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PROCEEDINGS

ARE CONSUMERS ACTUALLY WILLING TO PAY MORE FOR SUSTAINABLE PACKAGING? A CHOICE-BASED CONJOINT ANALYSIS.

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Abstract

In response to the increasing emphasis on sustainability and shifting consumer awareness of environmental protection, companies are adapting their product offerings to be greener. These changes include the adoption of more sustainable packaging. While it would appear that consumers are willing to embrace eco-friendly behaviour, however, the attitude-behaviour gap – that is, the difference between the favourable attitude towards sustainable practices and the less frequent adoption – remains relevant. Furthermore, it is unclear if and how much more consumers are actually willing to pay for a product with sustainable packaging, compared to their stated intentions. This study aims to analyse the willingness to pay a premium price for sustainable packaging, focusing on actual behaviour – instead of attitudes – through an experimental study employing choice-based conjoint analysis and real food packaging. The results show that consumers are willing to spend significantly more for the packaging alternative that they believe is greener. This research intends to extend the previous literature on sustainable packaging, which focused more on the study of attitudes, providing evidence about actual pro-environmental behaviour. From a practical point of view, the article presents insight for managers and practitioners about the development of effective sustainable packaging strategies.

Keywords

Sustainable packaging; Willingness to pay a premium price; Actual behaviour; Attitude-behaviour gap; Conjoint analysis.

1. Introduction

Protecting the environment is a major issue, which is also reflected in several everyday choices that individuals are called upon to make. Producing and consuming more sustainably is a challenge that cannot be underestimated, given the increasing scarcity of natural resources and growing pollution. Consumers are aware of and concerned about sustainability issues and accordingly consider practices and choices that are eco-friendly, such as purchasing green products, saving resources, and recycling (Prieto-Sandoval et al., 2022). The need for a transition to a more sustainable purchasing and consumption system is of topicality and increasing relevance in academic debate.

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Household consumption is responsible for almost three-quarters of carbon dioxide emissions (Ganglmair-Wooliscroft & Wooliscroft, 2022). Sustainability can be achieved through several practices, among which is the consumption of products in packaging with less environmental impact (Ischen et al., 2022). Product packaging can contribute to sustainable development (Nguyen et al., 2020): it is used in everyday life, and it generates a significant proportion of overall pollution (Herbes et al., 2020). Food packaging is a relevant aspect of this process since the food system contributes to one-third of the total greenhouse gas emission (Granato et al., 2022). In response to these evolving needs, many companies are taking action to adopt greener packaging in their product offering (Prakash et al., 2019).

Although it is clear how sustainable packaging can play a key role in individuals' purchasing choices (Bunga Bangsa & Schlegelmilch, 2020; Ketelsen et al., 2020), and that sustainability is a relevant criterion for packaging strategies (Granato et al., 2022), it is unclear whether consumers are actually willing to buy and how much they are willing to spend for products in greener packaging. Two main reasons can be identified.

Firstly, although sustainability issues are mainstream concerns, the attitude-behaviour and intention-behaviour gaps related to sustainable consumption remain relevant (Ganglmair-Wooliscroft & Wooliscroft, 2022). It is well documented the gap between the favourable attitude toward sustainable products and practices and the less frequent adoption (Olson, 2022). Even when consumers show environmental concern and willingness to adopt a sustainable life, they struggle in hesitant in purchasing green products: this effect is due to high price perceptions, scepticism, and social desirability bias (Kautish et al., 2022). Thus, eco-friendly attitudes do not imply that consumers behave in an eco-friendly way (Prieto-Sandoval et al., 2022). Notably, the extant literature on sustainability and packaging focuses more on attitudes than on actual behaviour, lacking studies analysing this second aspect.

Secondly, green products or with eco-friendly packaging are priced higher or perceived as pricier, which could represent a barrier to pro-environmental behaviour (Lavuri, 2022; Prakash et al., 2019; Vega-Zamora et al., 2014; Gleim et al., 2013). A substantial portion of previous studies confirm that consumers might be willing to pay more for sustainable packaging (e.g., Koch et al., 2022; Orset et al., 2017; Vecchio & Annunziata, 2015). It does not seem clear, however, how much more consumers are actually willing to spend for a packaging solution they consider greener.

This study aims to understand whether consumers actually prefer to purchase products with sustainable packaging, compared to alternatives considered less eco-friendly. To this end, a choice-based conjoint analysis (CBCA) and real food packaging have been employed. In this way, it was intended to study actual behaviour, rather than attitudes, by measuring the willingness to pay a premium price (WPPP) as a proxy for consumers' choice. The results show that consumers are willing to spend significantly more for packaging that they believe is greener.

