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THE IMPACT OF FOOD PACKAGING ON THE ENVIRONMENT AND WAYS OF MANAGING WASTES IN SELECTED GHANAIAN COMMUNITIES

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Abstract

Purpose: The author sought to investigate into how food packaging wastes are handled in the Ghanaian communities, the impact of the wastes on the environment and ways by which the menace can be curbed.

Methodology: The study was descriptive in nature and observation was the main instrument adopted to gather information on the phenomenon of the threat of packaging waste on the Ghanaian environment. Such observations were conducted in parts of the three namely Accra, Kumasi and Sekondi - Takoradi major cities in Ghana. At least, five (5) suburbs in each of the metropolitan areas were studied.

Findings: The study revealed that plastic packaging waste generated in the country is currently the most post-consumer waste. Majority of the consumers in Ghana do not take cognizance of the environmental impacts of the products they consume and thus throw or dump packaging waste products indiscriminately. They do not care about what will happen to it, to themselves as individuals and to the environment in general.

Unique contribution to theory and Practice and policy: The outcome of the study will enlighten the average Ghanaian on how to manage food packaging waste to help save the natural environment from unnecessary pollution, depletion and extinction of animals and marine habitat. This will enable policymakers in Ghana enact appropriate laws that will ensure the proper handling and management of the waste generated by manufacturers and consumers of food packaging.

Keywords: *Packaging, Packaging waste, Degradable, Biodegradable, waste management*

1.0 INTRODUCTION

Over the years, food packaging has seen a dramatic trend that makes it convenient for the producers to get their products to the retailers and consumers in safe conditions. Packaging offers producers, the opportunity to convey their products in stackable multi-packs. This makes it possible for a bulk of the consignment to be delivered to the depots/warehouse, retail points and the various points of sale. Consumers are now able to carry and store with ease surpluses of certain products which could hitherto not be handled because of their intangibility for future use. However, packaging has in these present days become an integral part of food production and thus cannot be separated or treated in isolation as far as food product merchandization is concerned. Most, if not all, of the intangible products are given form and shape by the packages that hold them together. The package makes delivery of these kind of products easy. The colourful nature of the packages makes it attractive enough to draw consumers' attention to the product and even goes to the extent of forcing people to do impulse buying. It therefore becomes an important marketing tool for which producers have resorted in engaging professional designers to produce very catchy packages to boost the marketability of their products and to augment the profit margin which is the expectation of every producer. The package, more often than not makes the product handy to be moved about.

Food safety on the other hand, is often guaranteed with the introduction of aseptic and convenient packaging. The evidence of tamper free packaging gives the consumers the hope and guarantee of safety as they can judge products that have been tampered with by unscrupulous customers and vendors. The labeling of the food package provides avenues for the consumers to know what they are purchasing and consuming because the inscriptions on the packages spells out the nutritional values and other information to enable the consumer know what the product in the package has in store for him or her. The labels also give the consumers and buyers the opportunity to know the quality of the product and the expiry date of the food product he or she is buying and consuming.

In spite of the importance associated with packaging the product for consumption, the package has become a canker and a menace that needs to be tackled head on in the Ghanaian communities. The end product of the package ends up making the market place filthy and the gutters choked with its concomitant spread of mosquitoes and diseases such as malaria, dysentery and diarrhea. This is all because majority of the consumers do not take into consideration the adverse environmental impacts of the products they consume.

Most often, the consumers claim to have read extensively on waste management processes but to their utmost surprise, the negative impact of packaging waste in the communities keep on rising. Effort made by District, Municipal and Metropolitan Assemblies does not seem to yield any positive results. The harm caused by packaging waste to the environment, human beings and animals as well as marine habitats continues persistently at an alarming rate which people turn blind eyes at.

Irrespective of the continuous call for consumers to be cautious of the habit of indiscriminate disposal of packaging by-products and the various moves to deal efficiently with packaging waste materials, the country is confronted with several key problems that continue to emerge and harm the water bodies. Arable farm lands especially, for backyard gardens that could augment food production and eliminate food shortage is seriously under attack. Indiscriminate disposal of packaging wastes into gutters and sewages account greatly for the perineal flooding in the major

cities in Ghana since they block the water pathways. This in effect brings indescribable hardship on the city dwellers. Most of them become displaced, lose their properties and make them economically handicapped as they have to struggle to find replacement for their lost properties. For these reasons there is the urgent need to look at the menace and provide ways by which it can be curbed or kept under control.

2. METHODOLOGY

The study was descriptive in nature and the observation instrument was adopted to gather information on the phenomenon of the threat of packaging waste on the Ghanaian environment. Data was collected by observing ways packaging wastes were disposed of and treated in selected cities and communities. In doing so, attention was focused on the behavior of the sample population that was studied who happened to be retailers, market women and sellers of goods as well as consumers from different setting. The choice of the observation for the information gathering was necessitated by the fact that it gave the author the flexibility to record the phenomenon as they occurred. There was occasional conversation with the respondents to solicit reasons for their behaviour. The purpose of using the qualitative research was that the phenomena was more descriptive than predictive and the goal was to understand, in depth, the viewpoint of the research participants; knowing that understanding of the different research participants was going to have different interpretations of their own experience and the social systems within which they interact. For these reasons, this qualitative approach did not concern itself with generalizations, rather, it only represents the people studied. For ethical reasons, the participants in the catchment areas were assured of anonymity to alley the fear for being named. This allowed them to express themselves in a very congenial and friendly manner. However, the non-participant observation technique was consequently adopted by the researcher to observe the retailers, market women and consumers from outside their groups and thus did not embed himself in the activities under study while conducting the investigations. This was critical as the investigator sought to remain detached, and therefore be less prone to bias.

