




MODERATION OF CONSUMERS' CONFUSION IN THE ATYPICALITY OF PACKAGING DESIGN THROUGH THE USE OF E-LABELING TOWARDS SUSTAINABLE CONSUMPTION

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Abstract: *This study aims to explore how e-labelling can moderate consumer confusion caused by atypical packaging designs, thereby promoting sustainable consumption. The pursuit of sustainability in product packaging has prompted the quest for exploration of various innovative approach to reduce environmental impact while maintaining user friendly interface for consumers. Utilizing a literature review to establish the theoretical framework, the research employs focus groups and Delphi techniques for data collection. The focus groups, comprising diverse consumer segments from Akure, Nigeria. The Delphi technique engages a panel of experts, including brand managers, marketers, and packaging designers, to achieve a consensus on the efficacy of e-labelling in mitigating confusion. Findings from the literature review suggest that clear and informative e-labels can significantly enhance product identification and reduce confusion. Focus group discussions reveal that consumers are receptive to e-labels, appreciating the additional information that aids in quick and accurate product recognition. The findings of the study shows that e-labelling will enable circular economy and environmental sustainability by preventing material waste. it may help reuse of product package as well as encourage recycling through education that can be provided. Also, e-labelling is considered preferable because it will enable comprehensive product packaging design due to its adaptation for multilingual content and real time update. In conclusion, the integration of e-labelling into sustainable packaging design represents a promising avenue for reducing environmental impact, enhance consumer engagement and drive innovation in the packaging industry. The Delphi panel supports these findings, emphasizing the role of e-labels in fostering sustainable consumption by reducing waste and promoting informed purchasing decisions. This study contributes to the body of knowledge on sustainable packaging practices and offers practical implications for stakeholders. By demonstrating the potential of e-labelling to alleviate consumer confusion, the research provides a pathway towards more sustainable consumption patterns in Akure, Nigeria.*

Key words: Atypicality, consumers' confusion, design, e-labelling, physical label, sustainable product packaging

1. INTRODUCTION

Casually, “sustainable consumption” can be seen as ‘the ability to maintain the use of available resources. The term is viewed by some researchers as a consumption pattern focused on not jeopardizing the needs of future generations (Bennett & Collins, 2009; Lee, 2014; Mont & Bleischwitz, 2007). It can be considered as a consumption that is based on informed choice. Informed choice is based on having good knowledge and rationale for making the right decision (Thorpe, 2010). According to Thorpe (2010), a change of lifestyle in terms of consideration for efficient resource consumption and waste minimization is germane to sustainable consumption. According to Thorpe (2010), this involves two sides; namely supply and demand. In terms of supply, this involves producing less environmentally damaging goods, and in terms of demand: it will be necessary to educate consumers about these improved goods. Thus, present study considers the moderation of consumers' confusion in the atypicality of packaging design through the use of e-labelling towards sustainable consumption due to the increasing non-food designs resembling food items (Buchmüller et al., 2022). There are category-based visual codes that could be followed to avoid such confusion in the aspect of graphic design innovation (Celhay et al., 2017) but atypicality of packaging design deviate from these norm, standard, conventional, or usual design. Fishel (2003) in Celhay, Folcher, & Cohen (2013) report that product designers and marketing managers agree that there are category-based visual codes, in terms of package design, that typify certain product categories. Examples include specific form, shapes, colours, materials, typefaces, layouts, and illustrations most frequently seen in a given product category. It is the notion of present study that this may help in contributing to consumers' safety. Atypical

designs may pose greater risks to vulnerable consumers, including children and those with limited literacy, who may struggle to comprehend warning labels, leading to misidentification and misuse. Adults, as shown in a study by Basso et al. (2014), unintentionally mistake dangerous products for edible ones. If safety in packaging design is not prioritized, it could lead to several risks, such as confusion, accidental ingestion, longer time spent searching for the right product, and loss of consumer trust. In this study, it is assumed that these issues of atypicality could prevent the achievement of SDG 3, which aims to ensure the well-being and health of the consumers except if improved by providing enough information.

