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Why Are Consumers Willing to Pay More for Liquid Foods in Environmentally Friendly Packaging? A Dual Attitudes Perspective

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Abstract: Considering that one of the key components of liquid food in environmentally friendly packaging is its higher price, it may not be appealing to all consumers. However, a growing body of evidence has shown that the sale of liquid food in environmentally friendly packaging is increasing. The purpose of this study was to analyze why consumers are willing to pay more for liquid food in environmentally friendly packaging. Drawing on the theory of dual attitudes by Wilson, Lindsey, and Schooler, this study proposes that consumer purchasing behavior can be explained through implicit and explicit attitudes. Moreover, a consumer's ecoliteracy and ecofriendly lifestyle might be important predictors of consumer attitudes toward environmentally friendly packaging. Our conceptual model was tested on survey data from 11 countries, with a total of 7028 respondents. The study revealed that consumers' willingness to pay a higher price for liquid food in environmentally friendly packaging could be predicted by their positive attitudes toward (a) the environmental friendliness of the packaging, (b) the brand of the liquid food, and (c) the affordability of the liquid food in the environmentally friendly packaging. Ecoliteracy and having an ecofriendly lifestyle were found to be important predictors of consumer attitudes toward environmentally friendly packaging. This study contributes to the literature that aims to explain consumers' willingness to pay more for food in environmentally friendly packaging. It identifies how much more consumers are willing to pay for food in environmentally friendly packaging and why.

Keywords: packaging; environmentally friendly; willingness to pay; dual attitudes; sustainability; liquid food

1. Introduction

With consumers' increasing awareness of the health and environmental implications of packaging, the global market for packaging made from recycled materials is growing and is forecasted to reach \$440.3 billion USD by 2025 [1]. Paper packaging makes up the biggest proportion of recycled materials. The demand for sustainability and reducing the impact of packaging on the environment is fueled by environmental awareness among a growing population of consumers. An increasing number of consumers are motivated in their purchasing behavior by environmental consciousness and concern for the general good of society, as well as by the well-being of future generations [2,3]. For both manufacturers and retailers, sustainable and environmentally friendly packaging offers opportunities that include differentiation and a competitive advantage [4]. Being part of the environmentally

friendly packaging market adds to corporate reputation and brand perception, which are motivations that underlie the corporate efforts of many firms to engage in such corporate social responsibility initiatives [5,6]. In addition, it is also attractive simply due to the higher margins earned for environmentally friendly products [7].

A recent report entitled “Global Sustainable Packaging Market Analysis & Trends—Industry Forecast to 2025” by the global agency Research and Markets [1] suggested that the sustainable packaging market will grow 7.7% over the next decade and is predicted to become the primary challenge facing companies, surpassing cost and other issues. Among the key challenges is the identification of consumers who are willing to buy food in environmentally friendly packaging.

This study adopts Scott and Vigar-Ellis’s [8] definition of environmentally friendly packaging, which is packaging that is easily recycled and is safe for individuals and the environment. The problem is that food in environmentally friendly packaging is usually more expensive, and although research has shown that more than one-third of consumers are interested in choosing environmentally friendly packaging, only half of them are willing to pay more for it [9]. What remains unclear is who are the consumers who are willing to pay more for food in environmentally friendly packaging. Moreover, with regard to this subject, there have been inconsistent findings. On the one hand, studies have shown that a marginal increase in price for food in environmentally friendly packaging has no effect on consumer purchasing behavior, even in developing countries [10]. This finding specifically refers to consumers who are part of the “organic food consumer group” [11]. On the other hand, research has shown that the higher price of products in environmentally friendly packaging can decrease consumers’ purchasing intentions. In particular, consumers with a lower level of education and low-income jobs are likely to be the most affected [12]. A recent literature review by Popovic, Bossink, and Van der Sijde [13] suggested that more research is needed to clarify which factors predict consumer willingness to pay more for food in environmentally friendly packaging.

This study focused on an investigation of the predictors of consumers’ willingness to pay more for basic liquid foods, such as milk and juice, that are available in environmentally friendly packaging. This is because, in many countries, milk and juice are part of the “Minimum Expenditure Basket” [14]. These products are widely offered in most supermarkets and are available in a diversity of packaging materials. Because they are part of the Minimum Expenditure Basket, it is often assumed that these foods are available at the lowest cost [15]. Many packaging studies have addressed the topic of milk packaging. Most of this research has focused on an investigation of either the packaging design [16] or its material [17]; to our knowledge, no study exists that has addressed the issue of consumer preference to pay a premium price for milk and juice in environmentally friendly packaging. The goal of this paper is to contribute to closing this gap by focusing on answering the following question:

Which factors predict consumer willingness to pay more for liquid foods sold in environmentally friendly packaging, such as milk and juice? To answer this question, this study draws on the theory of dual attitudes by Wilson et al. [18] and examines how very different attitudes—and the factors predicting these attitudes—can explain consumer willingness to pay more for liquid foods in environmentally friendly packaging. Our hypotheses were tested on a dataset from 11 countries (Brazil, China, France, Germany, India, Japan, Russia, Turkey, the UK, the US, and South Africa). This sample makes our study unique in light of recent criticism that most studies on sustainable and environmentally friendly packaging have utilized small samples and have tested hypotheses within a single country context [13]. In addition, our sample covered all continents and included both developed and emerging economies.

