

PACKAGING INNOVATION EFFECTS IN ENHANCE SALES

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ABSTRACT

Advertising does not occur inside the shop, packaging and design sell the pack, and advertising hold up the brand's design. Packaging is an important part of the promotion mix complementing, advertising, sales advertising, public relation, exhibition, direct mailing and so on. For example, when Sunkist packaging was changed to a beautiful blue color the sales had increased (the sales greater than before). The world of packaging is so big so in this paper we decided to explain innovation in packaging as a (Food packaging) that this is the most important thing for people.

Keywords: innovation in packaging, sales, advertising

INTRODUCTION

Advertising does not happen within the shop, packaging and design sell the pack, and advertising hold up the brand's design. The idea of a product upon a consumer is prejudiced by the physical contact made with the package; therefore an effective and efficient packaging will boost sales. For an example, when Sunkist packaging was changed to a beautiful blue color, the sales greater than before. Kotler explained packaging as: The activities of designing and producing the container or covering for a product. Therefore, packaging serves two main purposes: it protects the stuffing from high/low temperatures, insects, moist, light, and other highly aromatic and flavored products; it also protects the product during transfer and giving out so that it arrives in a pleasing condition. It promotes the products and then should be powerful and have a strong identity. Packaging, although it serves as a practical element, may and if possible should improve the product image and competitiveness. It communicates product image positioning and it is an influential communicator at the point of sale. The quality of a package plays an important role in providing in packaging news and increased sales (June 1995, p.41) states that good packaging empties shelves and that branding and eye-catching appearance are very important factors in generating sales. Packaging is an important part of the promotion mix complementing advertising, sales promotion, public relation, exhibition, direct mailing.

World is continuing to change, and request for portability and convenience gets high. These days' consumers want to have access to the net while they order, call their MD while using the public transportation, Send SMS when they are driving in the streets, and watch the movies then they are driving to their grandparents home. We can see that, today's society has millions of annoyed multiple task-creation of singles that they want to make their time maximum by doing two or more task at the same time. This global trend of on the go access, expediency, and fast satisfaction has effects on not just the industry and technology, communication, and amusement as well as the food industry. Now days customers expect shopping for clothing and act together with their friends on the web when at the same time they are having food on 7minute Asian cooking which tastes wonderful and also it is safe to use. In the years, food industry responds to request to have more options of interesting and healthy food choices, with various types' food and beverage which has the suitable package. In 19th century great leaders like Nicholas Appert, Louis Pasteur, Samuel C. prescott, and William L. underwood expand food packaging and protection science which keep relevancy now (Wilson, 2007). 20th century innovations like Glass bottles, Cellophane tapes, aluminum tapes, and plastics leads to have lighter and greater utility in food packaging. The other twenty-century packaging improvements like packaging with antimicrobials and vacuum and oxygen scavengers understand new precedents to give longer life and also protect food from green diseases. however, ubiquitous worldwide treats like making higher industrial processing of food, bigger amount of import and export food productions, and low time for training of fresh foods force food and potion packaging industry to research and try to find newer and much better packaging solutions. While protect and preserve food which once imagine as the major role of the food packaging (Robertson, 2006), facilitating handiness has become quickly known as the same important. The other factors of importance in the food packaging which includes traceability, tamper sign, and sustainability (Kotler and Keller, 2006; Marsh and Bugusu 2007).

Lots of new and thrilling expansions in the food packaging industry complete these roles and more. A new scientific status has summing up issued by the institute of food technologists talks about the new inventions in food packaging materials. Written by

Aaron brody, Betty bugsu, Jung Hoon Han, Clair koelsch sand and Tara H.McHugh, the summary named Innovation food packaging solution, this article present an outline of Scientific Status review.

