CONSUMER PERCEPTIONS OF SUSTAINABLE PACKAGING VERSUS MANUFACTURERS' ACTIONS IN KLANG VALLEY

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Abstract. This study investigated the consumer's perception of green packaging and compared it to the actions taken by manufacturers. This study examined the factors that determine the environmental friendliness of a box and compared them to customers' perceptions of what makes a package green. This study administered questionnaires to certain populations that enhanced the comprehension of the concept of green. The specific factors that contribute to the environmental sustainability of a package and the outcome of this are likely contingent on the circumstances, as was exemplified by the glass packaging, and ideally should be determined by the company for their particular product through thorough research. Companies that prioritize environmental sustainability likely conduct comparative studies and rely on the insights of packaging specialists. The objective of this study was to enhance understanding of the concept of "green" and facilitate informed decision-making regarding packaging. The objective was to dispel the numerous misconceptions that people have regarding environmentally beneficial practices. The information consumers expect to find and would inspire their trust in recycling the packaging refers to the economical use of source materials in the manufacturing of the packaging, as well as the health and safety of the consumer. Reception and understanding of this information also depend on the knowledge consumers possess, which is related to the maturity of the market, but also the cultural values that this study has not explored.
Keywords: *packaging, green technology, consumer, environment*

Introduction

Sustainability, environmentally friendly, and "green" are becoming the popular words in commerce and society. As many industries and markets are declining, for example newspapers; what can companies do to make sure that they make survive the next few decades? One way is to look into making a company products as sustainable and green as possible. One area that is simply not going to disappear is consumer packaging. According to Majeed et al. (2022), the concept of "green marketing" is gaining an important position on a global scale. However, this area needs to appeal to a constantly more informed consumer so that the product continues to sell. This study explored what the consumer perceives as being green packaging and compared that to what some green packages manufacturers are creating. This study investigated what actually makes a package green and how that compares to what consumers believe and what manufacturers are doing. Consumers are often influenced by pop culture and, therefore, their idea of green may be determined by what is currently popular. Early knowledge is crucial for managing hazardous and compostable trash, such as plastic packaging (Letchmanan et al., 2023). For example, a product bottled in glass is seen as being organic, fresh, and manufactured by an environmentally friendly company. However, while glass itself is very sustainable, it is heavier than plastic and has much more expensive transportation costs. It is difficult to determine what condition is more

damaging to the environment; fuel for transportation or waste in the landfill. There are many other similar situations where the green solution may be difficult to determine. In these cases, the consumer may not actually know what is greener. Consumers will tend towards whatever thought is popular no matter what may actually be green. Consumers are also swayed by what is written on the package describing how the package is green. Lastly, the consumer idea of green may be simply what packaging is recyclable or reusable. Out of necessity, many manufacturers probably try to appeal to what the consumer believes to be green. Companies ought to spend money on research to find the most environmentally friendly options. There are cases of companies having traded a reusable package for one that is not reusable because the carbon footprint of manufacturing the non-reusable package was smaller than that of the reusable one. While the company may not have been appealing to the consumer's idea of green, this company was willing to spend the time and money to make an informed decision to be sustainable. This is what companies ought to be doing. However, this study explored manufacturers tendency to simply appeal to the consumer no matter what packaging may be greener. Finally, this study investigated what actually makes a package green. This probably depends on the situation, as the case with the glass packaging, and hopefully is determined by the company for their specific product through research. In the case of companies that are actually being as green as possible, they are probably doing comparison studies and relying on what experts in the packaging field are saying. The purpose of this study was to expand knowledge of what green is and to enable making intelligent choices of sustainable and reuseable packaging that contribute to environmentally safe.

Research of study

In light of the worsening plastic pollution across the globe, retailers are switching to environmentally friendly packaging solutions. Eco-packaging has also stirred a hype among consumers who are well aware of the damaging impacts of plastic waste in the environment. But in essence, what really is eco-friendly packaging? By definition, eco-friendly packaging is any packaging that's easy to recycle, safe for individuals and the environment, and is made out of recycled materials. It uses materials and manufacturing practices with minimal impact on energy consumption and natural resources. Also known as sustainable or green packaging, eco-friendly packaging solutions aim to: (1) Lessen the amount of product packaging; (2) Promote the use of renewable/reusable materials; (3) Cut back on packaging-related expenses; (4) Eliminate the use of toxic materials in the production of packaging; (5) Provide options to recycle packaging easily.