This study contributes to the existing literature by providing an empirical analysis of consumers’ willingness to pay more for milk and juice packaged in environmentally friendly material across 11 different countries. It is among the very few studies that have used the theory of dual attitudes of Wilson et al. [18] to explain consumer purchases of liquid food in environmentally friendly packaging. The findings show that the willingness to pay more for liquid foods in environmentally friendly packaging is strongly related to both implicit and explicit attitudes. Finally, our results show that 73%

of the surveyed consumers indicated they are willing to pay more for milk and juice in environmentally friendly packaging.

2. Hypotheses Development

2.1. A Research Model

The research model tested in this study is based on a widely accepted assumption that consumer attitudes can be a strong predictor of consumer behavior [19–21]. Personal attitudes are formed by personal experiences or the knowledge a person possesses [20]. While there are many theories that explain the relationship between attitudes and behaviors, this study draws on the theory of dual attitudes by Wilson et al. [18] to explain why some consumers are willing to pay a premium price for products in environmentally friendly packaging. An attitude can be defined as “a summary evaluation of a psychological object captured in such attribute dimensions as good–bad, harmful–beneficial, pleasant–unpleasant, and likeable–dislikeable” [21] (p. 29). An attitude can also be defined as “a psychological tendency that is expressed by evaluating a particular entity with some degree of a favor or disfavor” [22] (p. 1).

The theory of dual attitudes by Wilson et al. [18] suggests that individuals hold more than one attitude toward objects, issues, and people. On the one hand, individuals have longstanding (implicit) attitudes that they practice and that are typically easy to retrieve (similar to habitual responses). At the same time, individuals have recently constructed evaluations (explicit attitudes) that are often temporary. Implicit attitudes are not replaced; rather, they are overwritten by explicit attitudes. While explicit attitudes may change, implicit attitudes will remain the same over time. Wilson et al. explained that “people can have dual attitudes, which are different evaluations of the same attitude object, one of which is an automatic, implicit attitude and the other of which is an explicit attitude. The attitude that people endorse at any point in time depends on whether they have the cognitive capacity to retrieve the explicit attitude and whether the explicit attitude overrides the implicit one” [18] (p. 102). For example, certain attitudes toward food that are developed in childhood (implicit ones) will prevail over a recently developed attitude if a person’s cognitive capability is lower at a certain point in the day (e.g., choosing French toast over healthy food for breakfast).

This study focuses on examining the effects of the following attitudes: (a) implicit attitudes toward environmentally friendly packaging, (b) implicit attitudes toward the price/affordability of food in environmentally friendly packaging, and (c) explicit attitudes toward a food’s brand perception. The first two attitudes are implicit and are based on long-standing practices and behaviors. The third attitude—attitude toward a food’s brand—we conceptualize as temporary and emergent: it is dependent on marketing about the food’s brand and can change over time [23]. The conceptual model is presented in Figure 1.

Depending on which attitude prevails at a certain point of time, a mix of the three attitudes could lead to a consumer’s willingness to pay more for foods in environmentally friendly packaging. According to Wilson et al. [18], people can hold more than one attitude toward the same thing, which is based on their own experience and level of cognition. While implicit attitudes automatically overwrite explicit ones, an explicit attitude can become a new habit and can, over time, become an implicit attitude.