Such observations were conducted in parts of the Accra, Kumasi and the Sekondi-Takoradi Metropolises. At least, five (5) suburbs in each of the metropolitan areas were visited and observed to know how the packaging materials are managed especially, in the markets, car stations and the streets where retail shops were sighted. These included Adum, Asafo, Kajetia, Suame, and Batama in Kumasi; Agbogbloshie, Kaneshie, Mallam, Tudu, Makola,in Accra as well as Kwesimintim, Effiakuma, Market Circle, Esaman and Bakaekyir in the Sekondi-Takoradi Metropolis. However, the findings of this research is a reflection of the packaging waste phenomenon of what pertains among the consumers across the country.

DISCUSSION ON PACKAGING MATERIALS

Materials for packaging include paper that is used for the wrapping of products like candies and chocolate; chipboards for boxes that contain Johnnie Walker, Jack Daniels, Wrigley's Juicy Fruit, cornflakes, chalk, soft drinks including Don Simon, Cape fruit Juice. Some products are packaged in Wood packaging material (WPM) which is otherwise referred to as Non-Manufactured Wood Packing (NMWP) or Solid Wood packing (SWPM). Wood packaging materials consist of both hardwood and softwood packaging. Wood-based products such as plywood, particle board, oriented strand board, and veneer. Wood wool on the other hand, is not considered as being suitable

for packaging because they have either been created using glue, heat, and pressure or a combination of these. Pallets, pallet collars, crates, bins, boxes, drums containers, skid, reels as well as dunnage and load boards are typical examples of wood packaging materials. In the circumstances where a combination of exempted materials is combined with a component of solid wood, it is required that such wood packaging should be treated and marked.

Most of the packages especially, for food packaging, are made of plastics. Manufacturers tend to use plastics for their advantageous characteristics. Thermoplastics for instance are malleable and can easily be given shape and molded into various products which include bottles, jugs, and plastic films which are very ideal for packaging food. In addition, almost all thermoplastics are recyclable by way of melting and reusing them as raw materials for the production of new products. The main reason that makes plastic the material of choice for food items is sanitation i.e., to prevent contamination. In order to keep products safe and fresh, multiple layers of wrappers are used to convey them from the point of production or the manufacturing plant to the retail shelf and then to our homes. Food packaging is used as a means to prolong the products shelf life. This, allows for broader distribution and prevention of food wastage. Ironically, the plastic creates another major waste problem that we now have to address.

Plastic is not as simple as many people may think. No two plastics are the same. Each of them is differs from the other. Some of them are reusable, others produce hazardous material after several uses. Some are easily recyclable; others need more sophisticated and intricate handlings in its recycling process (Bahraini, 2021). Taking into consideration plastic products such as the lunch box that we bring home, the water bottle, and the noodle cups for instance, and making a close study of them, one may find a number at its back or bottom, which many might have seen before but may not know what the number represents. The number indicates the type of plastic used to make the product you are holding at the time. The question therefore is, do you know exactly what number we should avoid and what number holds the biggest chance of damaging the environment? Most of the packaging materials are unsustainable while others are also non-degradable and find themselves in the trash bins unattended to. These tend to become a menace to many cities and communities across the globe as streets, gutters and sewages are engulfed with garbage.

Manufacturers and retailers are aware of products that do not harm the environment and vice versa. For that reason, their consumers are often informed about their products that are environmentally friendly in various forms of advertisements. They sometimes adopt the use of phrases such as “safe for the environment”, “biodegradable”, and “recyclable” to create consumer awareness of the kind of packaging materials their products packages are made of. However, the average Ghanaian does not take cognizance of these information to enable them manage the effects the package materials may have on the environment and their own health safety.

Despite the fact that packaging, has a very short ‘in-use’ lifetime around six (6) months or less, a study conducted by Geyer, Jambeck, & Law (2017) indicated that packaging was the dominant use of primary plastics, with forty-two percent (42%) of plastics entering the use phase. Packaging is therefore the dominant generator of plastic waste, responsible for almost half of the global total. The authors continued by saying that “in 2015, primary plastics production was 407 million tons out of which three-quarters (302 million tons) ended up as waste”. This then augmented the garbage created by food packaging. Even though some of the plastic packages carry the label “safe

for the environment", they are not necessarily biodegradable and may not break down and decompose easily as people may think the label suggests. The understanding of this by many Ghanaian consumers may mean that such a plastic material is not harmful or poisonous to the environment when it is buried in a landfill meaning, they cannot poison anything even if they do not breakdown. As consumers, they do not readily know how long it will take the plastic packages that are labelled "biodegradable" to breakdown (whether it will take a month, a year, a decade or a century).

