Factors Affecting the Purchase Intention of Products with Environmentally Friendly Packaging of Urban Residents in Ho Chi Minh City, Vietnam

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Abstract: The study's objective is to determine the factors affecting the intention to buy products with environmentally friendly packaging in the urban area of Vietnam with a specific case study in Ho Chi Minh City. The study uses the theory of planned behavior (TPB) to build an empirical model to evaluate the factors affecting consumer behavior. Primary data were collected through a direct survey of 485 customers in the city using a convenience sampling method. We built and tested the scale of variables using Cronbach Alpha analysis and used exploratory factor analysis (EFA) to select the main factors to be included in the impact regression model. The research results show the impact of five factors: (1) the price of products with environmentally friendly packaging on the customers' sense of community, (2) the consumer's attitude toward products with eco-friendly packaging with customers' conception of effectiveness, (3) social influence, (4) personal image concerns, and (5) quality of environmentally friendly packaging to intention to buy products with environmentally friendly packaging of urban residents in Ho Chi Minh City. The factor related to the attitude and perception of the effectiveness for the environment has the most substantial impact, followed by the quality of environmentally friendly packaging, the price factor, and the sense of community.

Keywords: purchase intention; environmentally friendly products; packaging; urban customers; theory of planned behavior; exploratory factor analysis; Ho Chi Minh City; Vietnam

1. Introduction

Advances in science and technology have helped people to develop socio-economically; however, along with that is increasing environmental pollution [1,2]. The leading cause of environmental pollution is waste of production from human activities. One of the sources of environmental pollution that countries worldwide are particularly concerned about is pollution from waste from used packaging, packaging made of nylon, and non-degradable plastic [3–5]. Southeast Asia is a region that discharges the most used packaging waste, plastic bags, and plastic products into the ocean [6]. This is an emergency call for countries worldwide, especially developing nations, about environmental pollution [4,6].

In the field of environmental behavior, green buying refers to choosing products that do not harm the environment [2,7,8]. Some research refers to green buying behavior as buying environmentally friendly products [3,6,9]. Several other studies have suggested that purchasing sustainable products is associated with green consumption behaviors [10–12]. Products that can be recycled and benefit society and the environment are called sustainable products [13]. In addition, green consumption behavior is assessed by consumers' willingness to buy green products [7,9,12,13]. This willingness is determined by their green consumption values and positive attitude toward sustainable products. The theory of

planned behavior (TPB) suggests that purchase intention combined with a positive attitude will determine consumer behavior [14,15]. Many studies have used the theory of planned behavior to explore the relationship between the intention of buying and consumer behavior. To test green purchase intention and consumption behavior in the environmental behavior field, modified behavioral measures are required in the Vietnamese context.

However, the reality also shows that, in Vietnam, products with environmentally friendly packaging still face many difficulties finding a place in the hearts and mindsets of consumers [16]. One of the obvious reasons is that consumers in urban areas do not yet trust the quality of environmentally friendly packaging [17,18]. In addition, the price of products with this packaging is often higher than products of the same type using regular packaging [19]. In order to develop awareness and responsibility for the environmental protection of consumers in urban areas in Vietnam, it is necessary to identify the factors affecting their intention to buy products with environmentally friendly packaging as a basis for administrators to have policies to encourage urban residents in Vietnam to consume environmentally friendly products for sustainable development.

Ho Chi Minh City is the largest city in Vietnam, with about 10 million people in the inner city. In the past decade, the urbanization rate of this city has been among the highest in Vietnam [17,18]. On the one hand, urbanization brings economic development and increases people's income; on the other hand, it causes environmental problems, including urban waste management. Currently, the rate of waste collected and treated in Ho Chi Minh City is only 45% [16]. From the perspective of environmental sustainability, green consumption, recycling, and reuse of resources should be encouraged for sustainable development. This study, therefore, analyzes the factors affecting the green consumption behavior of people in Ho Chi Minh City, assesses awareness, and connects awareness with environmental protection behavior. From there, recommendations are made to contribute to promoting environmentally friendly behaviors of people through environmental programs of the government and the community.

2. Theoretical Framework and Research Models

2.1. Environmentally Friendly Packaging

Packaging is the layer that covers a product in direct contact with the product. Packaging has functions including protection, preservation, user convenience, and brand identity of goods [20]. Packaging is also part of the product, the product's brand, and one of the critical elements of the consumer's experience with the product [2,21]. Packaging today has become an essential, tangible part of any product in addition to the quality factor. Packaging is the first factor in attracting customers, greatly influencing consumers' purchasing decisions [3,5,21]. Eco-friendly packaging is supposed to be a genuine expression of a company's concern for the environment, providing the opportunity to improve the environmental impact of goods without any changes in core values [4]. The Sustainable Packaging Coalition (SPC), a non-profit organization that supports economic and technical resources to develop environmentally friendly packaging, has a specific definition for environmentally friendly packaging. It states that environmentally friendly packaging is designed to optimize energy and production materials, is made from environmentally friendly materials, and is not harmful to organisms during its existence [3].

In this article, the phrases green packaging, eco packaging, or environmentally friendly packaging can have many different meanings associated with reducing waste, saving materials, and being reused.