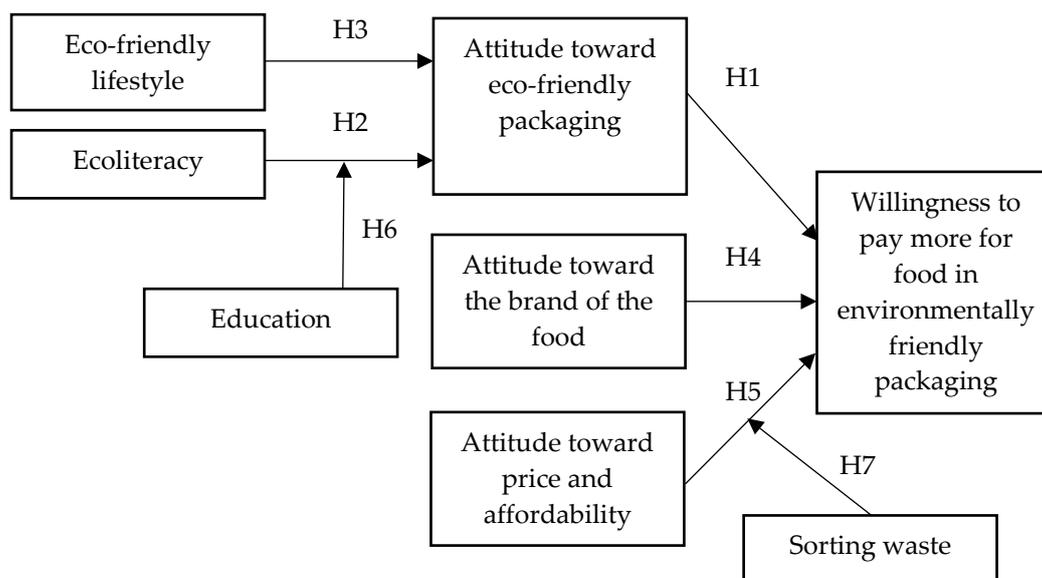


Figure 1. The conceptual model guiding the empirical study.

2.2. Attitudes toward Environmentally Friendly Packaging

This study proposes that the first attitude that predicts a consumer's willingness to pay more for foods in environmentally friendly packaging is his/her attitude toward environmentally friendly packaging. This attitude describes the consumer's evaluation of environmentally friendly packaging as good–bad, harmful–beneficial, pleasant–unpleasant, or likeable–dislikeable. Previous research has already examined the link between consumer attitudes toward environmentally friendly foods and their purchasing behavior, showing, for example, that 67% of American consumers are ready to pay a 5–10% premium for environmentally friendly foods [24]. Indeed, the link between environmentally friendly food and its packaging is very strong, and this relationship may be caused by the same attitudes. On the basis of the abovementioned research, the following hypothesis was formulated:

Hypothesis 1. *A positive consumer's attitude toward environmentally friendly packaging positively influences his/her willingness to pay more for liquid food in such packaging.*

2.3. Influences of Ecoliteracy and an Ecofriendly Lifestyle

In this paper, it is argued that a consumer's proenvironmental lifestyle will predict that consumer's positive attitude toward environmentally friendly packaging. This includes (a) ecoliteracy and (b) an ecofriendly lifestyle.

Ecoliteracy refers to an understanding of the principles of sustainability and the application of those principles [25]. Given its definition, ecoliteracy is very close to environmental literacy and encompasses affective knowledge, cognitive skills, and behavioral components [26]. Ecoliteracy is used to refer to consumers' sustainability knowledge and behavior [26]. A lot of research has connected ecoliteracy with consumers' ability to read ecolabels and understand the meaning of ecolabels [26]. This research is in line with research on consumers' environmental knowledge [27]. A lot of evidence exists that there is a positive significant relationship between consumers' ecoliteracy and their purchasing behavior [28]. Ecoliteracy influences consumer purchasing behavior by instilling a higher awareness about the environmental safety of products. Therefore, in this study, we expected that ecoliteracy would positively influence consumers' positive attitudes toward liquid foods that are packaged in environmentally friendly packaging. The following hypothesis was formulated:

Hypothesis 2. *A consumer's ecoliteracy positively influences his/her positive attitude toward environmentally friendly packaging.*

The next factor that positively influences consumers' positive attitudes toward environmentally friendly packaging is an ecofriendly lifestyle. An ecofriendly lifestyle is defined as "a grouping of related practices that can reflect and inform the consumer's self-concept (or identity)" [29] (p. 64). According to the Giddens [30] lifestyle theory, individuals continuously engage in a reflexive process of self-definition and self-expression and seek to identify to which social groups they belong. This is "a reflexive project" in which actions are defined as practices. Giddens [30] suggested that practices are organized into lifestyle sectors, and usually individuals engage in practices that are part of several different lifestyle sectors at the same time. An ecofriendly lifestyle is one of these sectors, helping individuals practice their self-identity. Axsen et al. [29] recently showed that such lifestyle practices lead to proenvironmental behavior. Therefore, with respect to the purchasing of liquid food in environmentally friendly packaging, we expected that consumers who practice an ecofriendly lifestyle would have positive attitudes toward environmentally friendly packaging of regular liquid foods. Therefore, the following hypothesis was formulated:

Hypothesis 3. *A consumer's ecofriendly lifestyle positively influences his/her positive attitude toward environmentally friendly packaging.*

2.4. Attitudes about the Brand of Products with Environmentally Friendly Packaging

The explicit attitude that predicts consumers' willingness to pay more for foods in environmentally friendly packaging is their attitude toward the brand of the foods sold in environmentally friendly packaging. What makes up this attitude is a consumer's evaluation of a food based on all of the rational and emotional benefits of the given brand. According to the American Marketing Association [31] (p. 23), a brand is "a name, term, sign, symbol, or design, or a combination of them, intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of competitors". The brand of a product represents certain values, provides added value, and gives a distinct identity to the product, causing a consumer to be willing to pay a premium price for that product [32]. The consumer perception of a brand guides consumer purchasing behavior [33]. It also offers "a sign of quality" [34] (p. 226). Finally, the consumer perception of a brand can motivate consumers to pay more for food products and goods [35]. Therefore, the following hypothesis was formulated:

Hypothesis 4. *A positive consumer attitude about the brand of the liquid food sold in environmentally friendly packaging positively influences his/her willingness to pay more for such food.*

2.5. Attitudes about the Price/Affordability of Liquid Foods Sold in Environmentally Friendly Packaging

Another attitude that predicts consumer willingness to pay more for foods in environmentally friendly packaging is attitude regarding the price/affordability of that food. This attitude involves a consumer's evaluation of the relative price associated with the final product versus the value it offers in terms of its benefits. Previous research by Suchard and Polonsky, and Myburgh-Louw and O'Shaughnessy [36,37] has already examined the link between consumer attitudes regarding the price/affordability of foods in environmentally friendly packaging and purchasing behavior. This research has shown that, if the price increases significantly, it will have a negative influence on the purchasing intent of consumers. This is because a higher price is considered to be an important barrier in preventing consumers from pursuing their proenvironmental intentions [38]. Many theories have indicated that, when considering proenvironmental behavior, individuals evaluate it against

convenience and immediate comfort [39]. Therefore, with regard to the affordability of liquid foods in environmentally friendly packaging, the following hypothesis was formulated:

Hypothesis 5. *A positive consumer's attitude about the affordability of liquid food in environmentally friendly packaging negatively influences his/her willingness to pay more for such food.*

2.6. The Moderating Effect of Education

This study proposes that education will moderate the relationship between ecoliteracy and consumer attitudes toward food in environmentally friendly packaging. A general assumption in most consumer studies is that education is positively related to environmentally friendly attitudes and behaviors [40]. In this study, the effect of education on the relationship between ecoliteracy and attitudes toward ecofriendly behavior was examined. This effect was expected to consequently lead to a willingness to pay more for foods in environmentally friendly packaging.

Hypothesis 6. *A consumer's education level positively moderates the relationship between ecoliteracy and attitude toward environmentally friendly packaging in such a way that consumers with a higher level of education will have more positive attitudes toward environmentally friendly packaging.*

2.7. The Moderating Effect of Sorting and Recycling Waste

Finally, this study proposes that consumer practices of sorting and recycling waste will moderate the relationship between attitude toward price and a consumer's willingness to pay more for foods in environmentally friendly packaging. This is because any practice that takes place over time creates greater awareness and helps develop a habit/behavior. While research has shown that individuals are willing to pay for recycling schemes from the point of view of paying for a greater good [41,42], this study posits that the behavioral effects of recycling waste will be different. Specifically, it was expected that those consumers who sort and recycle waste as a common practice are likely less willing to pay more for food in environmentally friendly packaging, as paying more may be perceived as wasting resources. Specifically, the following hypothesis was formulated:

Hypothesis 7. *A consumer's practice of sorting and recycling waste negatively moderates the relationship between his/her positive attitude about the price/affordability of liquid food in environmentally friendly packaging and his/her willingness to pay more for that liquid food in such a way that this relationship is stronger for those consumers who recycle waste.*

3. Materials and Methods

3.1. Context and Participants

The data for this paper were collected in 2013 as part of a larger market research study by Millward Brown, which is a British multinational market research firm. The objectives of this market research were to identify the strengths, weaknesses, opportunities, and threats to large packaging producers in relation to environmental issues; and to provide valuable input for strategy and product development. We used a unique dataset from 11 different countries covering consumers' views on liquid food in environmentally friendly packaging. In total, 7028 consumers above the age of 18 took part in this cross-cultural investigation. China, India, and the US each had approximately 1000 respondents, whereas approximately 500 respondents were from each of the following countries: Brazil, France, Germany, Japan, Russia, South Africa, Turkey, and the UK. In South Africa, face-to-face interviews were done, while the respondents from the other 10 countries completed an online questionnaire.

An initial analysis of the data showed that the respondents from developing countries gave more positive answers: the average mean scores for all questions (on a five-point Likert scale) were 3.46 for the respondents from developed countries and 3.75 for the respondents from developing countries. The majority of the respondents (61.5%) were the primary shopper in their household, 35.2% of the respondents were one of the primary shoppers of the household, and the remaining 3.2% were not the primary shoppers. Furthermore, 67.7% of the respondents had completed college or higher education. The income of the consumers, which was based on the income level of their countries, ranged from very low to very high, and 26.6% of consumers had an average income. The average age of the respondents was 38.1 years old, with a standard deviation of 12.7. Additionally, the entire sample consisted of 51% male and 49% female respondents. We also found that 73% of the surveyed consumers stated that they were willing to pay more for milk and juice in environmentally friendly packaging. Table 1 summarizes the sociodemographic data for all countries.

Table 1. Sociodemographic data for all countries.