According to Ritchie & Max (2018) "for some high-income countries, including most of Europe, North America, Australia, New Zealand, Japan and South Korea, they have very effective waste management infrastructure and systems; this means discarded plastic waste (even that which is not recycled or incinerated) is stored in secure, closed landfills. Across such countries almost no plastic waste is considered inadequately managed. This does not mean there is no plastic at risk of entering the natural environment". So, it means the entire universe is confronted with the menace of plastic waste.

Paper, glass, and metals can easily be recycled but the same cannot be said about plastics in sense that its recyclability is very limited although some are marked 'recyclable'. The mere fact that plastic packages are marked 'recyclable' does not automatically make it recyclable. This is accentuated by City ToSea (2020) which states that in the UK, "by 2015, six (6) billion tons of plastic waste was been produced, but only nine percent (9%) has ever been recycled. Seventy-nine percent (79%) of that ended up in landfill or our natural environment, leaving the remaining twelve percent (12%) being incinerated." For some products, recycling is an effective solution. However, the story is not the same with plastics.

In the UK, official plastic packaging recycling rate is just 39% although research organization, (Eunomia, 2021) believes the true figure is much lower. This means that more than 60% of all the plastic used ended up in landfill, incinerated or worse, in the environment and oceans. If UK is grappling with recycling plastic waste, what can be said about a developing country like Ghana? Indeed, plastics products are inexpensive, lightweight, durable, and resistant to decay. Unfortunately, this innovation comes at a greater cost. Plastic packaging is one of the greatest generators of plastic pollution, for its shortest life-span. Today, many producers are supplying the ever increasing populations with single-use plastic.

Plastic packaging is extremely wasteful and impacts the earth's ecosystems on which we depend negatively. Due to poor product design and lack of political infrastructure and will power, majority of the plastic waste that is generated is sent to landfills or disposed of into the environment. Only a little of the billions of tons of plastic produced, are being recycled properly. Plastic is not biodegradable and so, it is assumed that almost every piece of plastic ever made is still on this planet. Even when it breaks down into micro plastics, it is still dumped or washed into the sea where these micro plastics are consumed by fishes. Wharton (2019) cites an event in the United Kingdom (UK) where a pregnant sperm whale found dead in the Mediterranean Sea had 3.5 stone-worth of plastic in her belly. According to Wharton, two-thirds of what was in the whale's stomach were plastic, which could not be digested by any fish. Wharton further elucidated that "The distressing images of the whale showed the animal had consumed a corrugated tube for electrical

works, plastic plates, shopping bags, tangled fishing lines and washing detergent packages which still displayed with its legible bar code.

Of the 1.6 million tons of domestic waste disposed of in 2018, one-third is made up of packaging. More than half of this packaging is made of plastic, but only 4% of plastic waste is recycled (Zero Waste Masterplan, 2021). This is indicative that plastic that constitute the chunk of packaging material has eventually become a menace to society which has to benefit immensely from packaging.

Paper is also defined as "A flexible material consisting of thin, flat, felted sheets made of pulped wood, rags, or other fibrous materials laid down on a fine screen from a water suspension." It further states that "Applications for paper include packaging, structural material, fabric substitute, and wall coverings" (Your Dictionary, 2020).

The term paperboard is a general term that is descriptive of products which are 0.30 millimeter (0.012 inch) or more in thickness, made of fibrous materials on paper machines. Paperboard is mainly made from wood pulp, straw and wastepaper. Paperboards can be grouped boxboards for food packaging - food trays, plates, and paper boxes; container boards for the manufacturing of corrugated and solid fibre shipping containers, and paperboard specialties, including binders' board, electrical press board, and building boards (Encyclopedia Britannica, 2020). Paper is used in the manufacturing of wrappers, boxes, cups, for packaging a number of products such as popcorn, chocolate, soap, sugar, ornaments, spices, tea bags, wine, pizza, grains, cement, flour rice, candies, confectioneries and many others.

Packaging can make or break a product. Paper-based packaging can be used to entice prospective buyers right from the wrappers that serve as the primary the product to the secondary packaging that keeps it safe in shipping. it can be used to protect the product as well. Recent studies commissioned by the Paper and Packaging Board (PPB) showed that consumers overwhelmingly prefer paper and cardboard packaging as paper has a great sustainability story. Paper packaging is a sustainable and renewable, because the source of the material is trees. It is estimated that some nine-six percent (96%) of corrugated packaging can be recovered, and almost all of it is can be recycled to make new boxes and other paper products. More than six in ten people surveyed subscribed to purchasing products packaged in paper or cardboard so they can reuse the packaging. The Inc. Vision Summit (2020) reports that "seventy-eight percent of respondents in a recent Paper and Packaging survey conducted by IPSOS said "they are more likely to buy products packaged in paper and cardboard" because they are environmental friendly.

Packaging has a massive impact on consumer buying decisions. When shopping at grocery stores, most of the purchasing choices are made at the point of purchase. The advantages of Paper-based packaging's on-the-shelf include the ease with which products can showcase their distinctive packaging and graphics to tell a brand's story, its superior product protection, and the fact that it's easy to stack. Paper packaging is innovative and comes with a variety of intricate and ambient designs that appeal favourably to consumers' purchasing instincts.