2. METHODS

This study utilizes a literature review to establish the theoretical framework and employs focus groups together with Delphi techniques for data collection. The Delphi technique engages a panel of experts, including brand managers, marketers, and packaging designers, to achieve a consensus on the efficacy of e-labelling in mitigating confusion. Delphi techniques does not require large samples (Hsu & Lin, 2013). The Delphi method engages anonymous experts on a particular topic. Anonymous experts offer professional experience, knowledge skills and opinions, and exchange views with other experts until a consensus is reached. For the Delphi participants, only 7 people are involved. The focus groups, comprising diverse consumer segments from Akure, Nigeria. A partially structured focus group discussion is employed. The interviews are conducted in four phases: planning, participant recruitment, conducting interviews, data collection, and interpretation of obtained data.

2.1 Planning Phase and participants' recruitment

The purpose of the focus group discussion is to ascertain that consumers are interested in the use of e-labels. For this purpose, consumers of household products especially those that are aware of the presence of some non-edible products imitating edible product design in Akure, Nigeria are involved. An announcement soliciting voluntary participation is made to 30 potential consumers of household products. To ensure anonymity, the specific identity or location of the consumers remains undisclosed, as per the agreement with the participants. Next, the investigation's questions and the focus group's principles (agenda, timing, location, audio recording) are presented to the participants.

2.2 Conducting interviews and data collection

Two research assistants facilitate the interviews: one conducts the interview, while the other listens. The interviews are recorded using mobile phones and conducted in a distraction-free environment. On average, each interview lasts for 10 minutes

2.3. Sample Description

Twenty-four (24) out of the 30 potential consumers volunteer to participate in the study. Accordingly, participants are assigned numbers from 1 to 24 for identification. Four (4) focus group sessions are conducted with the participants' ages ranging from 15 to 58 years old. Table 1 provides further details regarding the sample composition.

Table 1: Demography of Participating Consumers

Focus Group (FG)	Participants' Age	Numbers of participants	Participants by Gender	
			Male	Female
FG1	15-25	6	3	3
FG2	26-36	6	3	3
FG3	37-47	6	3	3
FG4	48-58	6	4	2
Total		24	13	11

The execution and topics of the focus group interviews are carefully designed to facilitate open and descriptive discussions among participants. The questions are straightforward, avoiding simple yes or no answers, and encouraging participants to provide detailed responses. Participants are given the

opportunity to express their opinions, experiences, and disagreements without interruption. The questions allow multiple responses, fostering a rich exchange of ideas. The interviews focus on various aspects related to the extraction from literature review concerning e-labelling in relation to atypical package with the view of moderating confusion and its advantages for sustainable consumption. The challenges of adopting e-labelling and their interest in or acceptance of e-labelling are also discussed.

3. RESULT AND DISCUSSION

3.1 Findings through literature review to establish the theoretical framework

The Packaging Institute International defines packaging as the enclosure of products, items, or packages in a wrapped pouch, bag, box, cup, tray, can, tube, bottle, or other container form to perform one or more of the following functions: containment, protection, preservation, communication, utility and performance (Saka, 2011). Physical protection, barrier protection, information transmission, reducing theft, convenience, and marketing to mention a few are the vital significance of product package design (Grundey, 2010). Packaging preserves and protects its products from the hazards of the distribution cycle. Young (2003) considers some threats to packaging design and expresses his attitude in the following statement: “The most attractive or popular design is not necessarily the most effective one at the point of sale, because it may fail to communicate a key message quickly and clearly. This necessitates the need for sustainable packaging design not only in material consideration but also in graphical communication. Sustainable Packaging Coalition. SPC considers sustainable packaging as packaging that throughout the entire life cycle is beneficial, safe, and healthy for individuals and society as a whole (Kozik, 2020). According to Kozik (2020), such package design should meet the expectations and needs of consumers. Through these means, it helps to reduce product waste and conserve resources. The key measurement tool to assess a product’s environmental impact is the life cycle assessment (Chengcheng, 2023). However, the spaces available on the product package to reveal information pertaining to life cycle assessment (LCA) may not be enough and the use of the logo may not be explicit enough. An example of the aforementioned is the fact that some packaging designs have started encouraging consumers to engage in recycling of packaging materials through the use of graphics (Choi et al., 2015). They include various graphic design symbols such as package pictograms for recycling, proper handling to minimize waste, and proper disposal to mention a few (Figure 1) Although, sustainable package design is more material dependent; visual communication such as the use of labels and logos may also suggest sustainable product packaging (Magnier et al., 2016). When codes or other nomenclatures are used to reveal LCA on product packaging, it is assumed that not all consumers will understand them. However, this aspect of LCA is not the focus of this study but the use of e-labelling towards sustainable consumption due to consumers' confusion about the atypicality of packaging design. It is believed that e-labelling can be useful for the unfolding of all these kinds of useful additional information.