Country	N	Age		Gender %		Education Level %							
		Mean	SD	M	F	L1	L2	L3	L4	L5	L6	L7	L8
USA	1000	40.61	13.46	48	52	0.2	0.4	0.4	2.5	14.8	31.4	37.8	12.5
UK	502	39.43	13.52	49	51	0.6	2.2	3.6	5	24.5	32.7	24.3	7.2
Germany	502	46.03	13.39	51	49	0	0.6	13.5	40.2	17.9	5.8	20.5	1.4
Brazil	500	35.74	11.54	50	50	0.2	0.2	2.2	5.6	27.2	22.6	30.8	11.2
France	500	41.15	12.90	49	51	0.6	1	0.2	17.6	27.4	23	18.4	11.8
S. Africa	520	37.19	12.45	50	50	0.2	0.8	1	21.2	59.2	11.7	4.4	1.5
Russia	500	38.50	11.95	48	52	0.2	0.8	0.6	18.4	8.4	13.2	55	3.4
China	1002	36.86	11.83	52	48	0.3	0.3	0.3	1.1	4.9	35.6	57.3	0.2
Japan	501	42.98	12.33	48	52	0.4	0.2	1	2	30.3	7.8	54.1	4.2
Turkey	501	33.26	9.97	65	35	0	0.2	2.6	3.8	30.1	12.8	44.7	5.8
India	1000	32.07	9.82	51	49	2.1	3.1	3.7	2.6	2.4	8.7	40.2	37.2
Total	7028	38.10	12.70	51	49	0.5	1	2.4	9	19.4	20	37.3	10.4

Notes. S. Africa = South Africa, Level 1 = No formal education, Level 2 = Some elementary school, Level 3 = Completed elementary school, Level 4 = Some High School, Level 5 = Completed High School, Level 6 = some college or university without a degree, Level 7 = Completed university or equivalent/University Degree, Level 8 = Postgraduate Degree.

3.2. Measurements

The variable “willingness to pay more for products in environmentally friendly packaging” was measured with the following single question: “If you consider 1 L of milk sold in environmentally friendly packaging, would you be willing to pay extra to purchase it?” The respondents could choose between the following four answers: (1) no; (2) yes, approximately five cents more; (3) yes, approximately 20 cents more; or (4) yes, more than 50 cents more. The extra amount was specified in the local currency.

The variable “Ecoliteracy” was measured using three items about environmental logos: “Environmental logos are clear and easy to understand,” “the information shown on environmental logos is believable,” and “Environmental logos are useful in helping me understand the environmental impact of packaging.” All items were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The construct validity of this variable was assessed using a factor analysis, which showed that all three variables were part of the same factor. The Cronbach’s alpha for the variable “Ecoliteracy” was 0.82.

The variables “Attitude toward environmentally friendly packaging,” “Attitude toward the brand of milk/juice,” and “Attitude toward price and affordability” were measured as single items. The single items were listed in the questionnaire under the following statement: “Indicate how much you agree that the following items are important when deciding which milk/juice drinks to buy.” The item measuring “Attitude toward environmentally friendly packaging” was “The availability of

environmentally friendly packaging.” The item measuring “Attitude toward the brand of milk/juice” was “the brand or company, or who produces it.” The item measuring “Attitude toward price and affordability” was “The price or if it is on promotion or on special offer.” The answers were measured on a five-point Likert scale ranging from 1 (not at all important) to 5 (very important).

“Ecofriendly lifestyle” was measured with the question, “Why do you buy environmentally friendly products?” The respondents answered with items such as “Fits with my lifestyle habits and preferences (e.g., organic, local, natural, or free from ‘x’).” The response options were 0 = no and 1 = yes.

The variable “Education” was measured with the question, “What is your highest level of education?” The respondents could choose between (1) no formal education, (2) some elementary school, (3) completed elementary school, (4) some high school, (5) completed high school, (6) some college or university without a degree, (7) completed university or equivalent/university degree, or (8) postgraduate degree.

Further, the single item “Sorting waste for recycling” was measured with the question, “Do you sort and set aside waste for recycling?” The item was measured on a five-point Likert scale ranging from 1 (have not considered it) to 5 (frequently done).

The use of one-item measurements is in line with other studies in marketing that have focused on measuring concrete singular objects and/or attributes [43]. Gardner, Cummings, Dunham, and Pierce [44] have also argued that measuring attitudes, perceptions, and beliefs can be successfully done with single-item measurements. This approach was also supported by Wanous and Reichers [45], who performed research on the reliability of single-scale items and found that, in some cases, single-item measurements were as reliable as multi-item measurements.