2.2. Functions of Environmentally Friendly Packaging

Environmentally friendly packaging does not harm the environment, but most importantly, it still has to ensure the functionality of the packaging. According to [9], the primary functions of packaging include protecting product quality from external influences, promoting the product, transmitting information, and creating convenience for customers.

2.2.1. Product Quality Protection

The most important functions of packaging are ensuring the spatial condition of the product during transportation, protecting the product from breakage and damage, and protecting the appearance and contents of the product from harmful effects from the external environment [7,8]. Environmentally friendly packaging is more environmentally friendly, saving packaging materials and using materials that are not harmful to the environment or are reusable.

2.2.2. Product Promotion

Packaging is a marketing tool, making products more unique and prominent and promoting products to consumers. Buyers do not spend much time on logical thinking, as research estimates that one-third of purchasing decisions are made at the point of sale [9,22]. Therefore, the packaging design is crucial. It is the bridge between the customer and the manufacturer and is a vital part of the customer's experience with the product [22].

2.2.3. Information Conveyance and Creation of Convenience for Consumers

The shape of packaging needs to be designed to facilitate the storage of goods in different locations, such as on shelves, at home, and in the office [23]. In addition, the packaging needs to include information related to the manufacturer and data about the goods so that consumers can understand the product information and contact the manufacturer when needed.

2.2.4. Impact of Waste from Packaging on the Environment

Each person in 28 European countries used about 175 kg of packaging per year in the 1990s. This figure dropped to 160 kg in 2003 [24]. Instead of being recycled, plastic, glass, and packaging waste is usually buried directly in the ground without pre-treatment, causing adverse environmental impacts. According to [11], more than 80% of the waste floating in the sea is plastic (equivalent to 269,000 tons). Gradually, plastic waste breaks down into smaller, more flexible plastic when eaten by creatures such as fish, birds, sea turtles, etc. Therefore, catching and using these creatures' meat will harm human health [22].

2.3. Purchase Intention of Products with Environmentally Friendly Packaging

Consumption intention reflects consumers' beliefs related to the chain of consumption behavior as personal motivation in their perception of plans/decisions to promote an attempt at performing a particular behavior. The intention to buy products with eco-friendly packaging reflects consumer beliefs related to the chain of product consumption behavior, which can be considered a specific form of environmentally friendly behavior expressed through consumer concerns about the environment [16,17]. The widely accepted Rational Choice Theory, explaining consumers' buying behavior toward environmentally friendly products, was included in the study of Paternotte in 2011. It asserts that consumer attitudes about environmental issues strongly determine actual behavior and purchase of environmentally friendly products [25].

Researchers have extensively used the theory of TPB developed by Ajzen (1991) to explain the purchase intent of organic food [2,3,5,7]. According to TPB, one of the most critical factors in determining human behavior is the intention to perform the behavior. The relationship between behavioral intention and human behavior is used simultaneously to study consumer buying behavior. It indicates that a person's behavioral intentions are influenced by two main components, including personal attitude, subjective norm, and perceived behavioral control. Theories of consumer behavior have reinforced this theory and demonstrated that consumers' decisions about the intention to purchase products that are not harmful to the environment are firmly decisive [26,27]. The model of [8] includes four factors affecting the intention to buy this kind of product, including (Figure 1):

(1)   Ecological effects;
(2)   Ecological knowledge;

(3)   Natural tendency;
(4)   Sense of community.

(1) ecological effects (environment)

(2) ecological knowledge (environment)

(3) natural tendency

(4) sense of community

green consumption intention

green consumption behaviour
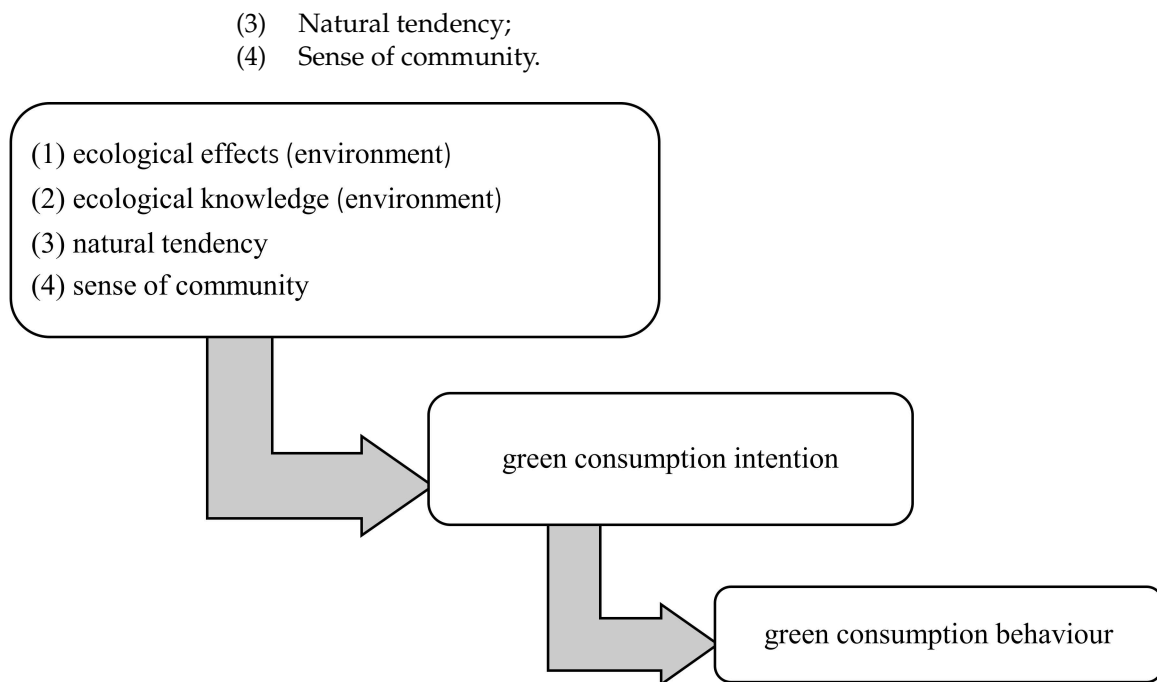
Figure 1. Model of factors affecting the purchase decision. Source: [8].