This study extends previous literature, addressing results about WPPP and sustainable packaging, bridging the attitude-behaviour gap. Moreover, it provides insights to managers and practitioners on developing sustainable packaging strategies.

2. Literature background

Packaging protects goods during transport, enables efficient logistics, and conveys marketing messages (Koch et al., 2022). Packaging affects product perception and represents an effective communication vehicle (Ischen et al., 2022). It is the first element encountered by consumers when analysing products and influences the decision-making process (Monnot et al., 2019).

When it comes to sustainable packaging, there are two commonly accepted definitions: that of the Sustainable Packaging Alliance (2007) and that of the Sustainable Packaging Coalition (2011). Both provide a list of criteria that packaging must fulfil to be considered sustainable. In addition to the technical point of view, the consumer perspective can also be considered, i.e., the individual's perception of packaging, which may explicitly or implicitly evoke its sustainability (Steenis et al., 2017; Magnier et al., 2016; Magnier & Crié, 2015). According to Ischen et al. (2022), eco-friendly packaging is perceived as such by consumers and is considered and actually chosen by them. The greenness of the packaging also entails several further consequences. As an example, the perceived food quality increases if the product comes in sustainable packaging (Magnier et al., 2016), and a food product packaged in a sustainable solution is perceived as more satiating or natural than less sustainable alternatives (Ischen et al., 2022).

The packaging can be designed to evoke eco-friendliness through structural, visual, haptic, or informational cues (Herbes et al., 2020; Magnier et al., 2016; Magnier & Crié, 2015). However, the literature shows that consumers mainly rely on the packaging's structural cues to assess its sustainability. Indeed, packaging evaluations seem to be affected mostly by the material and its end-of-life features, in terms of recyclability, biodegradability and reusability (De Feo et al., 2022; Nguyen et al., 2020; Herbes et al., 2018; Lindh et al., 2016). Consumers less often consider the cost of production and the beginning-of-life characteristics (Herbes et al., 2020). Across several studies, it has been proven that glass and cardboard are perceived as greener, while plastic and metal are perceived as not eco-friendly (Nguyen et al., 2020; Boesen et al., 2019; Steenis et al., 2017; Lindh et al., 2016). De Feo et al. (2022) show that among Italian consumers glass bottles are perceived as the most sustainable packaging, compared to aluminium cans and plastic bottles, which were perceived as the worst solution.

Products packaged in sustainable alternatives could be priced higher or perceived as pricier (Prakash et al., 2019). For this reason, previous literature has investigated the consumers' WPPP for sustainable packaging. Koch et al. (2022) claim that consumers might be willing to pay more for eco-friendly packaging because they anticipate it will be more expensive. Shoppers can show WPPP if they are satisfied with the packaging market's appeal (Nguyen et al., 2020). While French consumers stated to be willing to pay more for sustainable packaging (Orset et al., 2017), Italian ones seem to be influenced more by the price of the packaging than by its type (De Feo et al., 2022). Either way, even if WPPP can be analysed as a proxy of actual behaviour (Singh & Pandey, 2018), consumers may show a WPPP for green products even though actual behaviour may be inconsistent with stated attitudes.

Based on the above, the following hypothesis is formulated:

H1. Consumers are more willing to pay a premium price for packaging that is considered more sustainable than one that is considered less sustainable.

3. Materials and methods

A CBCA was performed to analyse the actual choice behaviour and overcome the limitations of attitude studies and self-reported measurements. This technique allows a close simulation of a real purchasing situation, as the choice task provides a realistic approach. Consumers are presented with a series of alternatives, which they must think about in terms of trade-offs and indicate their preference among the proposals. Hence, individuals are asked to perform a simple and natural task, as during a real shopping experience (Barwitz, 2020; Meyerding & Merz, 2018; Allenby et al., 2005). CBCA has been previously used for inferring willingness to pay, since consumers may find it difficult to estimate what price they are willing to pay for a product (Meyer et al., 2018). Furthermore, since CBCA allows the study of specific product characteristics, it is particularly suited when it comes to studies on packaging (as in Jensen et al., 2021, Meißner et al., 2020).

In the CBCA each alternative presented to the participant is a combination of product characteristics from a defined set of attributes. Every attribute can present several levels. For this study, the two product attributes employed were: a) *Material*, referring to the different packaging material alternatives; b) *Price*, referring to the different price levels of the product.