Why embrace eco-friendly packaging

The environmental effects of single-use plastics don't begin and end with waste treatment. It's only the tail-end of the entire process that most consumers are aware of. A certain type of packaging can cause a serious impact on the environment in every stage of its production, beginning from sourcing the raw material, manufacturing, transportation, purpose, and all the way to its disposal. According to Rahman (2023), in Malaysia, it is estimated that an average of nine billion plastics are consumed by Malaysians each year, most of which end up in the oceans. If we don't take action on this, this plastic pollution can threaten our marine wildlife and contaminate our food

chain. Switching to eco-packaging is the most viable solution to minimize this problem. Packaging manufacturers and businesses have a huge role to play in putting environment-friendly packaging items in the mainstream. With plastic pollution is growing at an alarming rate, industries need to reduce, if not completely eliminate plastic use. The sustainable plastic packaging details why this revolutionary packaging method is beneficial to our planet as a whole: (1) It's safe and healthy for people and communities throughout its life cycle; (2) It is made out of materials that are healthy; (3) It is sourced, manufactured, transported, and recycled using renewable energy; (4) Sustainable packaging passes the market criteria for cost and performance; (5) Eco-packaging is physically designed to optimize materials and energy; (6) It optimises the use of recycled or renewable source materials; (7) Eco-packaging items are manufactured using clean production technologies and ethical practices; (8) It's recovered and utilised in biological and/or industrial closed-loop cycles. Taking on an eco-mindset and translating it into your packaging design is also good for your brand. According to Krah et al. (2019), new packages and eco-labels explaining sustainability should be designed using a user-centred approach. A study revealed that sustainable packaging can help brand owners increase their net sales by about 2 to 4 per cent. Thanks to the growing number of consumers (particularly millennials) who're coming to patronise businesses with a palpable concern for the environment. According to the study, these consumers value eco-friendly packaging as a part of the entire brand experience.

Research questions, research objective and significant of research

The research questions are: (1) Can bio-based PE be recycled like normal PE? Does bio-based mean its biodegradble? (2) When does the use of compostable packaging materials make sense? (3) Are there viable plastic packaging alternative? The research objectives are: (1) To find the best way to make people use eco – friendly packaging in their daily basis; (2) To avoid people using among plastic bottles and sustainable packaging. Such as school, office and home; (3) Find a best way to produce eco-friendly awareness. Coming out with awareness according to the eco-friendly packaging is make us to be clean and safe the earth. Do not use more plastic. Lets save the earth. Using eco-friendly packaging will increase more cleanse and safety for the nature. According to Rajendran et al. (2019), the green packaging products play a vital role in protecting the environment and the health of the population in a country, thus the need to increase an awareness in purchasing or preferences in consuming green packagedproducts.

Research scope and limitation

School children & restaurants

School kids are the target audiences because they are bring bento to school everyday in their Tupperware. Instead of using Tupperware we can use eco-packaging for safety. So parents can teach kids to be eco-friendly. Its start from home. Restaurants should start using eco-friendly packaging instead of plastic Tupperware, plastic beg and plastic bottles. In Malaysia there is a lot of restaurants from 100% only 20% are using eco-friendly packaging. Government should beware of plastic and as all the restaurants to use eco-friendly packaging instead of using plastic. Let's save the earth.

