸጊያ
- ለንፁህ ወይም ለመዓድን ውሃ
- ለሚበጠበጡ መጠጦች
- ለለስላሳ መጠጦች
- ለተለያዩ ጭማቂዎች
- እንዲሁም ለማንኛውም ፈሳሽ ምርቶች ማሸጊያ ያገለግላል



ሌሎች ምርቶቻችን

- ዓይንን የሚማርኩ ሚላሚን የጠረጴዛ እቃዎች
- Milamine table wear
- ከፕላስቲክ የተሠሩ የቤት መገልገያዎች
- Plastic house hold products
- ማሸጊያዎች
- ፒቪሲ ቧንቧዎች
- Packing Materials
- PVC pipes
- ማስተርባጅ ለፕላስቲክና ለሚማ ፋብሪካ ውጤቶች ማቅለሚያ
- Masterbatch for coloring the products of the Plastic & Shoe Factories

Are you tired of expensive breakable & heavy bottles?

..let us give you high performance P.E.T lighter & more economical bottles.

For packing of ...Edible oil ...Pure or gassed water ...Fizzy drinks...Fruit juice Mineral Water ... ETC.

ጥራት ያለው ምርታችን ያላሰለሰ የጥናት ውጤት ነው

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