The research model of [24] based on the TPB shows that three main factors affect the intention to buy green products, including (Figure 2):

(1)   Attitude;
(2)   Subjective norm;
(3)   Perceived behavioral control.

Environmental knowledge

(1) attitude

(2) subjective norm

(3) perceived behavioral control

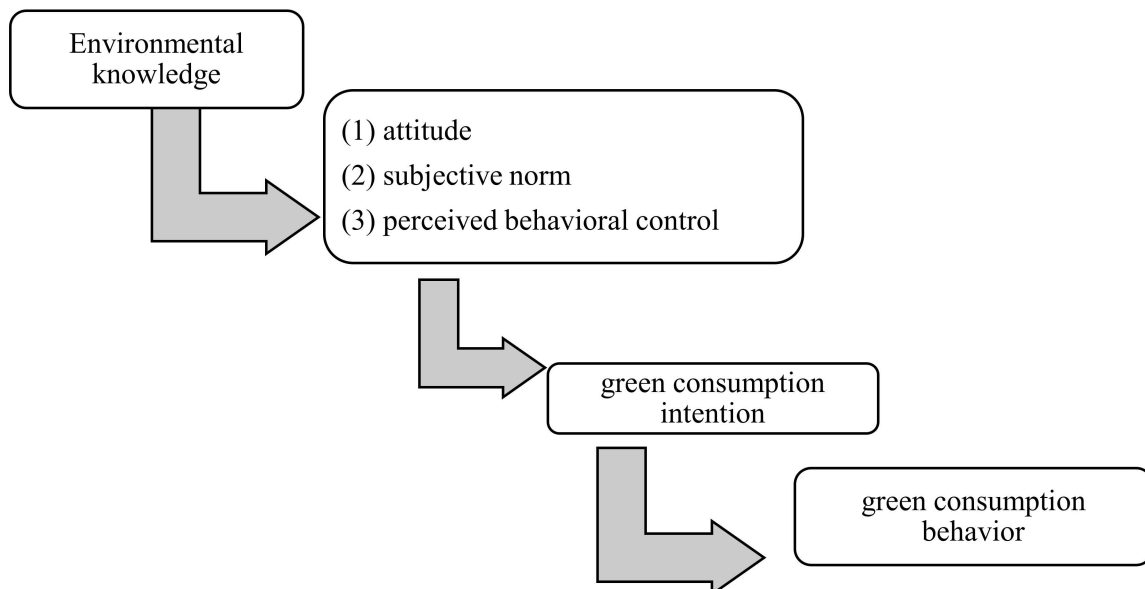green consumption intention

green consumption behavior

Figure 2. Model of factors affecting green purchasing decision. Source: [24].

Ref. [28] mention eight factors affecting the intention to buy green products, including (Figure 3):

(1)   Social influence;
(2)   Attitude toward the environment;
(3)   Concern for the environment;

(4)　Environmental awareness;
(5)　Awareness of environmental responsibility;
(6)　Awareness of environmental behaviors;
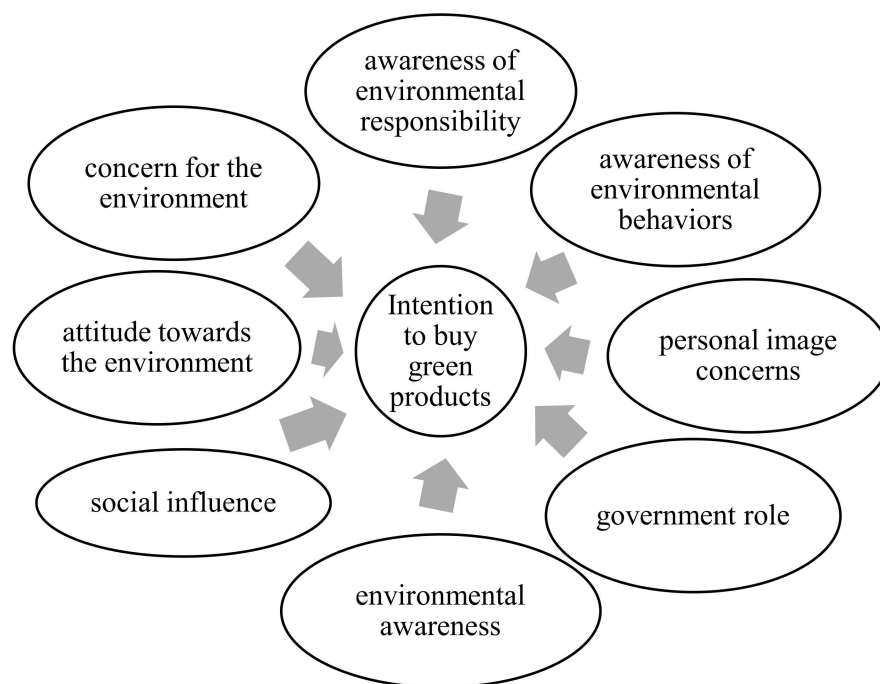(7)　Personal image concerns;
(8)　Government role.