Literature review

Acording to Shaun, an LCA database is a generic name for a database that contains data that can be used for life cycle assessment. The data in an LCA database can consist of life cycle inventory data (LCI) and/or already characterized life cycle impact assessment data (LCIA) (Shaun, 2024). Sustainable packaging is the development and use of packaging which results in improved sustainability. This involves increased use of life cycle inventory (LCI) and life cycle assessment (LCA) to help guide the use of packaging which reduces the environmental impact and ecological footprint. It includes a look at the whole of the supply chain: from basic function, to marketing, and then through to end of life (LCA) and rebirth. Additionally, an eco-cost to value ratio can be useful. The goals are to improve the long term viability and quality of life for humans and the longevity of natural ecosystems. Sustainable packaging must meet the functional and economic needs of the present without compromising the ability of future generations to meet their own needs. Sustainability is not necessarily an end state but is a continuing process of improvement. Some aspects of environmentally sound packaging are required by regulators while others are decisions made by individual packagers. Investors, employees, management, and customers can influence corporate decisions and help set policies. When investors seek to purchase stock, companies known for their positive environmental policy can be attractive. Potential stockholders and investors see this as a solid decision: lower environmental risks lead to more capital at cheaper rates. Companies that highlight their environmental status to consumers can boost sales as well as product reputation. Going green is often a sound investment that pay off.

The process of engineering more environmentally acceptable packages can include consideration of the costs. According to Mudgal et al. (2024), a decision such as selecting sustainable packaging requires 'experts' who use their experience for material selection. Some companies claim that their environmental packaging program is cost effective. Some alternative materials that are recycled/recyclable and/or less damaging to the environment can lead to companies incurring increased costs. Though this is common when any product begins to carry the true cost of its production (producer pays, producer responsibility laws, take-back laws). There may be an expensive and lengthy process before the new forms of packaging are deemed safe to the public, and approval may take up to two years. It is important to note here, that for most of the developed world, tightening legislation, and changes in major retailer demand (Walmart's Sustainable Packaging Scorecard for example) the question is no longer "if" products and packaging should become more sustainable, but how-to and how-soon to do it. Efforts toward "greener" packaging is supported in the sustainability community; however, these are often viewed only as incremental steps and not as an end. Some people foresee a true sustainable steady state economy that may be very different from today's: greatly reduced energy usage, minimal ecological footprint, fewer consumer packaged goods, local purchasing with short food supply chains, little processed foods, etc. Less packaging would be needed in a sustainable carbon neutral economy, which means that fewer packaging options would exist and simpler packaging forms may be necessary. The chosen criteria are often used best as a basis of comparison for two or more similar packaging designs; not as an absolute success or failure. Such a multi-variable comparison is often presented as a radar chart (spider chart, star chart, etc.)

Specific factors for sustainable design of packaging may include: (1) Use of minimal materials-reduced packaging, reduced layers of packaging, lower mass (product to packaging ratio), lower volume, etc.; (2) Energy efficiency, total energy content and

usage, use of renewable energy, use of clean energy, etc.; (3) Recycled content-as available and functional. For food contact materials, there are special safety considerations, particularly for use of recycled plastics and paper. Regulations are published by each country or region; (4) Recyclability-recovery value, use of materials which are frequently and easily recycled, reduction of materials which hinder recyclability of major components, etc.; (5) Reusable packaging-repeated reuse of package, reuse for other purposes, etc.; (6) Use of renewable, biodegradable and compostable materials-when appropriate and do not cause contamination of the recycling stream; (7) Avoid the use of materials toxic to humans or the environment; (8) Effects on atmosphere/climate-ozone layer, greenhouse gases (carbon dioxide and methane), volatile organic compounds, etc.; (9) Water use, reuse, treatment, waste, etc.; (10) Worker impact: occupational health, safety, clean technology, etc.

Materials and Methods

SWOT analysis

According to Puyt et al. (2023), SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis is one of the oldest and most widely adopted strategy tools worldwide. Sustainable packaging forms the foundation of what looks to be a growing industry. But manufacturing the product is only part of the equation, and a SWOT analysis can help you make decisions about your business. In addition to strengths and weaknesses you deal with internally, the industry faces many external influences that offer both opportunities and threats.

Strength

One of the strength lies in the fact that once you establish your business, you gain an advantage over newcomers to the market, since they must create a manufacturing process to make Sustainable and find companies who want the product. Owning patents for the sustainable packaging you manufacture is another strength, since you won't need to pay a licensing fee to the inventor in order to continue to create your product.