3.3. Measurement Model

A Confirmatory Factor Analysis (CFA) was conducted to examine the discriminant validity of the measurement model using Mplus. All latent constructs were included in the analysis except for ecofriendly lifestyle (because it was a categorical variable). Education level was excluded in the analysis as well because it was an observable construct, not a latent construct. With the exception of the three-item measurement for Ecoliteracy, the constructs in the current paper were measured using single items. Following the procedures suggested by Petrescu [46], the error term of all constructs with single-item measurements was set at a value equal to the Variance * (1—reliability). The results showed that the hypothesized six-factor model fit the data well ($\chi^2(10) = 90.33, p < 0.001$; RMSEA = 0.03; CFI = 0.99; TLI = 0.98; SRMR = 0.01). This model had a better fit than did an alternative model where all constructs were loaded in one factor ($\chi^2(25) = 33159.19, p < 0.001$; RMSEA = 0.43; CFI = 0.00; TLI = -1.92; SRMR = 0.51).

4. Results

To better understand the reasons behind the responses for the variable “Willingness to pay more,” a frequency analysis was conducted. We found that 27% of the participants were not willing to pay for liquid food in environmentally friendly packaging, 47% of the participants were willing to pay five cents more, 20% of the participants were willing to pay 20 cents more, and finally, 6% of the participants were willing to pay more than 50 cents more.

The findings are presented below in the order of the proposed hypotheses. Table 2 summarizes the descriptive statistics and the correlations between variables.

To examine the hypotheses, structural equation modeling was used to test the model. The original hypothesized model did not yield a satisfactory fit ($\chi^2(8) = 1741.41, p < 0.001$; RMSEA = 0.18; CFI = 0.58; TLI = 0.11; SRMR = 0.05). To improve the model fit, we adopted a suggestion from the modification indices and added five correlations, including (1) Attitude toward the brand together with Attitude toward environmentally friendly packaging, (2) Attitude toward the brand together with Ecoliteracy, (3) Attitude toward the brand together with “Sorts waste,” (4) Ecofriendly lifestyle together with

Ecoliteracy, and (5) Willingness to pay more together with “Sorts waste.” The model was then rerun, and we achieved an acceptable fit ($\chi^2(22) = 523.46$, $p < 0.001$; RMSEA = 0.06; CFI = 0.88; TLI = 91; SRMR = 0.04). The independent variable and moderator were mean-centered before being put into the model [47].

Table 2. Intercorrelations matrix of the study variables.

Variable	M	SD	1	2	3	4	5	6	7
1. Willingness to pay more	2.05	0.83							
2. Attitude—packaging	3.69	1.17	0.31 **						
3. Attitude—brand	3.83	1.14	0.24 **	0.48 **					
4. Attitude—price	3.82	1.10	−0.12 **	0.17 **	0.12 **				
5. Ecofriendly lifestyle	0.29	0.46	0.20 **	0.20 **	0.13 **	−0.01 **			
6. Ecoliteracy	3.54	0.95	0.26 **	0.38 **	0.31 **	0.12 **	0.17 **		
7. Education	6.07	1.36	0.09 **	−0.01	0.05 **	−0.05 **	0.07 **	0.07 **	
8. Sorts waste	1.92	1.27	−0.08 **	−0.08 **	0.07 **	−0.02 **	−0.07 **	−0.06 **	−0.08 **

Note: $N = 7028$; ** $p < 0.001$. Attitude—packaging = Attitude toward environmentally friendly packaging; Attitude—brand = Attitude toward the brand of milk/juice; Attitude—Price = Attitude toward price and affordability; Willingness to pay more = Willingness to pay more for products in environmentally friendly packaging.

The results show that a consumer’s attitude toward environmentally friendly packaging positively influences his/her willingness to pay more for foods in such packaging ($\beta = 0.06$; $p < 0.05$). Thus, hypothesis H1 was supported. The results of the hypothesis testing are summarized in Table 3.

Table 3. Results of the regression analysis.

	β	S.E.	p -Value
Outcome: Attitude—packaging			
Ecoliteracy	0.37	0.01	0.00
Ecofriendly lifestyle	0.14	0.01	0.00
Education	−0.05	0.01	0.00
Ecoliteracy * Education	0.02	0.01	0.13
Outcome: Willingness to pay more			
Attitude—packaging	0.06	0.03	0.02
Attitude—brand	0.43	0.05	
Attitude—Price	−0.18	0.01	
Sorts waste	−2.12	0.28	
Attitude—Price * Sorts waste	−0.03	0.01	

Notes: Attitude—packaging = Attitude toward environmentally friendly packaging; Attitude—brand = Attitude toward the brand of milk/juice; Attitude—Price = Attitude toward price and affordability; Willingness to pay more = Willingness to pay more for products in environmentally friendly packaging; Ecoliteracy * Education = the interaction term of Ecoliteracy and Education; Attitude—Price * Sorts waste = the interaction term of Attitude—Price and Sorts waste.

Hypothesis 2 posited that a consumer’s ecoliteracy positively influences his/her attitude toward environmentally friendly packaging. Indeed, the results of the statistical analysis show that ecoliteracy was positively related to a consumer’s attitude toward food in environmentally friendly packaging ($\beta = 0.37$; $p < 0.001$), supporting Hypothesis 2.