Figure 1: Examples of package pictogram suggesting sustainable consumption

Although according to (Choi et al., 2015), some of the packaging designs encourage consumers to reuse or suggest how to recycle the package by providing information on the package but this study is of the notion that this practice needs to be improved to cater to achieving SDG 3, which aims to ensure the well-being and health of the consumers. In the aspect of illiteracy and language barrier, foreign product brands found in the supermarket without English language may not be understood by consumers in Nigeria. To provide multilingual information on product package design may not be convenient due to limited space; thus, it is believed that e-labelling can help in providing more space for information display but in a digitized form; thus, reducing usage of materials for labels.

E-labelling is still new and has not yet been adopted across several products. For example, the United States only started allowing it for telecommunication products in 2017. This means that product information and regulatory details which transcends conventional physical labelling can be accessed and displayed on the digital screen of such products. When it is without a screen, comprehensive and current product data can still be assessed by using digital devices for interacting with the embedded digital marker on the product package. This study is of the notation that e-labeling should be extended to other product categories like Non-Alcoholic beverages to contribute to sustainable consumption as well as moderate atypical package design. Thus, it minimizes over dependence on physical labels (i.e. tactile material) which may require raw material processing and a lot of production cost. This line of thought is in accordance with circular economy as it aims to reduce the use of raw materials and reduce the amount of waste. Circular economy involves several stages, from the initial design of products to their end-of-life management by keeping them in use for as long as possible. Circular economy is characterized as the regenerative system that will minimize waste and promote long-term environmental sustainability. This will responsibly manage the end of a product's life and minimize the amount of waste sent to landfills so as to contribute to a more sustainable and environmentally friendly system. Thus, it is believed that linking sustainability data with digital technology through e-labelling can inform consumers about the actual identity of the product brand despite the atypicality. Also, it will inform the consumers on proper packaging disposal (recycling, composting, etc.) in the area in which the product is used and this would provide a much-needed connection for the consumers (Boz et al., 2020). Some countries (such as Canada, Japan, and the United States) have started discussions about how to extend e-labels to other product categories (Cory, 2017) beyond ICT products. Although some countries may be contemplating whether to adopt e-labelling or not because of possible challenges that can be involved. Due to the advantage that consumers can access comprehensive and current product data by using digital devices for interacting with the embedded digital marker on the product package necessitate the need for e-labelling so as to moderate consumers' confusion in the atypicality of packaging design towards sustainable consumption. The following attributes are gathered from the literatures so as to be used as rationale for exploring e-labelling as way of moderating consumers' confusion in the atypicality of packaging design towards sustainable consumption:

- 1) material waste reduction due to appropriate choice and use,
- 2) instructional videos to learn more about the product brand,
- 3) multilingual content to be able to translate to understandable languages,
- 4) interactive content which will enable consumers to communicate with other stakeholders,
- 5) real time updates which will enable quick response and delivery of useful information. This will also be useful for reuse of the packaging since the old information can easily be updated without printing of new ones,
- 6) visual appeal and branding of the products can be improved due to the opportunity of managing the available space on the product packaging and
- 7) clear and informative e-labels can significantly enhance product identification and reduce confusion.

3.2 Findings through focus groups comprising diverse consumer segments

Twenty (24) out of thirty (30) actually volunteered to participant in this study. Four (4) out of twenty-four (24) participants decided to participate because they find the topic very interesting and they have been looking for opportunity to discuss about designs of non-food products imitating food. Majority does not understand the meaning of atypical design but they easily understand the topic when it is presented as 'designs of non-food products imitating food'. The remaining 20 participants are silent and give no response about the reasons for participating in the discussion. *"As a consumer who have design background, this topic should be discussed with the advertising agencies and practitioners. They are in the position to know if e-labelling will assist in brand promotion and consumers' engagement. Although, I do see designs of insecticides resembling food because of the pictures of fruits and the names or captions used but I believed the designs are creative means of making the product more attractive to consumers. The topic will be discussed better in advertising perspective than under 'sustainable consumption."* (50 years old male, no.22). *"I think I will accept e-labelling because on several occasions within the supermarket, foreign brands without English language captions are encountered. In fact, I saw a biscuit but I thought it was a soap because there are no pictures of biscuits or somebody eating biscuit on it. It was a foreign language throughout without any English language. I have to peruse every part of the packaging until I saw an e-label. I had to scan this*