There are few limits to what can be done with paper and cardboard packaging. Corrugated packages in which products are shipped for retail, end up becoming a point-of-sale display. Molded pulp inserts and Styrofoam can protect delicate electronics or fragile, fresh fruit from being

damaged during shipping. Specially coated card boards and packages are made to hold coolants to keep vegetables fresh in transit. Cardboard can even be made waterproof to hold liquid based products whiles pulp is molded into reusable, recyclable, and bio-degradable drink coolers that can survive several trips before the product gets to the ultimate consumer.

In effect, the package is developed by molding cardboard to wrap around a very thin waterproof lining to make it possible for liquid products that are lighter to be transported and make it easier to recycle. The unboxing experience that come with packaging with paper, can be exciting and an advantage to online sales. This becomes a replacement for some of the "touch points" that consumers have when shop in stores and shops. A memorable unboxing experience helps to replace the good feelings and sales boost that come with a positive in-store shopping experience.

DISCUSSION ON THE USES AND IMPORTANCE OF PACKAGING

Packaging combined with developments in food science, processing and preservation techniques, has been applied in a variety of ways to ensure the safety of the consumer and integrity of the product. The success of both packaging and food technology in this regard is reflected by the fact that the contents of billions of packs are being safely consumed every day. In order to help minimize food waste throughout the supply chain and save cost, an optimum level of packaging is required. Packaging assists the preservation of the world's resources through the prevention of product spoilage and wastage, and by protecting products until they have performed their function. The principal roles of packaging therefore, are to contain, protect/preserve food and inform the user. Thereby, food waste may be minimized and the health of the consumer safeguarded.

The importance of packaging does not rest with the food industry only but is manifested in the many other things we purchase from the shops, shopping mall, marts and markets that include packages for television sets, cooking utensils, suits and shirts, shoes, computers and accessories, jewelry, oil products. The importance also includes the provision of vital services such as protection, preservation and display of all kinds of goods and thus creates businesses on which we all depend for our economy (Watts, 1990). These services that are associated with packaging nonetheless come with its concomitant adverse effects on the environment that impacts negatively on the health of the people in the communities especially in the urban and egalitarian setups.

Packages offer branding to the product they contain and register them on the minds of the consumer and make many people develop loyalty to certain product because of the prestige associated with their packaging. It is in the light of this, that (The Unique Group, 2017) emphasizes that retail packaging is the first impression with a consumer, and everything possible has to be done to build a strong branding by choosing a clear and unique design that will lead to brand loyalty. Packaging makes the handling of products easy and transportation of a quantity of the product more convenient and also helps in the storage of the product for a stipulated period of time. For products that are intangible, packages give them form by way of containment to enable prospective buyers to handle and carry them to their respective homes.

Packaging is industry's silent salesman. It displays and describes the product it contains; leaving the consumer to choose which product is best suited for his or her taste. It is the combination of these and the visual appeal that trigger consumers' decision to make purchases.

The package positions the product and promote sales and thus encourage the purchase of the product in both the short and long term. Once a package has fulfilled the requirements of containing, protecting and facilitating handling of the product throughout its distribution, it is also required to perform sales promotion and communication functions. These functions are mainly accomplished through the appearance and graphic design of the package, but they can only attain their marketing objectives successfully if the structural design and its execution are of comparable quality.

Protective and Preservation functions of Packaging

Packaging protects its contents during storage, transport, usage and also protects the user from the contents especially when the content of the package is poisonous and harmful. In such situations, child-proof capping, wrap-around and tamper-free covers are provided to prevent minors including children to have direct access to the content which may be chemicals, explosives, weedicides or medicine and at the same time protect the contents from being tampered with. With packaging, products are protected against attacks from heat, dampness, air, and bumps suffered during transportation. To achieve this, the product's package is designed in such a way that the product can be kept in a perfect condition until it reaches the end user.

The main function of packaging is to provide protection to the product from dirt, insects, dampness and breakage. For example, the products like biscuit, jam, chips, etc., need to be protected from environmental contact and hazards and thus needs tight packaging. Primarily, the package is meant to protect the product against potential damage throughout the process of transporting, storing, selling and exporting a product and to ensure the convenience of handling during performance of its other functions. This, therefore, assists in ensuring that the package is able to withstand the robust physical handling in the distribution chain so that goods are received by consumers in the same form as they left the factory. Consumers have the tendency of touching products with their hands on the shelf without restraints and without any need to avoid smudging certain products with their hands because they have no means to evaluate the product by its appearance. Therefore, product packaging which serves as a barrier between the content and its package is seen as a medium for protecting consumers from getting contaminated. Depending on the nature of the product, the package may need to be airtight, liquid tight or powder tight, to prevent any form of escape of the product or access for any contaminating materials.

Packaging preserve the product's integrity by protecting the content of the package against damage from climatic, bacteriological and transit hazards (Stewart, 1995). Packaging also assists in the preservation of the product from deterioration and contamination in order not to compromise the health of the ultimate consumer. The package protects, preserves and extended the period of time of Food products which might not be used or consumed immediately. Britannica (1984) emphasizes that "most food packaging is designed to protect it from its surrounding and to delay the process of deterioration beyond the time needed for transportation, marketing and consumption."