Weakness

The cost of research and development of new or improved biodegradable packaging options represents a major weakness. The cost of using biodegradable packaging is another potential weakness, since if it is higher than the typical packaging your customer would need to factor that into the price of their own product. This means you may be forced to keep your own profits low to sell what you manufacture. If you're producing more packaging than you currently sell, this is a weakness since it affects your cash flow.

Opportunities

Heavier consumer demand for more biodegradable products means more potential interest from manufacturers who choose to come into compliance with their customer's requirements. As fossil fuel becomes depleted and oil prices rise, the need for biodegradable packaging presents more of an opportunity as a solution to the problem. As countries promote the use of biodegradable packaging, such as France requiring

plastic bags to contain 40 percent of their material from vegetable origin, this represents a possible opportunity for growth. As farmers grow more natural products, such as sugar cane, corn and bamboo, the cost of materials to make biodegradable packaging will become more readily available and available at a lower cost.

Threats

Large retailers may choose to develop their own biodegradable packaging as a way to cut costs, which would reduce the market and increase your vulnerability. Competition from manufacturers that start developing biodegradable packaging are another threat. If crude oil prices start to decrease and more fossil fuel is located, the perceived need for your services may be pushed into the future, a threat to your bottom line.

Results and Discussion

From the responses given in the goggle form there are 146 responses (*Table 1*). In the first there are 44.8% of Male that is 65 and 55.2% of Female that is 80 of them have answered the google survey form. The highest from the age of 18-25 (65.1 %), second highest from the age of 26-30 (23.3%), the medium from the age of 31-40 (9.6 %) and the least from age 41-50 (2.1 %). There are 84.9% responden familiar with sustainable packaging and 15.1% only not familiar with sustainable packaging. 75.7% been tried this sustainable packaging and 24.3% not tried sustainable packaging at all. Respondent's reply for sustainable packaging is safer than plastic. There are 96.6% agree and 3.4% disagree with the statement above. From the creative, attractive and design for the sustainable packaging they used mostly excellent there are 58.3%, average at 41% and poor 0.7%. There are 93.8% of respondents reply yes to agree if providing sustainable cutlery for each meal they purchased and only 6.2% disagree with that statement. There 93.2% of respondent consume home cooked food more than fast food and there are also 6.8% of them having fast food more than home cooked food. 80% of respondents reply yes for given option 20% off for every public holiday meals and 13% doesn't agree to place order for that.

Table 1. *Consumer Perceptions of Sustainable Packaging Versus Manufacturer's Acion In Klang Valley (N=146).*

Category	Percentage (%)
Gender	
Male	44.8
Female	55.2
Ages	
18-25	65.1
26-30	23.3
31-40	9.6
41-50	2.1
Is it customer familiar with sustainable packaging ?	
Yes	84.9
No	15.1
If they (customer) have tried sustainable packaging?	
Yes	75.7
No	24.3
Sustainable packaging is safer than plastic?	
Yes	96.6
No	3.4
Is the packaging (from manufacturer) are creative, attractive and design for the sustainable packaging they used mostly excellent?	
Yes	58.3

Maybe	41
No	0.7
Is they (manufacturer/ food seller) providing sustainable cutlery for each meal they purchased?	
Yes	93.8
No	6.2
Is the customer consumer like home cooked food more than fast food?	
Yes	93.2
No	6.8
If manufacturer / food provider given option 20% off for every public holiday meal would customer like to buy from them?	
Yes	80
No	20
How much spending on delivery?	
RM50-RM80	80
RM35-RM40	2.1
RM25-RM30	4.1
RM15-RM20	13
Using mobile aps for delivery	
Mobile Apps	46.6
Whatsapp Apps	43.8
Website	6.8
Phone call	2.7
Is you feel grateful for the first 10km is free delivery?	
Yes	98.6
No	1.4
How frequent on-line order in a week?	
6-8 times	24
3-6 times	4.1
3 times	71.9
Is the customers happy if there were given varieties of cuisine in one meal?	
Yes	92.4
No	7.6
There are sustainable cutleries in packaging	
Yes	93.2
No	6.8
In Packaging, now manufacturer with sustainable packaging delivery re moving towards zero waste.	
Yes	89.7
No	10.3
How about using plastic in packaging?	
Yes	99.3
No	0.7