Hypothesis 3 posited that a consumer’s ecofriendly lifestyle positively influences his/her attitude toward environmentally friendly packaging. This hypothesis was supported by the data, since an ecofriendly lifestyle was positively related to a consumer’s attitude toward products in environmentally friendly packaging ($\beta = 0.14$; $p < 0.001$). It was also found that consumer attitudes toward the brand of the liquid food in the environmentally friendly packaging positively influenced his/her willingness to pay more for foods in such packaging ($\beta = 0.43$; $p < 0.001$). Thus, Hypothesis 4 was supported.

Hypothesis 5 proposed that consumer attitudes about the price/affordability of foods in environmentally friendly packaging negatively influence the willingness to pay more for foods

in such packaging. This was indeed the case ($\beta = -0.18; p < 0.001$), which means that Hypothesis 5 was supported.

Hypothesis 6 posited that a consumer's education level positively moderates the relationship between ecoliteracy and his/her attitude toward environmentally friendly packaging. The impact of the interaction term "ecoliteracy together with education level" on "attitude toward environmentally friendly packaging" turned out to be insignificant ($\beta = 0.02; p = 0.13$). Thus, Hypothesis 6 was rejected.

Finally, Hypothesis 7 suggested that a consumer's practice of sorting recycling waste negatively moderates the relationship between his/her attitude toward the price and affordability of packaging and his/her willingness to pay more for milk and juice in environmentally friendly packaging. The moderation effect of sorting recycling was found to be significant and negative ($\beta = -0.03, p < 0.01$). Thus, Hypothesis 7 was supported. Because the moderation effect was significant, the effect is illustrated in Figure 2. Figure 2 shows that the more consumers reported that they sort and set aside waste for recycling, the stronger the negative relationship was between the consumer's attitude toward price and the consumer's willingness to pay more for products in environmentally friendly packaging.

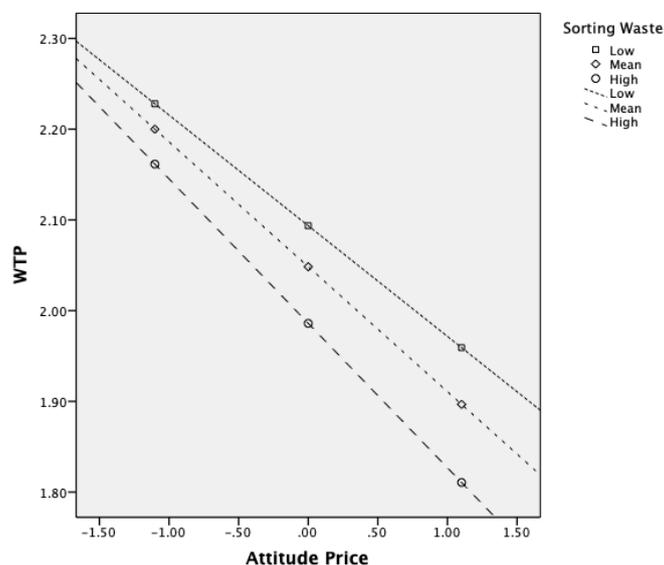


Figure 2. Moderation plot for hypothesis 7. Notes: Attitude—Price = Attitude toward price and affordability; WTP = Willingness to pay more for products in environmentally friendly packaging.

Even though it was not explicitly hypothesized, the combination of hypotheses 1–3 implies a mediation relationship. Specifically, ecoliteracy and an ecofriendly lifestyle positively influenced consumer attitudes toward environmentally friendly packaging, which in turn increased willingness to pay more for products in environmentally friendly packaging. We examined this indirect effect using bootstrapping ($k = 1000$) to obtain 95% confidence intervals. The indirect effect of ecoliteracy on willingness to pay more—via the consumer's attitude toward environmentally friendly packaging—was significant ($\beta = 0.07, 95\% \text{ CI } [0.06, 0.08]$). Moreover, the indirect effect of an ecofriendly lifestyle on the willingness to pay more—again, via the consumer's attitude toward environmentally friendly packaging—was significant ($\beta = 0.06, 95\% \text{ CI } [0.05, 0.07]$) as well.

5. Discussion

The objective of this study was to examine the predictors of a consumer's willingness to pay more for liquid foods (e.g., milk and juice) in environmentally friendly packaging. Wilson et al.'s theory of dual attitudes [18] was used to formulate the hypotheses and to conduct a study among consumers of liquid foods in 11 countries. The study's findings support the argument that both implicit and explicit attitudes are strongly related to the willingness to pay more for liquid food in environmentally friendly packaging. Specifically, it was found that (a) a consumer's attitude toward environmentally friendly

packaging and (b) a consumer's attitude toward the brand of milk/juice were significant predictors of the consumer's willingness to pay more for liquid food in environmentally friendly packaging. In turn, the results show that a consumer's attitude toward price and affordability had a significant negative effect on his/her willingness to pay more for liquid food in environmentally friendly packaging. Two factors were found to be important predictors of a consumer's attitude toward environmentally friendly packaging: ecoliteracy and an ecofriendly lifestyle. Furthermore, one of our moderators, education, was not supported. Finally, we found that the practice of sorting waste for recycling had a negative effect on the relationship between a consumer's attitude toward price and affordability and his/her willingness to pay more for liquid food in environmentally friendly packaging, which means that those consumers who sort waste and for whom affordability matters are less likely to pay more for liquid food in environmentally friendly packaging. With these findings, the study makes several important contributions and offers new avenues for future research.