INNOVATION IN FOOD PACKAGING

Away from inertly delaying environmental essentials from affect food products, new, active and innovation food package use more lively methods to include and preserve food (Brody et.al.,2001;Lopez_Rubio et. al., 2004) .For an example, two ordinary issues in keeping the fineness of the food that has been packaged is oxygen and moisture organize. Oxygen in the packaging is very helpful in the boost of aerobic microbe and molds, Oxidative reactions in the packaging also cause in unplanned odors and flavors and also change in the color or nutritional value, Likewise moisture in food packaging may causes powdered products turn to one-part solid thing or to form lumps or crisp product make to change to softer and supporting the development of microbes. In contrast very small moisture can effect in dried out foods. An Active packaging includes components that show way to these issues. Oxygen scavengers take the oxygen away from the food packages, thus impeding the growth of microbes and take care of the future taste and odor of food; Carbon-dioxide emitters keep back the microbial reactions and growth in the products like meat and cheese (Lopez-Rubio et. al. 2004). Moisture control devices suppress water activity, and their job is to remove fluids from meat products, keep food fresh, and limit the rate of lipid oxidation (Vermeiren et. Al., 1999). Recently keeping humidity in the packages is done with moisture controllers, It can do both jobs either shrink the loss of humidity from the foods or also it can decrease excess humidity in the interstices of package closures. Other devices in the procedure of active packaging machinery have included antimicrobial and ethylene absorbers. While lively packaging system in corporate healthy ways to control the amount of oxygen, microbial growth, and humidity, creativity packaging designs facilitate the monitoring of the food quality (Broody et. al., 2001; Kerry et. al., 2006). Time temperature indicators Time temperature indicator or (TTI) is a device or smart label which shows the accumulated time temperature history of a product, Time temperature indicators are mostly use on food, medical and pharmaceutical products to indicate exposure to excessive temperature and time temperature, readiness indicators, biosensors, and Radio frequency identification Radio frequency identification or RFID is a technology that uses the radio waves for communication and transfer data between a data reader and an electronic tag attached to an object for the purpose of identification and tracking are all examples of the intelligent packaging components. Most of these small and sensitive devices do not use in huge scales and they are not widely used, and also do not have huge commercial application, but two are gaining more disrepute: Time temperature indicators and Radio frequency identification.

Time temperature indicators can play an important role in showing the newness and safety of a product, they monitor and show which food products are safe to eat, this can become very important when food is stored in less than most favorable conditions like high degree of heat or freezing. In some situations that foods should not be frozen, a time temperature indicator specify if the food had been improperly exposed to cold temps. On the contrary a time temperature indicator could show whether foods receptive to heat has been exposed to unnaturally high temps and the period of exposure. Radio frequency identification uses wireless monitoring of food packages from beginning to end readers, tags, and computer systems. Radio frequency identifications uses in the food industry are frequent and range from facilitating the traceability of food to improving the efficiency of the supply chains. But maybe the most important benefit of Radio frequency identification in the food packaging is that it speeds the stock rotary motion and make tracking much easier. Radio frequency identification systems have many benefits for food manufacturing operations and supply chains. Developing an intelligent food packaging system for quality and safety of the food would require Radio frequency identification to become more popular and be used in food industry and the addition of the food science. Sell chains like Wal-Mart and Home Depot are already use Radio frequency identification, so its prominence is likely to boost. Because Radio frequency identification systems make security and safety benefits by tracking the source of food supplies, retailers are trying to find ways to put together this technology in to the management of their provide chains (Broody et. al., 2001; Kerry et. al., 2006).