There are 80% of them spending RM5-RM10, 13% of them spending RM 15-RM20, 4.1% spending RM 25-RM30 and last not least 2.1% spending RM35-RM40 for their food delivery. Since there are several methods to place an order there are 46.6% is using mobile apps, 43.8% in the whtsapp, 6.8% are using website and 2.7% use phone calls to place their order. Most of the respondents feel grateful for the first 10km is free delivery (98.6 %) and 1.4% of them ungrateful for the service. The highest respondent reply for less than 3 times that is (71.9 %), 3-6 times in a week is (24 %) , 6-8 times in a week is (1.4%) and (2.7 %) more than 8 times in a week. If there were given varities of cuisine in one meal there are (92.4 %) agree and (7.6 %) not agree with the opinion. There are (93.2%) agree to sustainable cutlery only and (6.8%) said no to sustainable cutleries. (50%) of them agree that their experiences is very easy, (47.9%) said that is easy, (1.4%) said it difficult and (0.7%) said the very difficult to place an order. From the survey given, (89.7%) agree and (10.3 %) not agree with sustainable packaging delivery are moving towards zero waste. (99.3 %) say no plastic and only (0.7 %) said no to no plastic. Im happy that from all the answer given by the respondents and there are (97.3%) of willing to share this sustainable packaging and lifestyle to their family and friends and (2.7%) are not willing to share this journey to their family and friends.

In summary, respondents reply their own opinion that sustainable packaging is safer than plastic, Sustainable packaging is a wonderful idea towards go green concept it's safer for the future generations to experience some natural resources, more to a green

life, Healthy lifestyle, Sustainable packaging is safer because it reduces the ecological footprint of all the stages in the product's life-cycle, Reduce environmental impact, It's saving the mother earth, Because they are reusable and also saves the environment, It reduces the waste produce by human. There also we need our earth to be clean and safe to live our life, for future so that not only for humans also for all the habitats in this world need a clean and safe environment. If we reduce using plastic materials there would be no harmful for all the habitats in this world. Packaging is made from recycled materials that are safe and sustainable for the users and the environment and produces little to no environmental waste. There are more answers given for their opinion.

Conclusion

This study has major managerial implications as it notify decision makers and marketing managers about the factors that influence a consumer's sustainable behavior. According to Barbu et al. (2022), many researchers have explored consumer behavior toward the green products topic and have presented different viewpoints on this subject. Research results have shown there are two motivational factors-saving by recycling and protecting the environment-which can influence their decision to live in healty lifestyle. The high costs of eco-packaging and lack of information on the benefits of their use is considered as reasons for not purchasing them. Therefore, a major implication of this study is the need to familiarize consumers with the long-term benefits of using eco-packaging. According to Nguyen et al. (2020), global consumers are increasingly concerned about the negative environmental impacts of packaging waste. Managers need to know what benefits and barriers are perceived by consumers in purchasing green packaging and to develop strategies for changing consumer habits in the direction of sustainability. In order to change the attitude and behavior of the Romanian consumer, companies must act in the following directions: (1) Informing the population about the effects of ecological packaging on environmental through communication campaigns that sensitize consumers and encourage eco- friendly consumption habits; (2) Product information based on labeling schemes ("eco-labeling") to help consumers by providing details on the environmental performance of products and packaging and to make them buy environmentally-friendly products. According to Wojnarowska et al. (2021), Eco-labelling is a system that informs a consumer of the environmental impact of products throughout their life cycle. The information consumers expect to find and would inspire their trust in recycling the packaging refers to the economical use of source materials in the manufacturing of the packaging, as well as the health and safety of the consumer. Reception and understanding of this information also depends on the knowledge consumers possess, which is related to the maturity of the market, but also the cultural values that this study has not explored. Another barrier highlighted by the study is low consumer income, which does not allow them to pay more for products in organic packaging. To motivate consumers, companies can offer economic incentives to buy products in organic packaging.

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Conflict of interest

We hereby confirm that there is no conflict of interest involve with any parties in this research study.

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