Figure 3. The model of factors affecting the intention to buy green. Source: [28].

3. Proposed Research Model and Hypothesis

In this study, the author has used the TPB model of [15]. This is the foundation theory of a research model to investigate the purchase intention of products with environmentally friendly packaging. This model includes three main elements of the theory of planned behavior: attitudes towards purchasing behavior of products with environmentally friendly packaging, social influence, and consumers' perception of effectiveness. The author added four more factors from the research models of [8,28] which are personal image concerns and a sense of community and two direct factors related to environmentally friendly packaging, which are the quality of environmentally friendly packaging and the price of products with environmentally friendly packaging.

3.1. Attitudes towards Buying Products with Environmentally Friendly Packaging

Attitude is an essential antecedent to intention and behavior and is described as the degree to which the behavior is favorable or unfavorable. An individual will intend to perform a behavior when evaluating it positively [5,6]. The more positive the attitude, the stronger the intention to perform a behavior and vice versa. Thus, attitudes can be predicted as potentially leading to actual consumer behavior. Ref. [16] also adopted the definition from [23] to define attitude as the act of expressing what consumers like and dislike. A caring attitude about the environment is rooted in one's conception and the degree to which an individual perceives himself as an integral part of the natural environment. Studies that have explained the relationship between intention, attitude, and behavior show that people's behaviors are consistent with their intentions [23,24]. According to the TPB model, attitude towards behaviors firmly and positively influences intention to act. Several studies verify this relationship between environmentally friendly buying behavior [2,4,7,8]. Therefore, the hypothesis is put forward as follows:

Hypothesis (H1). *Attitude towards buying products with environmentally friendly packaging has a positive relationship with the purchase intention of products with eco-friendly packaging.*

3.2. Social Influence

Consumers' purchase intention depends on the information they collect from various social sources, in which the reference group plays a vital role in influencing consumers when they are in buying situations [25]. The reference group comprises people with similar habits, desires, and thoughts; therefore, they have the same attitude toward an environmentally friendly culture [14]. For urban dwellers, reference group influences come from family, teachers, friends, school, and the media. The influence of media and friends is most important since friends strongly influence many aspects of consumer behavior, standards, and personal values [11,13]. Therefore, the author hypothesizes the following:

Hypothesis (H2). *Social influence is positively related to the intention to buy products with environmentally friendly packaging.*

3.3. Consumers' Perception of Effectiveness

Consumer concerns about environmental issues may not easily switch into purchasing behavior for products with eco-friendly packaging or eco-friendly products. However, individuals who strongly believe their environmental perception will lead to a positive outcome are more likely to engage in pro-environmental behaviors based on their environmental concerns. Ref. [25] argues that people who care about the environment only show behavior toward the environment if they perceive that a single individual action can contribute to solving common environmental problems. The influence of consumers' perception of effectiveness on intention is suggested by the TPB model and is also confirmed in many previous studies on environmentally friendly purchasing behavior [27,29,30]. Therefore, the author proposes the following hypothesis:

Hypothesis (H3). *Consumers' perception of effectiveness is positively related to the intention to purchase products with environmentally friendly packaging.*

3.4. Personal Image Concerns

Studies on the influence of marketing on consumers' purchasing decisions about environmentally friendly products have shown that interest in personal image influences green product purchasing behavior [31]. For urban residents, the image of social ego shown by the consumption of goods and services is essential; this group is sensitive to the social meaning of consumption due to the strong orientation of expressing personal images [9,31]. This is in agreement with [11] when examining the positive and significant influence of self-image concern on consumers' intention to purchase products with eco-friendly packaging. Therefore, the author hypothesizes the following:

Hypothesis (H4). *Personal image concern is positively related to the intention to buy products with environmentally friendly packaging.*

3.5. Sense of Community

People with a sense of community are more likely to engage in recycling behaviors because they tend to be more cooperative, more willing to help others, and more focused on the group's goals than people with a sense of individualism. In contrast, individualistic people view recycling activities as less critical and are less likely to engage in resource conservation behaviors than collectives [10,28]. Personal values and sustainable, desirable, essential goals that help guide an individual's life are pivotal to an individual's commitment to the environment [10]. Many studies have found the influence of individuality and community on ecological behavior [11,23,25]. Therefore, the hypothesis is put forward as follows:

Hypothesis (H5). *Sense of community is positively related to the intention to buy products with environmentally friendly packaging.*

3.6. Quality of Environmentally Friendly Packaging

According to research by [31], packaging protects product quality during transportation from the place of production to the consumer. Manufacturers require sturdy packaging that can protect the appearance and quality of the products from external influences [1]. Environmentally friendly packaging saves packaging materials and uses materials that are not harmful to the environment or can be reused. However, despite the benefits of eco-friendly packaging, such as being lightweight, reduced production costs, ease of product promotion, and no harm to the environment, environmentally friendly packaging consumers have doubts about the protective function of the packaging [28]. The quality of the packaging significantly impacts consumers' intention to buy products with packaging. Therefore, the author proposes the following hypothesis:

Hypothesis (H6). *The quality of environmentally friendly packaging is positively related to the intention to purchase products with environmentally friendly packaging.*

3.7. Prices of Products with Environmentally Friendly Packaging

Research by [9] confirms that the price of products with environmentally friendly packaging influences consumer purchase intention in addition to availability. Ref. [21] in a study on eco-friendly eating habits, found three factors influencing eco-friendly consumer behavior: price, product availability, and buying convenience. Research shows that when the price of a product with environmentally friendly packaging is appropriate (which may or may not be much higher), the intention to purchase this product will increase (Figure 4).
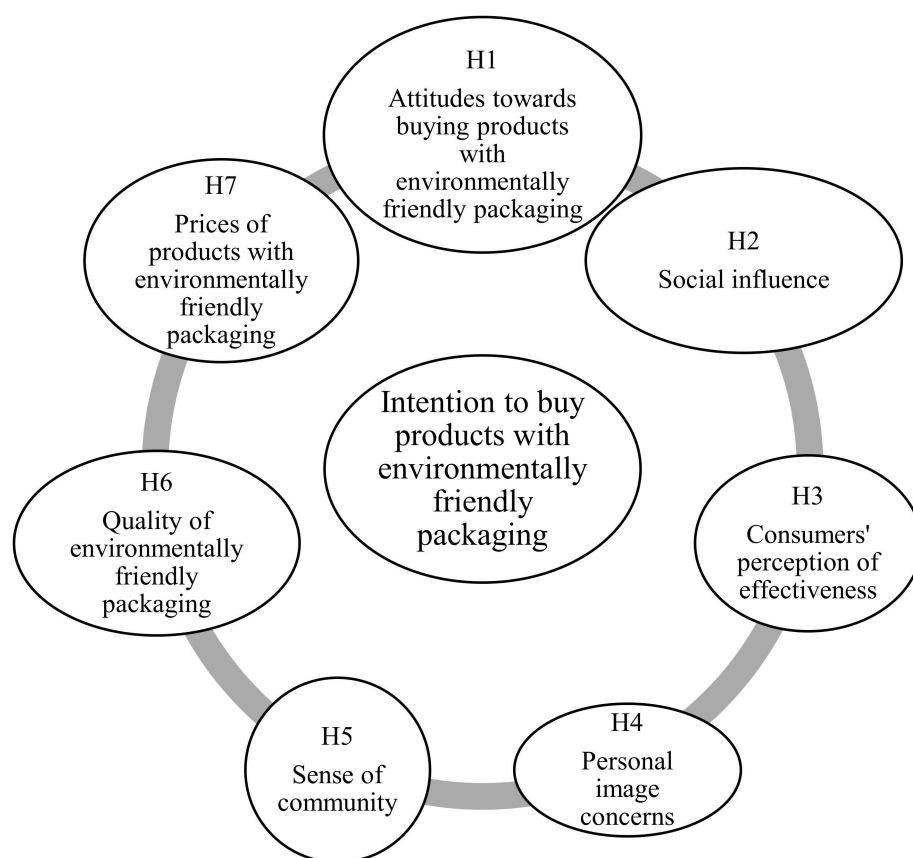

Figure 4. Proposed research model. Source: Proposed from [8,24,28].

Hypothesis (H7). *The reasonable price of products with environmentally friendly packaging positively relates to the intention to buy this product.*

Based on the above research hypotheses, the proposed initial research model has two groups of variables:

Dependent variable: Intention to buy products with environmentally friendly packaging;

Independent variables: Attitude of buying behavior, social influence, consumer's perception of effectiveness, personal image concerns, sense of community, quality of environmentally friendly packaging, price of products with environmentally friendly packaging.

4. Research Methods

4.1. Data Collection

In this study, data were collected using the procedure shown in Figure 5.