ADVANCES IN CONTROLLING VOLATILE FLAVORS AND AROMAS

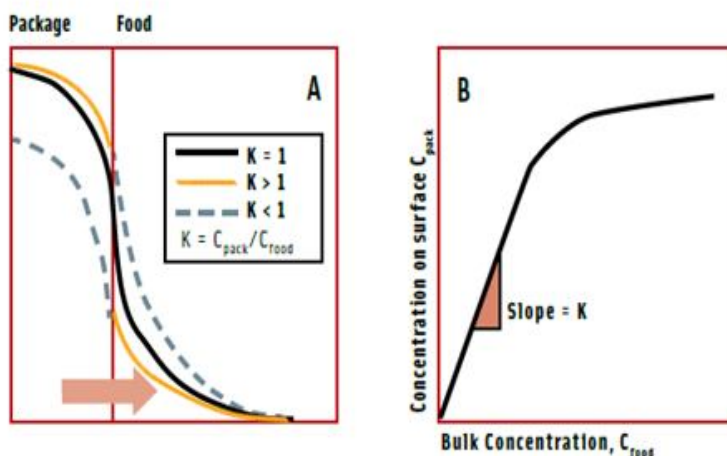
Transfer the mass of components within and between packaging and food leads to the loss of unstable aromas and flavors from food. The most ordinary methods of mass transport food packaging systems are passage, flavor scalping (see figure 1), selective infiltration and ingredient transfer between mixed parts of the food. Migration is the transfer of substances from the package into the food due to through contact. Migration of packaging mechanism to food must be unstated and considered with toxicological risk analysis system; thus the most normally studied migrants are plasticizers, antioxidants, oligomers, dimmers, plastic monomers, and dye/adhesive in the black residues. Migration in packaging clothing mechanism is used in two ways, based on the migrating chemicals. First one is global (that is, total migration); and the second one is exact migration of chemicals of attention. Migration of chemical substances is strong minded by parts of mg/m² for package outside or mg/kg for food. Amount of migration is depended on quite a few variables: contact area between food and polymer morphology, storage space temperature, absorption of migrant, food composition, contact time, food and package textile, and split of polymeric packaging materials and migrants (Brown and William 2003; Linssen and others 2003). Flavor scalping is caused by the absorption of desirable volatile food flavors by package materials for example absorption of volatile flavors of apple juice and carrot beverages by polyethylene. Polyethylene materials are known to scalp many volatiles from food Sajilata and others (see Figure 1).

Table 1. Oxygen transmission rate (OTR in cm³ m⁻² d⁻¹ atm⁻¹ at 23°C, 50% RH) and water vapor transmission rate (WVTR in g m⁻² d⁻¹ at 23°C, 75% RH) of composite films based on 12 μm PET films. Reproduced from Lange and Wyser, 2003.

Film	OTR	WVTR	Specification (μm)
PET	110	15	12
PET/PE	0.93-1.24	0.248-0.372	12/50
PET/PVDC/PE	0.33	0.132	12/4/50
PET/PVAL/PE	0.13	0.26-0.39	12/3/50
PET/EVOH/PE	0.06	0.134-0.268	12/5/50
PET/Al-met/PE	0.06-0.12	0.006-0.03	12/-/50
PET/SiO ₂	0.006-0.06	0.0024-0.06	12/-
PET/Al-foil/PE	0	0	12/9/50

PE = polyethylene low density; PET = polyethylene terephthalate; PVDC = polyvinylidene chloride; PVAL = polyvinyl alcohol; EVOH = ethylene vinyl alcohol; Al-met = aluminum metallization; SiO_x = silicon oxide; Al-foil = aluminum foil.

Figure 1. Effect of interfacial partitioning of molecules on mass transfer between food and packaging materials.
A: Migration of package constituents into foods. B: Scalping of food flavor into packaging materials. *K* is a partition coefficient of a migrant.



This one is owing to polyethylene's lipophilic natural world, which attracts large amounts of no polar compounds like volatile flavors and aroma in the foods. Indeed, some kind of products particularly vacuums packed foods or high fat foods pick up odors from neighbor strong odor foods when stored or dispersed in the storage room, same case, or preview (Brown and Williams 2003). The incorporation of unwanted flavors by packaging materials uses the same theory and principles of relocation, but in general is not considered flavor scalping. Intolerable odor unplanned can be avoided by suitable package with high barrier materials. The usage of high barrier packaging materials can put off the absorption of other nonfoods odors. For example taints. Because it may result in worsening and flavor scalping are not desirable. However, some programs intentionally make use of these methods of mass transfer to improve the packaged foods quality. The interactions can be used in active and innovative package programs (Brown and Williams 2003). These Examples are off flavor absorbing system and helpful volatile free system. As well as losing flavor in foods, no polar flavor components loosen the polymer arrangement to make much amorphous polymers. These may result in undesired changes in the automatic (Loss of laminations, Seal strength) and barrier (to volatiles, moisture, and oxygen) properties (Linszen and others 2003). Then, the effect of off flavor absorption on the vital characteristics of plastic packaging materials should be measured.