First, this study is one of the few to address the topic of consumers' willingness to pay more for liquid food in environmentally friendly packaging [48]. This topic is often omitted from scholarly research; however, it is a highly relevant topic, especially for the food industry, as was indicated by the results of this study. This study shows that 73% of the consumers surveyed suggested that they would be willing to pay more for environmentally packaged foods. This finding is in line with recent research. For example, 86% of study participants in Sweden [11], 81% of study participants in the US [49], and 67% of study participants in Germany were found to be willing to pay a premium price for products in environmentally friendly packaging [50]. These percentages signal a significant improvement in consumers' willingness to pay compared to just three decades ago. At the beginning of the 1990s, research showed that only 13% of consumers were willing to pay more for environmentally friendly packaging [37]. Overall, these findings are encouraging for both scholars and practitioners. However, it remains unclear whether these relatively high percentages only apply to regular foods or whether niche/specialized food products would receive similar support. Future research can address this topic and examine which factors determine consumers' willingness to pay more for food in environmentally friendly packaging.

This study suggests that factors such as ecoliteracy and an environmentally friendly lifestyle can explain consumers' willingness to pay more for food in environmentally friendly packaging. These findings highlight that consumers are becoming much more aware of the benefits of purchasing food in environmentally friendly packaging [48] and that such purchasing behavior is no longer a prerogative of only highly educated, well-paid segments of society [51]. Sustainable purchasing behavior is becoming a broader behavioral phenomenon that should receive more attention from scholars and practitioners [13]. Innovative explanations for this trend should be sought that consider how the lifestyles and behaviors of consumers in general have changed over the past decades. Consequently, we encourage scholars to test a broader spectrum of predictors and explanations, as suggested by, e.g., Kollmuss et al. [38].

Finally, more theoretical work is needed to explain consumers' willingness to pay more for food in environmentally friendly packaging. For example, this study utilized Wilson et al.'s [18] theory of dual attitudes. In most other studies, scholars have used Ajzen's Theory of Planned Behavior [19]. However, these explanations may be limited. More conceptual work is needed to develop better and stronger theoretical explanations. Marketing studies have shown that purchasing involves a broad range of factors and therefore a broad range of attitudes toward these factors [52]. For instance, consumers may have an attitude about, e.g., a product's packaging, ingredients, quality, or brand [21]. They may also hold an attitude toward a food's effects on health, the environment, or other contextual implications [53]. Thus, broader explanations about consumer decision-making are needed in future research. One interesting research avenue is the study of how consumer attitudes are formed. Research has suggested that consumers adopt different cognitive processing strategies, e.g., systematic/deliberate, associative/spontaneous, or heuristic [54]. To our knowledge, hardly any study has addressed any of these cognitive perspectives in the context of environmentally friendly packaging. We believe that

studying the cognitive processes leading to attitude formation about food in environmentally friendly packaging can offer fresh and relevant information.

Limitations of This Study

There were several limitations to this study that need to be addressed. The first limitation was that one-item measurements were used in the survey. Single-item measurements are not as reliable as multi-item measurements. However, some studies, such as that of Wanous and Reichers [45], have found that in some cases, single-item measurements are as reliable as multi-item measurements. Moreover, Gardner, Cummings, Dunham, and Pierce [44] have found that measuring attitudes, perceptions, and beliefs can be successfully done with single-item measurements. Nevertheless, the use of single-item measurements was one of the main limitations of this study, and this needs to be recognized.

Another potential limitation of this study was that willingness to pay more was measured in local currency. While local currency was recoded into euros after the study was completed, it is possible that there was a discrepancy between the perceived value of five cents versus 50 cents in the local context. For example, in countries with low incomes, paying an additional five cents might be an important indicator of sustainable purchasing behavior. In countries where incomes are much higher, the relative value of 50 cents may be an insignificant contribution.

One of the strong points of this study was the large sample of consumers per country and the high total number of consumers that participated in the survey ($N = 7028$). At the same time, the large sample may also be one of the weaknesses of our study. Usually, a large sample size leads to higher significance in the tested relationships.

Finally, the conceptual model tested in this paper could, in the future, incorporate more attitudes and moderations to provide a more complete picture of real-life situations. Only two implicit attitudes and one explicit attitude were used to test the hypotheses. Future studies should focus on identifying other attitudes that may be of interest with regard to willingness to pay more for environmentally friendly packaging, e.g., attitudes toward sustainability.

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