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┌──────────────┐      ┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│ Objectives   │  →   │ Theoretical  │  →   │ Experimental │  →   │ Group        │
│ of the study │      │ framwork     │      │ scale        │      │ Discussion   │
│              │      │              │      │              │      │ (n=24)       │
└──────────────┘      └──────────────┘      └──────────────┘      └──────────────┘
                                                                          ↓
┌──────────────┐      ┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│ Official     │  ←   │ Complete     │  ←   │ Preliminary  │  ←   │ Preliminary  │
│ quantitative │      │ scale        │      │ quantitative │      │ interview    │
│ research     │      │              │      │ research     │      │ table        │
│ (n=485)      │      │              │      │ (n=150)      │      │              │
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      ↓
┌──────────────────────────┐      ┌──────────────────────────┐
│ Conbrach's Alpha         │  →   │ EFA                      │
│ Eliminate variables with │      │ Eliminate variables with │
│ smal item-total correla- │      │ small EFA weights, test  │
│ tion coefficients, test  │      │ factors and extracted    │
│ Conbrach's Alpha         │      │ variances                │
└──────────────────────────┘      └──────────────────────────┘
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                          ┌──────────────────────────┐
                          │ Regression correlation   │
                          │ Test correlation,        │
                          │ regression analysis.     │
                          │ Validate the model and   │
                          │ solve the research       │
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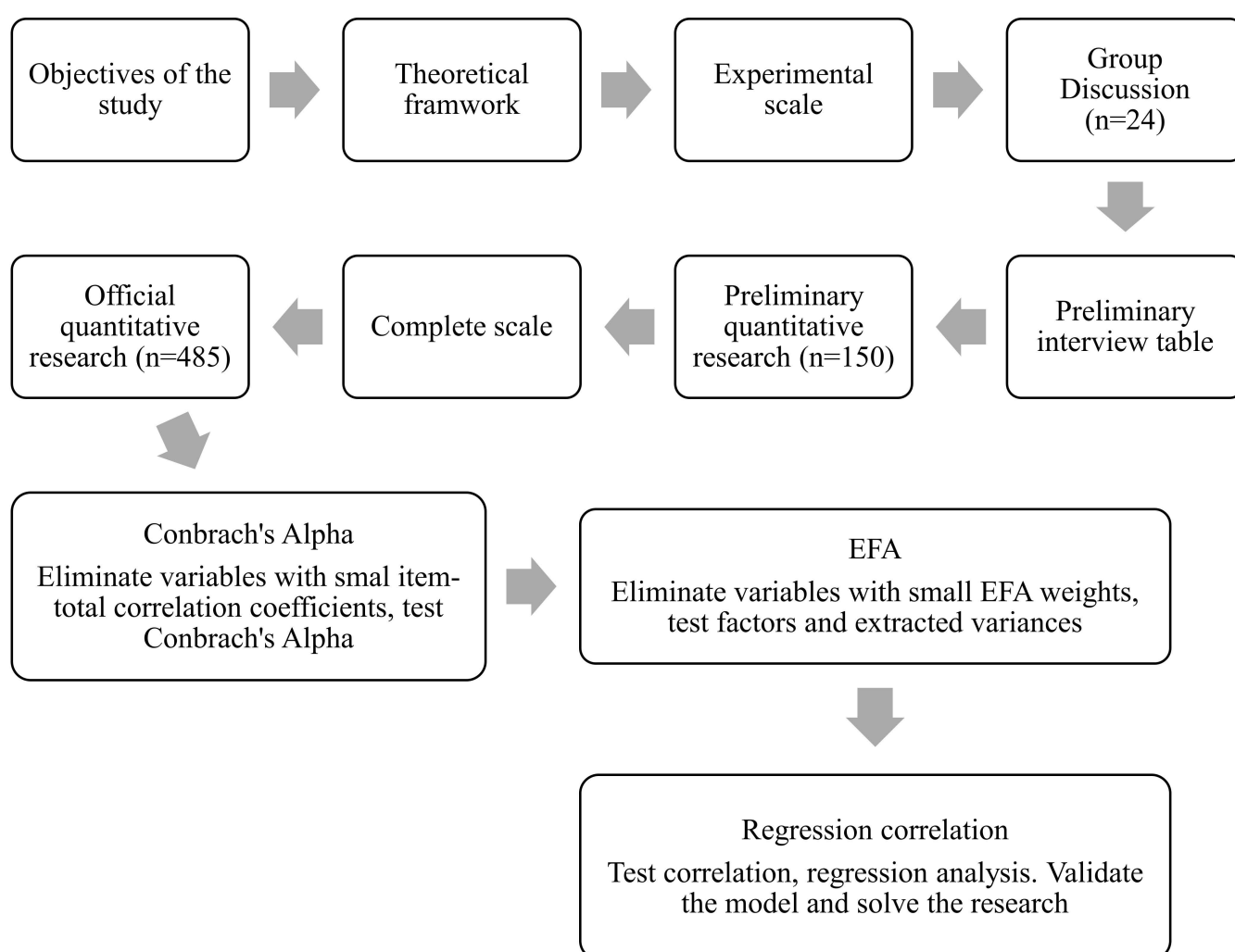
Figure 5. Data collection process. Source: Research process (2022).

First, preliminary qualitative research was conducted in Ho Chi Minh City in April 2022 to discover, adjust, and supplement the scale of research concepts. First, based on the theory of attitude toward purchasing behavior of products with environmentally friendly packaging, social influence, consumers' perception of effectiveness, and four other factors, personal image concerns, sense of community, quality of environmentally friendly packaging, and price of products with environmentally friendly packaging were considered.