code with my mobile phone and I was able to see many things about the brand. The surprise is that everything is still in foreign language but when I saw the videos showing the process of manufacturing the products, I can finally conclude that the product is a biscuit. The video shows the production and packaging process, continues with distribution of the product." (36 years old female, no.13). "E-labelling is good and I want to accept it but it should be used for providing additional information. It should not replace the physical label. I still want to see the tangible label and I like it more when e-labels are included to provide more information such as videos and opportunity to chat with the producers." (58 years old female, no 24). "I accept and like e-labelling and want it to be legalized. This will not cancel physical package label but allows reuse of physical package label. Instead of the package labels to result to refuse or waste; they can be reused as much as possible until they can no longer be used again. The package container will then be washed, cleaned and sterilized for further usage instead of resulting to package waste. After several uses, they can then be recycled. This will aid sustainable consumption and circular economy. When someone find it difficult to understand the identity of product because of resemblance to something else like non-food resembling food, e-labelling will be useful to seek for more information and make complaint to the producers through chatting." (20 years old male, no 5). "I will support the adoption of e-labelling if the policy makers and regulatory bodies can legalize the use of e-labelling for the provision of more information for consumers so as to minimize any form of confusion. I observe that e-labels are more used for only transactions and not for providing information for consumers in Nigeria. When the codes are scanned, they only show the prices. Also, some of them will show the Facebook page or other social media belonging to the brands. Sometimes, there are new information to be learnt at the social media pages of these brands. I accept e-labelling for all products in Nigeria on the basis that they will be used to provide enough pieces of information for consumers." (25 years old female, no.6). "The ideal of e-labelling should be presented to the government, policy makers and regulatory bodies; no matter how good it may seem to be; we consumers cannot make its adoption to be possible. But I accept the idea of e-labelling. By considering the challenges for those who cannot use new technology, I advise that both physical labels and e-labels should be used. Then, gradually, physical label may be fading away gradually until only when everything will be absolutely e-labels in the nearest future. At that stage, the entire citizens of Nigerian might have been used to it. Nigeria is a country with citizens that easily adjust and adapt to new conditions." (58 years old male, no. 23).

The observation is that majority welcome the idea of e-labelling as means of providing adequate information to consumers and the challenges of the technology in terms of internet and other technicalities are infinitesimal to majority of the consumers. Analysis of the interview shows that none of the participants consider the challenges of understanding how to use e-labels. All of them have smart mobile phones and planning to buy more advanced phones. "I think this is a very good idea because it will provide more job opportunities. The creation for contents either text, videos and images for the consumers will allow more job opportunities. This will also solve the problem of identification problem since someone can easily scan the e-labels to know more about the product brands. The people living in the villages can even enjoy the fact that they can watch videos showing how the products they are using are produced. In places, where there is no internet connectivity the physical labels will be made available for them. This is the evidence that both e-labelling and physical labels should co-exist" (26 years old male, no.7).

Majority of them think that the use of e-labelling will not be challenging to consumers since they are always fond of using their smart phones for purchase of goods. "Getting physical cash is now a problem in Nigeria, even, when you visit the bank, you will not be given enough money despite having money in bank account. Thus, consumers are getting used to e-transaction. I think e-labelling cannot pose any challenges to consumers if they are used on product package design to provide more information for comprehension and understanding a particular product brand. When a soap looks like a bread or bread looks like soap, one can verify by scanning the e-labels to understand better. Although, this kind of designs should be discouraged. Design should follow standards and they must be easily comprehended even when they are minimalist (19 years old female, no.4). "To be considering that not all consumers have smart phone is negligible because majority of the people in Akure has a smart phone and they are even thinking of buying another one. The electronic gadget is not a problem but if such policy about the adoption of e-labelling will be made then, government must try all means to allow the prices of such gadget to be reduced, so that people can easily afford one. Then, if possible, codes that will work without the use of internet should be used. If this can be done, then the adoption e-labelling as means of providing more information will be very welcome and acceptable". (18 years old male, no.3). "I think this will aid sustainable consumption in the aspect of fake

products and retailers that may be selling expired products since e-labelling can be used to assess the genuineness of the product brand. This will support good health and well-being. Also, it will minimize confusion due to misunderstood designs. I like and accept the use of e-labelling as means of providing additional information on product package design. They can also educate consumers on how to recycle or return already used product package to the nearest collection centre through the use of e-labelling. I am not even aware if there is any collection centre in Akure where already-used product packages can be submitted. " (40 years old male, no.15).