Packaging as Container for the Product

The package effectively serves as the container and defines quantity of product it contains using the available pack volume as efficiently as possible especially in the case of intangible products. The quantity of product may be measured by volume, weight or by count. Tight dimensioning is adopted in the design process to keep the package size to the barest minimum to reduce production cost and also improve the strength of the package. A tight package, with minimal empty space, normally endures pressure and handling pressures better than a loosely filled one. The product itself often contribute to pack strength because products that are filled loosely in the package have to bear the stresses alone.

Distribution and Handling of products

For packaging to be effective packaging is to ensure that products reach their destination in optimum condition without any imperfection. The package facilitates safe handling of the product from the time of packing until it reaches the end user for usage. For an exporter, transport and distribution are a major concern so everything possible is done to ensure that the product is secured enough to withstand all the shocks though to the final destination. Packages are designed to contribute as much as possible in minimizing handling costs throughout the distribution chain. "Compared to those in developed nations, residents in developing countries, especially the urban poor, are more severely impacted by unsustainably managed waste. In low-income countries, over 90% of waste is often disposed in unregulated dumps or openly burned. These practices create serious health, safety, and environmental consequences" (The World Bank, 2019). That makes such industrialized countries resort to mechanical handling which also applies to disposal and recycling of packaging wastes. For this reason, the packaging system is mostly planned to ensure that all components can be handled easily.

Information and Instruction

Basically, the package's function of communication is to inform consumers about the product. Even the earliest forms of packaging reflect this communicative function of packaging. Packaging serves as one of the most important vehicles for communicating the brand message directly to the end user of the product. Packaging has now become a product in its own right. Apart from serving as a protective skin for food, it turns out to be an interface where the producer provides useful information for the consumers (Alimantarium, 2021). It therefore captures peoples' attention and gives the consumer the necessary assurance as to the standard of the project being purchased. It also redirects consumers to the product online where the content and visual elements appeal for attention and impact on purchasing decisions. Packaging communicates essential and vital information and messages to the consumer. This is the communicative role of packaging. The designers challenge is to communicate the right message as fast and forcefully as much as possible.' Packaging actually meets a real need: that is protecting goods and conserving available resources as much as possible. It well established that packaging ensures that products get to the end-user in the same condition as it was from the point of production.

The label on the packaging provides consumers information about the contents and origin of the product. The information also includes the ingredients and the recommended method and instructions for use of use as well as preservation. Because packaging law requires that an

increasing number of facts be mentioned in the labelling of the product, the colourings present in the food is clearly stated for consumers to be aware. Manufacturers are obliged to ensure that any statements made about the product and its composition are factual. Other notable component of the package communication function is that information including, ingredients, sell by dates, price, special offers, manufacturers' address, contact information, product title, barcode and more, that are useful to consumers and companies such as Supermarkets, are printed on packaging. The bar code is also an extremely useful element to the shop selling the product. When the barcode is scanned, the computer system automatically gives information that determines whether the product needs reordering whiles information on the price of the product is displayed on the box (Ryan, 2020).

Sales Promotion and Positioning of the Product

Packaging is industry's silent salesman. It displays and describes the product it contains; leaving the consumer to choose which product is best suited for his or her taste. The physical shape and structure of packages alone influence sales. Because most consumers' reason for buying is directed by the total character of the product and its package which comprises its weight, size, price, and design. Making the product more efficient and promoting the sale of the product is the main purpose of the sales function of a package. The package, thus enables the promotion of the brands identity and raises the products competitiveness on the shelf. It is in the light of this that Herdeg (1961), maintains that if all functional needs met, the well-designed package does not only become aesthetically satisfying but also essential for the promotion of consumer choices in an ever-increasing competitive market. Even after-use packing materials in the house keeps on remanding the consumers about the product making the packaging perform the role of a "passive salesman."

Promotional materials placed on the packaging are made purposely to attract the potential customer's attention and to have a positive impact upon their purchasing decisions. Such promotional materials on packages play very significant roles in selling the products as they are directed to the consumers. The package promotes and encourages purchase of the product in both the short and long term. Having fulfilled the requirements of containment, protection and handling of the product throughout the distribution chain, the package also performs sales promotion and communication functions. These functions are mainly achieved through the physical appearance and graphic design of the package, but they can only attain their marketing objectives successfully if the structural design and its execution are of comparable quality. Sales of products come in two categories namely, first-time sales and repeat sales. The package ensures that it attracts first-time buyers and also encourages the brand loyalty which is developed through continuous purchases.

Consumer Convenience

There is a growing demand by the consuming public for packages that offer time-saving and easy-to-handle features as a result of their work patterns. This function ties in perfectly with the saying that "time is money" and so the fast-growing working populace have resorted to fast foods and canned foods that come in handy to save time and energy. Because of the busy schedules of individuals nowadays, they prefer things that are easy going. In the carriage of the product from one place to another, packaging provides convenience in stocking and in consumption. The new pet water bottles of Voltic, Verna, Bel-Aqua, Malta Guinness, Coca Cola for instance, have made carriage, stocking and consumption easier.