We conducted a focus group discussion with 24 urban residents to test their attitudes about variables collected from the literature and to see if it was appropriate to include a

final questionnaire. FDG also helped the team collect urban residents' attitudes toward environmentally friendly products and contributed to the completion of the questionnaire. At the same time, the author also combined references to the scale of previous studies, especially studies on the intention to buy products with environmentally friendly packaging in urban areas, to obtain the final complete scale. Official research was carried out with the quantitative method through survey questionnaires. This study tested the proposed model's scales, the theoretical model, and the hypotheses. Once the scales were built, the authors designed a quantitative survey and conducted a preliminary study of 150 people to assess the scale's clarity, ease of understanding, and preliminary assessment. The official scale was used for quantitative research and tested with Cronbach's Alpha reliability coefficient method and EFA exploratory factor analysis. Interviewees were urban residents in Ho Chi Minh City. All collected data were processed using SPSS 22.0 software.

The study used the following formula [18] to estimate the sample size:

$$n = Z^2 \times \frac{p \times (1-p)}{e^2}$$

n: sample size;
Z: distribution table *Z* with confidence 95%;
p: percentage of successful *n* sample size estimation;
e: error.

The calculated sample size to ensure reliability was 468. In fact, 485 people were surveyed in Ho Chi Minh City in 2022. The study used a convenience sampling method to approach the survey subjects and face-to-face interviews with structured questionnaires. The questionnaire was designed to filter information to ensure that the proper research object was selected. Survey locations included supermarkets, traditional markets, offices, and consumers' homes.

4.2. Measurement of Variables

The scale in this study is based on existing scales in the world. They are adjusted and supplemented to suit consumers in the Vietnamese market based on the results of qualitative research with focus group discussions and preliminary quantitative research. This study includes eight factors (or variables, concepts):

(1) Attitudes toward purchase behaviors of products with environmentally friendly packaging (AT);
(2) Social influence (SI);
(3) Consumers' perception of effectiveness (CP);
(4) Personal image concerns (PC);
(5) Sense of community (CS);
(6) Quality of environmentally friendly packaging (QL);
(7) Prices of products with environmentally friendly packaging (PR);
(8) Intention to buy products with environmentally friendly packaging (IB).

There are seven independent variables: AT, SI, CP, PC, CS, QL, and PR, while IB is the dependent variable.

(a) The scale of attitudes toward the purchase behavior of products with environmentally friendly packaging

Attitudes toward buying products with environmentally friendly packaging are the beliefs and perceptions of consumers of this type of product. In this article, the scale of attitude towards purchasing behavior of products with environmentally friendly packaging is based on the research of [10] including observed variables AT1 to AT4 (Table 1).

Table 1. The scale of attitudes toward the purchase behavior of products with environmentally friendly packaging.

Variables	Description
AT1	Using products with environmentally friendly packaging will reduce environmental pollution and improve the environment.
AT2	Using products with environmentally friendly packaging will help reduce the waste of natural resources.
AT3	Using products with environmentally friendly packaging will help conserve natural resources.
AT4	I feel comfortable using products with environmentally friendly packaging.

Source: Research results (2022).

(b) The scale of social influence

The scale of social influence is built based on research based on the studies of [12] combined with studies on the influence of society on friendly consumption in some Southeast Asian countries. The scale consists of 5 observed variables, SI1 to SI5 (Table 2).

Table 2. The scale of social influence.

Variables	Description
SI1	My friends think I should use products with environmentally friendly packaging.
SI2	My family thinks I should use products with environmentally friendly packaging.
SI3	People important to me encourage me to use products with environmentally friendly packaging.
SI4	Information in the media encourages me to try products with environmentally friendly packaging.
SI5	I learned that consuming environmentally friendly packaging products contributes to a better environment.

Source: Research results (2022).

(c) The scale of consumers' perception of effectiveness

The consumer perceived effectiveness scale is based on the scale in the study by [31] and includes four observed variables, CP1 to CP4. This scale refers to an individual's belief in taking action to protect the environment (Table 3).

Table 3. The scale of consumers' perception of effectiveness.

Variables	Description
CP1	I can protect the environment by buying products with environmentally friendly packaging.
CP2	I think I can help solve environmental problems.
CP3	I think that if I do some environmental protection in my daily life, I will contribute a lot to our environment.
CP4	I think that if I participate in environmental protection, I will encourage my family and friends to participate too.

Source: Research results (2022).

(d) The scale of personal image concerns

Personal image is one of the major influencing factors on the performance of certain behaviors of each person, having an independent impact similar to other factors. In this study, the scale of concerns in the personal image includes three observed variables, PC1 to PC3 (Table 4).

Table 4. The scale of personal image concerns.

Variables	Description
PC1	Participating in environmental protection makes me appreciated by society.
PC2	Participating in environmental protection makes me unique among others.
PC3	I am considered obsolete if I do not participate in environmental protection.

Source: Research results (2022).

(e) The scale of sense of community

People with a sense of community tend to like cooperation. They are willing to listen and support others. They can eliminate personal goals to focus on group goals. With the above characteristics, people with a sense of community will often participate in purchasing products with environmentally friendly packaging. The scale of sense of community in the study is built based on the study of [8] and includes five observed variables, CS1 to CS5 (Table 5).