Ad-hoc packaging of a fictional product were designed to avoid any bias due to prior knowledge. A milk carton was selected as manipulation since it is a product that is generally easily accessible, usually purchased through a simple decision process, and available in different packaging alternatives. Examples of studies using different liquid product packaging options can be found in Boesen et al. (2019) and Steenis et al. (2017). Based on the real products available in the Italian market, where the study has been located, three real mock-ups of milk packages were realised. As the *Material* attribute of the CBCA, thus, the three levels were: 1) glass bottle; 2) carton pack; 3) plastic bottle. Based on previous literature, the glass bottle was assumed to be the alternative perceived as most sustainable, followed by the carton pack. The plastic bottle, on the other hand, was considered the solution deemed the least sustainable by consumers. By varying the material of the packaging, however, all other features were kept fixed. The visual appearance was identical for the three packages, recalling a milk drop; the colour was blue, like those generally available on the market, and the labels carried the words “*whole milk*” and “*1 litre*”, in Italian.

Furthermore, based on the average price of one litre of milk in Italy, i.e., 1.50€, three incremental levels of 0.10€ were identified. As the *Price* attribute of the CBCA, thus, the three levels were: 1.60€; 1.70€; 1.80€. The choice of price levels based on actual market prices is in line with previous literature (Meißner et al., 2020; Meyerding & Merz, 2018) and contributes to the realism of the task.

Finally, using the JMP Pro 14 software, ten choice sets were produced. Attributes and levels were entered into the program that randomly combined one level of the *Material* attribute and one level of the *Price* attribute. In this way, participants were given ten pairs of profiles, each having one packaging at a given price vs. another packaging at a given price. Consumers were also provided with a no-choice option, to increase the realism of the task.

4. Procedure

Since the participants were presented with real packaging, the experiments were held at a university laboratory. 40 Italian consumers participated in the CBCA study, above the minimum size of 30 participants claimed by Bendixen et al. (2004), identified by convenience sampling. Details about the demographic characteristics are presented in Table 1.

Table 1. Demographics of CBCA participants.

Gender	Male	18
	Female	22
Age	18-24	25
	25-34	10
	45-54	4
	55-64	1
Occupation	Employed	1
	Self-employed/Freelance	4
	Student	22
	Working student/part-time worker	8
	Other	5
Education	High school diploma	30
	Bachelor's degree	2
	Master's degree	7
	PhD	1

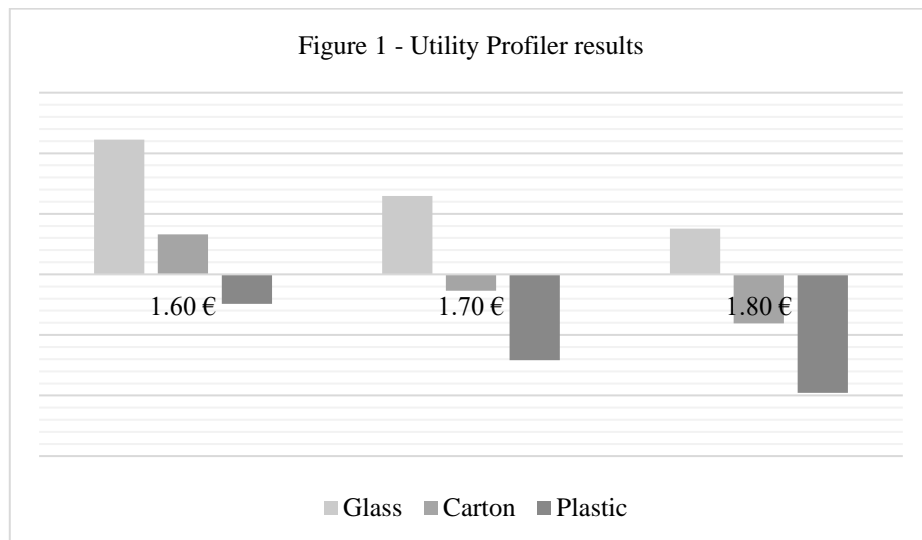
Participants were informed that the purpose of the study was to evaluate some milk packages before their actual launch on the market and that attendance would be anonymous. Moreover, they were reminded to consider their spending habits and their usual budget (Jensen et al., 2021). After that, the packaging pairs were shown, one by one. For each pair, consumers were asked to choose one alternative or neither, while a researcher kept track of preferences. In the end, participants provided their demographic data.

5. Results

Data analysis has been carried out with JMP Pro 14 software.