3.0 FINDINGS

Packaging has from time immemorial helped in holding intangible product such as liquids, powdered, granulated and gaseous substances together to ease their movement through the distribution chain. Packages are normally designed and created for products to make them convenient for handling from the product's point of manufacture to the end user. (Watts, 1990) asserts the packaging industry is an exciting one that matches design to modern technology given products facelift to arouse people's interest and attraction for them.

Consumer products usually comes with a lot of packaging. In addition to the packaging requirement to contain the product itself, packaging also serves as a means to protect the items during delivery and handling and also for aesthetic and marketing purposes. However, there are some consumer goods, such as food, drinks, cleaning products, shampoo etc. whose packaging is used just once and being thrown away. Many people and companies do not mind throwing packaging away, especially, if the packaging was not meant to be reused or easily recycled. Most of the time, disposable cups and other containers that are single-use packaging are not being able to recycle because they are contaminated with food and end up as garbage. Unnecessary packaging has a toll on national resources because it contributes to high waste production.

Plate 1 & 2: Heaps of Packaging wastes at the markets

"Plastic waste generated in the country is currently the most post-consumer waste which comprises plastic bottles, polythene bags, sachets and wrappers. A study conducted on *Household Perspective of Plastic Waste Management in Urban Ghana – A Case study of the Bolgatanga Municipality,* revealed an estimate of over forty (40) plastic producing industries in the country which produce over 30,000 metric tons per annum of assorted plastic products and, in addition, about twelve thousand (12,000) metric tons of finished plastic products being imported annually and subsequently adding to the plastic waste problem in the country (https://www.longdom.org/articles). At least about 20-30% of these end up as waste in the streets. With very few recycling facilities in the country, the issue of post-consumer plastic waste has become a major issue of concern." (18th Session of the United Nations Commission on Sustainable Development, National Report for Ghana, Waste Management in Ghana).

Given the lack of space for another landfill in Ghana, there is the need to reduce the amount of waste we produce to prolong the lifespan of our landfill for as long as we can. Generally, packaging makes food to reach the intended user safely as the package protects the content from contamination and spoilage and as well, prolong the shelf life of the food product. The benefit here is, food is being able to travel long distances without losing its primary nutrients and still be wholesome for consumption to fulfil the goal of food packaging which is to contain food in a cost-effective way, satisfy industry requirements and consumer desires, and also to maintain food safety.

The kind of relief Convenience packaging offers in the food industry cannot be overemphasized as this makes it possible for food products from across the world to be imported and exported to other places on the other side of the divide. The wake of convenient foods and fast foods in handy and attractive packages has thus reduced time which would hitherto been spent in preparing foods in the kitchen and also make it possible for workers to carry foods to their work places to be eaten during lunch which are comparatively cost effective.

Though packaging is very essential as consumers in Ghana shop various food products from the markets, retail shops, supermarkets, marts, and Malls, yet, they carry a lot of packaging materials along to their homes. The number of female workers has increased in recent times as compared to some three decades ago when the women were considered housewives and that a lot of couples are now dependent on buying packaged foods day in and day out. With the introduction of convenience and aseptic packaging, office workers, bachelors, young boys and girls resort to packed foods. It has also become fashionable to have local foods such ‘waakye’, rice, ‘ampesie’ ‘garri’ and beans increasing been packaged in polystyrene and conveyed in various forms of polyethene bags.

The chunk of packaging waste in town is not as a result of packing food alone, water is also packaged in plastic containers including sachet water which is contained in transparent polystyrene as well as in pet bottles. The number of sachet water producers in Ghana has increased tremendously that production is scattered across the country. After drinking people throw these sachets and the pet bottles indiscriminately thereby making the streets and the open gutters filthy. As a result, when it rains, most of the streets and communities become flooded. In the event of such flooding, precious live and properties are lost as well.

There is a growing public concern and agitation on the ever increasing packaging litters and the packaging wastes in the Metropolitan and Municipalities and wonder what the cost will be to dispose the packaging waste as compared to recycling or recovering the discarded waste as being done in the industrialized countries. The manner or method in which the wastes are disposed of in open landfills and the pollution associated with it is another source of worry because the proximity of most of these landfills are not far from some communities. These concerns aggravate the already perceived notion that there is over-packaging due to the seeming excess of free space in terms of product settlement. People already contend the legibility of the labels on the package and have doubt about the integrity of information on labels. Consumers are even afraid of contamination of food due to the packaging itself and accidents involving packaging as well. The food industry is aware of these concerns and must find a means to tackle the problem to alleviate the worry which also contributes to the worsening environmental issues.

An important strategic issue facing the food industry is the political and public pressure over the environment, particularly in relation to concerns over the amount of packaging and packaging waste. Of late, managing packaging waste has been the focus of attention of the Municipal and District Assemblies following mounting pressures from the public and the media. In Ghana, almost all the wastes end up at the landfill site. However, the cost involved in dumping waste at landfills turns to be high for the Municipal and District Assemblies which have a toll on their budget. Since the Assemblies are not able to meet the cost implications of disposing the waste, the various city waste management companies such as Zoomlion, Western Waste, Waste 360, Jekora Ventures Ltd, etc., Municipal and district wastes management teams are not able to remove wastes on regular basis. This results in overflow of waste in the bins and containers. It is an undisputed fact that the costs in removing packaging wastes depend on the size and weight of the load. Ability to reduce the chunk of waste produced will bring the cost down yet, no consideration is made to get producers and consumers adopt compliance for the desire for environmentally-friendly products which, will in the long run, improve consumers demands for such products and as well decrease cost in disposing waste.