The majority of participants (20 out of 24) welcome the idea of e-labelling as a means of providing additional information to consumers. Participants see e-labelling as a solution to challenges such as confusion due to product designs that imitate food, lack of information on product packaging, Identification of genuine products, and provision of additional information such as videos and manufacturer details. Some participants suggest that e-labelling should not replace physical labels but rather complement them. The majority of participants do not see challenges in using e-labels, as they are already familiar with using smartphones for transactions.

A few participants suggested that the government and regulatory bodies should legalize the use of e-labelling and ensure that it is accessible to all, including those without smartphones. From these findings, it can be recommended that regulatory bodies should consider legalizing the use of e-labelling. E-labelling should be designed to complement physical labels, not replace them. Measures should be taken to ensure accessibility and inclusivity in the adoption of e-labelling. Also, it is very important that education and awareness campaigns should be implemented to inform consumers about the benefits and use of e-labelling.

3.3 Findings through focus groups comprising diverse consumer segments

The Delphi technique engages a panel of experts, including brand managers, marketers, and packaging designers, to achieve a consensus on the efficacy of e-labelling in mitigating confusion. The consensus reached is shown in Table 2. The Delphi panel supports the role of e-labels in fostering sustainable consumption by reducing waste and promoting informed purchasing decisions in the sense that atypical design can be understood when the e-labels are scanned. The findings of the study show that e-labelling will enable a circular economy and environmental sustainability by preventing material waste. It may help reuse of product package as well as encourage recycling through education that can be provided. Also, e-labelling is considered preferable because it will enable comprehensive product packaging design due to its adaptation to multilingual content and real-time updates.

Table 2: Consensus reached during three rounds by the Delphi participants

Consensus Reached by Delphi Participants on the use of e-labelling as means of moderating confusion that can be caused by atypical package design	1ST Round		2ND Round		3RD Round	
	Yes	No	Yes	No	Yes	No
Reduce material waste as well as aid sustainable consumption	7	0	7	0	7	0
E-labelling should provide instructional videos for consumers	6	1	4	3	5	2
Multilingual content through e-labelling will minimize confusion	7	0	7	0	7	0
Interactive content through e-labelling will increase consumers' trust	4	3	7	0	5	2
Real time update will aid sustainable consumption	7	0	7	0	5	2
Divers Target Audience will be reached and satisfied	1	6	5	2	4	3
Regulatory requirements will be monitored and well sustained	7	0	7	0	7	0
Mobile Applications (App) that will not require internet can be used	1	6	2	5	2	5
Compliance to regulatory requirement may be easy for manufacturers	7	0	7	0	7	0
Accessibility and technological barriers will be well managed	7	0	7	0	4	3
Enhance consumers; experience and atypical design will be fun to them	6	1	4	3	4	3
Improved in-store experience and User Interaction	6	1	4	3	4	3
Enhanced visual appeal of the products and package re-use	7	0	7	0	7	0

4. CONCLUSION

Findings from the literature review suggest that clear and informative e-labels can significantly enhance product identification and reduce confusion. Focus group discussions reveal that consumers are receptive to e-labels, appreciating the additional information that aids in quick and accurate product recognition. In conclusion, the integration of e-labelling into sustainable packaging design represents a promising avenue for reducing environmental impact, enhance consumer engagement and drive innovation in the packaging industry. The Delphi panel supports these findings, emphasizing the role of e-labels in fostering sustainable consumption by reducing waste and promoting informed purchasing decisions. This study contributes to the body of knowledge on sustainable packaging practices and offers practical implications for stakeholders. By demonstrating the potential of e-labelling to alleviate consumer confusion, the research provides a pathway towards more sustainable consumption patterns in Akure, Nigeria. It can be recommended that regulatory bodies should allow e-labelling to be used for providing adequate information and they should be designed to complement physical labels, not replace. Also, it is very important that education and awareness campaigns should be implemented to inform consumers about the benefits and use of e-labelling.

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