GREEN PACKAGING INNOVATION

One of the answer trends inside food packaging system is sustainable packaging. The sustainable packaging coalition (a worldwide group which has more than two hundred industry members) characterizes packaging as sustainable if it meets the following criteria:

It is healthy, safe, and beneficial

- For folks and society all through its experience cycle
- It meet market principle for act and cost
- It is transported, recycled, affected and sourced using renewable influence
- It maximizes the make use of recycled or renewable basic materials
- It is manufactured using clean production system and top practices
- It is made from materials in good physical shape in all probable end of life scenarios
- It is designed to optimize resources and energy
- It is recovered efficiency and used in biological and/or industrial cradleto-cradle cycles (SPC, 2007).

A package's sustainability is strong minded by the source of its packaging materials. As a result firms and ecological groups are working collaboratively to make lower the effect of packaging on the worldwide sources. In count global legislation, retailer, and firms have showed the way to initiatives for package sustainability that make a decision choice of design and materials. Examples of global legislation contain the revised 1997 European Commission's packaging and waste dictate, the 2007 evaluation, registration, and authorization of chemicals (REACH), and the BS EN 13432 standard (WARNER,2006).

NANOTECHNOLOGY INNOVATION EFFECTS IN FOOD PACKAGING

There is some thrilling development in food packaging industry engage nanotechnology. Nanotechnology is about really small materials are poised to have big contact in the food packaging materials. Nano-sized innovation could produce extraordinary new packaging concepts for fence and mechanical properties, pathogen discovery, and active and intelligent packaging. At the front position of nano-sized development in the food packaging are nano-composites. Nano-composites are some kind of material which is of nano-particle components. Toyota was the first company to commercialize nano-composite materials, which is using nano sized montmorillonite clay to boost thermal and mechanical properties of nylon (Weiss et al., 2006). In packaging food industry, montmorillonite clay is being explored as the nano-component in diversify of polymers: starch, nylon, polyester, and polyethylene. Nano-composite plastic films are able to block carbon dioxide, oxygen, and moisture from reach food, so when they are used for packaging, the material expands the shelf life of food. Nano-composite food packaging is very light, well built and they have well resistant against the heat (ETC Group, 2004). To continue, research into the development of biodegradable nano-composite packages is under way. While nano-composite hold swear in food packaging through better barrier properties, the other type of nanomaterial shows big potential in handling microbial increase. Researchers have found that carbon nanotubes use powerful antimicrobial effects: direct contacts with aggregates carbon nanotubes prove to be lethal for Escherichia coli. The hypothesis is that the long, thin nano-tubes price E.coli cells, causing cellular harm (Kang et al., 2007). The other nano sized way with optimistic indicators for the prospect is nano-sensors. When integrated with food packaging, nano-sensors can sense chemicals, pathogens, and toxins in food. As an example, biosensors have been developed that detect staphylococcus enterotoxin B, E. Coli, Salmonella spp., and Listeria monocytogenes (Joseph and Morrison,2006; Liu et al., 2007). Nano-sensors can also notice allergen proteins to stop adverse reactions to foods such as peanuts, tree nuts, and gluten packaging Nevertheless, progression in this place moves cautiously because the effects of nano sized materials on humans are still under investigation.

CONCLUSION

The food industry have found big amount of advances in the packaging since its beginning in the 18th century with lots of intelligent and active innovations happening during the last century. These advances have show the way to better food safety, quality, and sales. When many innovations have stemmed from surprising sources, many have been driven by changing customer preferences. Some new benefits have mostly pay attention on delaying oxidation process and controlling moisture migration, microbial growth, volatile flavors, respiration rates, and aromas. These important parallels that of food packaging distribution that has driven in the critical areas of sustainable packaging use of packaging value chain relationships for spirited benefit, and the expansion sale food service packaging. Nanotechnology has the possibility to power the packaging part very much (Weiss et al., 2006). Nano-scale inventions in the types of pathogen discovery, active packaging, and also barrier formation are poised to get the food packaging industry to new visions and heights.

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