Research has shown that due to poor waste management systems around the world, majority of the plastic packaging wastes that is sent to landfills ends up in our natural environments. A lot of them that are dumped into the ocean even pollute and threatens wildlife, alters ecosystems and eventually poses high risks to human health. In order to minimize the damage to ecosystem, the production of plastic packaging should be reduced. Burning plastic emits toxic pollutants and irritants into the air we breathe. Reducing the amount of plastic waste sent to landfills can dramatically increase air quality around the world.

In the life of every individual, the likelihood of having come in contact of with some packaging and plastic as a packaging material is higher because convenience food packaging is now on the ascendency. Because of that, majority of foods are packaged with some form of plastic packaging material. Even though packaging with plastics have shorter life span, plastic packaging constitutes 42% of all the plastics that are produced. The short life span of plastic packages is as a result of it being used one time and thrown away and ending up as waste that tends to pollute the environment. Polluting the environment with packaging wastes in the form of wrappers, containers, straws, cups, lids, and plastic ware also have adverse effect on the health of human beings, wild and aquatic life.

There are varieties of chemical additives in plastic that have implications on human health. The chemicals found in plastics according to health scientists is capable of disturbing the endocrine system leading to cancer, birth defects, immune system issues, and problems in the growth of children (www.plaineproducts.com 2020). According to Plaine Products (2020), studies have shown that bisphenol A (BPA) that is present in the plasticizer used in lining canned foods packaging materials negatively affect the brain and prostate gland in fetuses, infants, and children, if not removed before using for packaging foods. This is because such chemical component has the tendency to leach into the food.

It is worthy of note that market men and women, traders, buyers, consumers, passersby, and shop owner alike, in the Ghanaian communities, dumped all sort of wastes products of packages in the same litter bin or other places irrespective of the packaging material. This is to say that paper, plastics, bottles, glass, wood and metals among other things end up in the same collection bin and

about ninety percent (90%) of it end up in landfills. In Ghana, Metropolitan, Municipal, District and commercial wastes are usually collected by trucks, and then transported to landfill; only a handful of these wastes are sent to the treatment plant for material recovery through mechanical sorting, composting, or for energy recovery (grid or kiln incinerator, pyrolysis).

After visiting a number of markets in the Accra Metropolis, Kwarteng (2021) concluded that "sections of the markets had piles of refuse accompanied by pungent smell and multitudes of flies" Kwarteng went on to report that all the gutters were choked to the brim with plastic waste and traders who happen to be the cause of these heaps of filth and unpleasant smell, sit by them and lament about the "strong and very unpleasant smell from the garbage heaps close by." The irony of the menace according to one of the shop owners is that "even when the community organized communal labour to clear the gutters, the filth that was removed was left standing and not collected by city waste management teams and eventually found its way back into the gutters"

Plate 3: Filth of plastic and other waste

Plate 4: Packaging waste choking the gutter

Another issue that is bothering in Ghana is that, the average consumer believes that after putting the used plastic and other packaging materials into a bin and the waste management companies hauled the trash, it is gone away forever and will never to be seen any more. Even though some package could be used more than once, the lifespan of such packages are cut short simply because, after using the content, they are thrown away ending up in the landfill site. This defeats the primary goal of the manufacturer of such packages. When this happens many of the packages are subsequently produced and thus augment the wastes generated by the package materials. For that

reason, the worth of what was not meant to be destructive, tends to be negative. The impact of these package wastes on the environment therefore, becomes very alarming.

Plate 5 & 6: Scenery of packaging waste in streets and gutters after rainfall


However, studies have shown that plastic debris for instance, take a longer time to decompose. It is estimated that Foamed plastic cups take about 50 years to decompose whiles plastic beverage holder can survive up to 400 years. Whereas disposable diapers stay for around 450 years, plastic bottle can remain for 450 years. For fishing line and net, it can take up to 600 years to decompose. This is indeed, something to worry about as consumers of packaged product. Our lives are then threatened as our soil become infertile as a result of decrease in food production. If this is how long these plastic waste will remain in the ecological system, then of course, human race as well as the animals are at risk because generations unborn will suffer for the menace being created today.

Current trends in packaging as a result of the increasing human population, indicate larger amount of the use of various forms of plastics as materials for packaging due to its availability, convenience for food and cost effectiveness but the negative side of these materials is the consequences it has on the environment. From the point of view of Bridgewater & Bridgewater (2007), "indiscriminate disposal of wastes from plastics and plastic products lead to environmental pollution which is evident in several ways including environmental natural beauty deterioration" Plastic wastes block sewage systems in cities and towns in Ghana causing flooding, displacement of families and their livestock as well as pets and a reduction of productivity in foodstuffs. Such flooding leaves debris of filth on the streets which causes the production of stinking smell. The aftermath of the blockage also results in the breeding of mosquitoes, spreading of diseases such as cholera and malaria.