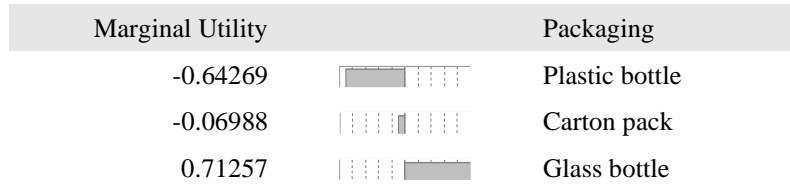
The attribute *Material* (LogWorth: 15.309; p-value: .00000) and the attribute *Price* (LogWorth: 5.038; p-value: .00001) are significant, as resulted in the Effect Summary. The attribute *Material* (χ^2 : 70.501, <.0001) and the attribute *Price* (χ^2 : 23.199, <.0001) are significant also according to the Likelihood Ratio Test.

H1 is supported since results prove that consumers present a WPPP as assumed. The glass bottle shows the highest utility (1.112432) at the price of 1.60 €, followed by the carton pack (0.329974) and by the plastic bottle (-0.24283). The glass bottle shows the highest utility (0.648162) at the price of 1.70 €, followed by the carton pack (-0.1343) and by the plastic bottle (-0.7071). The glass bottle shows the highest utility (0.377131) at the price of 1.80 €, followed by the carton pack (-0.40533) and by the plastic bottle (-0.97814). A summary is provided in Figure 1.



When it comes to the Effect Marginals results, the same pattern can be identified: the glass bottle is followed by the carton pack and, at last, by the plastic bottle. A summary is presented in Figure 2.

Figure 2 - Effect Marginals



6. Discussion and conclusions

This study addresses previous literature calling for more research on sustainable packaging measuring actual behavioural (Koch et al., 2022), leading to three main contributions.

Firstly, at each price level, the glass bottle presents the greatest utility among the alternatives, followed by the carton pack. As expected, the plastic bottle presents the least utility. These results are in line with previous literature (Steenis et al., 2017; Magnier et al., 2016; Magnier & Cri , 2015), whereby more sustainable packaging – or perceived as such – seems to be preferred by consumers. Thus, our hypothesis was supported. Interestingly, consumers deem the glass bottle as more sustainable, but this is not necessarily the case. As many authors point out (e.g., Herbes et al., 2020; Boesen et al., 2019; Herbes et al., 2018; Steenis et al., 2017), the perception of individuals is often not in line with the actual environmental impact of the packaging and the actual Life Cycle Assessment.

Secondly, regarding the relevance of each attribute, it seems to emerge that the attribute *Material* is more relevant than *Price*. This result confirms that consumers pay much attention to the packaging material, in line with previous literature (Nguyen et al., 2020; Herbes et al., 2018; Lindh et al., 2016). Furthermore, this study contrasts with Ketelsen et al. (2020), according to whom price is considered more important than packaging sustainability, and De Feo et al. (2022), who claimed that Italian consumers seem to be influenced more by the price of the packaging than by its type.

Thirdly, consumers always present a positive utility for the glass bottle, regardless of the price level. The opposite scenario is presented for the plastic bottle, which always presents negative utility, at any price level. Carton pack leads to mixed outcomes. Taken together, these results extend the pre-existing literature on sustainable packaging, showing that consumer attitudes are followed by actual behaviour, addressing the attitude-behaviour gap. The results on WPPP are in line with part of the existing studies (Koch et al., 2022; Orset et al., 2017; Vecchio & Annunziata, 2015), according to which consumers are willing to pay more for sustainable packaging. In addition, the study contrasts with some authors, according to higher eco-friendliness of packaging does not generate a WPPP (Agerup et al., 2019; Wei et al., 2018; Ertz et al., 2017).

This study provides practical insights into green packaging development. Since consumers rely on the packaging material to assess its sustainability, manager and practitioners should consider that structural manipulation can be effective in

influencing the purchasing decision. The glass bottle proves to be perceived as the most eco-friendly solution, and consumers are willing to pay more for it, regardless of the actual environmental impact of the packaging. As a result, it seems possible to consider higher price ranges for such a solution. In contrast, plastic always seems to be the least preferred solution, and the one that generates the least utility, underscoring the tendency of consumers to exclude it from their purchasing choices.

Finally, this article presents some limitations, which may be insights for future research. First, the sample involved is small, and future studies could include a larger and more diverse number of participants. Second, this study employs only one type of packaging, namely liquid food, while future studies could be extended to different products. Furthermore, only the material was manipulated for the purpose of analysis, while future research could focus on other packaging cues, such as visual, haptic, and informational. Finally, it would be interesting to analyse WPPP by manipulating multiple attributes simultaneously, as CBCA allows for more complex designs.

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