Most animals especially marine inhabitants exposed to plastic wastes mistakenly take plastic waste for food and in the end ingest them thereby causing harm, damage and sometimes death. Ingestion of plastic wastes by birds causes obstruction and physical damage to their digestive system. It further reduces their digestive ability of the system which eventually lead to starvation, malnutrition and death.

Management of Packaging Waste

The mode of waste collection in the Ghanaian communities especially, the metropolitan and urban areas requires critical attention in order to reduce the packaging wastes that litter and pollute our streets, gutters, and sea. Attention has to be focused on how to improve on the proper collection of the packaging wastes, its treatment, and disposal. Improper management that has taken place over the years, has led to environmental hazards, degradation, and pollution which have had adverse health implications on the population.

Setting up incineration facilities in the communities is an effective way of controlling and reducing the negative impact of the packaging wastes than the culture of open burning that mostly takes place across the country. The system of incineration would serve as an alternative to landfills and reduce the harm that is caused to the lands that could be used for farming and other activities. Without adequate management of landfills, the harmful chemicals in plastic wastes will to leach into the environment, pollute the soil, air and underground water as well. Environmental scientists also point out that fumes from plastic wastes which forms a greater part of packaging waste, release harmful chemicals such as halogenated additives and polyvinyl chloride into the atmosphere. Furans, dioxins, and polychlorinated biphenyls (PCBs) are released by the incineration of plastics into the environment. Although incineration serves as an alternative to landfill, the combustion heater of the flue systems is permanently damaged by plastics during plastic incineration and the products of this plastic combustion are detrimental to both humans and the environment as low weight molecular compounds are likely to evaporate into the air directly and pollute it. Whiles some of the compounds form combustible mixture, others may oxidize in a solid form.

Treatment plants can reduce the residues; however, this may be more hazardous for the environment and the workers than the original waste as fly ashes produced from incinerators contain some heavy metal and complex chemicals. These residues are classified by legislation as hazardous waste and require special management.

4.0 CONCLUSIONS

1. Majority of the consumers in Ghana do not take cognizance of the environmental impacts of the products they consume and thus throw or dump packaging waste products indiscriminate. They do not care about what will happen to it, to themselves as individuals and to the environment in general.
2. A lot of the packaging waste materials are often dumped and fired in open space without recourse to the hazards these acts may cause.
3. If producer comply with the growing desire for environmentally-friendly products, it will further develop their customer-base as well as make them leaders in packaging industry.
4. It is strongly believed that because of plastics which form the core of materials for packaging takes a longer period to decompose, none of us living today will be alive to observe the end of these plastic materials as we indiscriminately dump them around. So, we would have to put plans in place to safeguard the environment for ourselves and future generations of humans, as well as animals.
5. Handling waste on site costs time, energy, and manpower because it has a toll on the time spent in cleaning, collecting, transporting and removing waste from the facility. Reducing

total waste produced by using biodegradable alternatives or cycling the material back into the system for reuse however, saves labour costs.

6. Even though paper, glass, metal and plastic can be recycled, the same cannot be said in Ghana because most of the garbage end up in the landfills.

5.0 RECOMMENDATIONS

1. A massive public awareness and education on change of attitudes towards waste disposal and proper waste disposal at every point of sale such as the markets, retail shops, supermarkets, shopping malls should be undertaken by various water and sanitation departments of District, Municipal and Metropolitan Assemblies. Emphasis of such awareness and education should be on waste separation at every point of collection.
2. Efforts must be made to educate the populace on the chemical constituents of plastic products and the negative environmental and public health effects of pollution by plastic wastes. This will go a long way to reduce the pollution rate and preserve the quality of the environment.
3. Educational curricula at different levels must include pollution and waste management systems.
4. Waste management companies as part of their responsibilities should provide different waste buckets/bins for the segregation of paper, metal, glass, wood, plastic, etc. at the collection sites to enable the people begin the sorting of the wastes right there. This in effect will make recycling of a particular material easy and less costly as there will be no need to employ other hands to do the separation either mechanically or manually.
5. The Public and Private Partnership schemes that exist for the government should be extended to business men to encourage most people to venture into public waste management industry. By providing funding, loans, and assistance to interested private operators, the number of waste management teams will increase and make the collection of these packaging waste very regular and less cumbersome.
6. Government should also encourage the business groups to rethink waste as a resource for which they can venture into the recycling of the packaging waste and produce composts, fertilizer and other products. This can be achieved by given support by way of soft loans and start-up capital with reduced interest rates and flexible payment terms.
7. Ghanaians should try as much as possible and forgo fast foods. Though it is quick and convenient to get, it is actually not the healthiest option, because fast food is typically served using lots of wasteful plastic items like wrappers, containers, straws, cups, lids, and plastic ware.
8. Government should gather political ‘will’ and ban the use of plastic packages just as is done in a number of countries such as France, India, China and Singapore where either all kinds or just the light plastic bags, are now banned. This could be done gradually to avoid public uproar.
9. Municipal authorities should consider building incinerators to take care of some of the packaging wastes that would have ended up in the landfills to save arable lands and reduce the leaching into the water bodies.

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