Table 5. The scale of sense of community.

Variables	Description
CS1	I work hard for the group's purpose even without personal recognition.
CS2	I am a team member with good spirit.
CS3	I am ready to help others when they need it.
CS4	I work mainly for the good of others in the group, even if the benefit to myself is less.
CS5	I always share and care for others.

Source: Research results (2022).

(f) The scale of quality of environmentally friendly packaging

Environmentally friendly packaging must first ensure the essential functions of protection, promotion, and user convenience to gain a foothold in the market. Consumers tend to consider the function of the packaging first and then consider its eco-friendly factors [13]. The quality scale of eco-friendly packaging is based on research by [24], including four observed variables, QL1 to QL4 (Table 6).

Table 6. The scale of quality of environmentally friendly packaging.

Variables	Description
QL1	I believe that environmentally friendly packaging can protect the product inside.
QL2	I believe that environmentally friendly packaging can be as durable as conventional packaging.
QL3	I think that environmentally friendly packaging can be as beautiful and convey product content as conventional packaging.
QL4	I think environmentally friendly packaging can attract consumers' attention as conventional packaging.

Source: Research results (2022).

(g) The scale of prices of products with environmentally friendly packaging

Price is always one of the factors that influence consumer buying behavior. When consumers feel a product's value exceeds its price, they tend to consider it, not want to buy it [9]. A reasonable price will promote consumer consumption. The price scale of products with environmentally friendly packaging is based on the scale in the study of [28] and includes three observed variables, PR1 to PR3 (Table 7).

Table 7. The scale of prices of products with environmentally friendly packaging.

Variables	Description
PR1	I will buy products with environmentally friendly packaging even though the price is higher than products with conventional packaging.
PR2	I will buy products with environmentally friendly packaging when the price is not higher than products with conventional packaging.
PR3	I only buy products with environmentally friendly packaging when the price is not higher than products with conventional packaging.

Source: Research results (2022).

(h)　The scale of intention to buy products with environmentally friendly packaging

The intention to purchase products with environmentally friendly packaging expresses the consumer's attitude about purchasing these products in the future. The scale of intention to buy products with environmentally friendly packaging is developed based on the author's scale [10] consisting of 4 observed variables with symbols IB1 to IB4 (Table 8).

Table 8. The scale of intention to buy products with environmentally friendly packaging.

Variables	Description
IB1	I want to buy products with environmentally friendly packaging.
IB2	I consider purchasing products with environmentally friendly packaging before making a purchase.
IB3	I want to make the consumption of products with environmentally friendly packaging.
IB4	I want to encourage people to buy products with environmentally friendly packaging.

Source: Research results (2022).

5. Research Results

5.1. Description of the Study Sample

Table 9 summarizes the main socio-economic characteristics of the sample.

Table 9. Statistics of the study sample.

	Frequency	Percentage	Accumulation
Gender			
Female	365	75.3%	75.3%
Male	120	24.7%	0.1%
Total	485	100.0%	
Age			
18–25 years old	50	10.3%	10.3%
26–35 years old	78	16.1%	26.4%
36–45 years old	289	59.6%	86.0%
>46 years old	68	14.0%	100.0%
Total	485	100.0%	
Income			
VND/month <5 million	47	9.7%	9.7%
VND/month 5–9 million	91	18.8%	28.5%
VND/month >9 million	347	71.5%	100.0%
Total	485	100.0%	

Table 9. *Cont.*

	Frequency	**Percentage**	**Accumulation**
Education level			
Vocational training/Intermediate	2	0.4%	0.4%
Colleges	7	1.4%	1.9%
Graduates	444	91.5%	93.4%
Post-graduates	32	6.6%	100.0%
Total	485	100.0%	

Source: Research results (2022).

5.1.1. Gender

The survey showed that 365 women and 120 men participated in the interview. There were fewer male participants (24.7% male and 75.3% female). Although there is a gender difference, this result is acceptable because women tend to purchase more.

5.1.2. Age

The research focuses on surveying the urban population; therefore, the age group 36–45 accounts for the majority. There were 289 people aged 36–45, accounting for 59.6% of the survey sample, and 78 people aged 26–35, accounting for 16.1% of the survey sample.

5.1.3. Income

The research focuses on the urban population, so most had an income of over VND/month 9 million. Up to 71.5% of those with an income of less than 9 million/month. The remaining two income groups accounted for only 28.5%.

5.1.4. Education Level

Up to 444 respondents had a university degree (91.5% of the total), and 32 had a post-graduate degree (accounting for 6.6%). The two groups of college and intermediate students were less than 2%. The research focuses on surveying highly qualified subjects with better awareness of environmental protection and consumption of products with environmentally friendly packaging.

5.2. Scale Reliability Analysis of Cronbach's Alpha

Cronbach's Alpha was used to test the scale's reliability to eliminate inappropriate variables and scales. On Cronbach's Alpha scale, 0.8 or more to close to 1 is good, and from 0.6 to nearly 0.8 is usable. In addition, the item–total correlation used to test the close correlation between variables when measuring the same research concept must be greater than or equal to 0.30 for the variable to meet the requirements [30]. The results of the Cronbach's Alpha test for the scales in the study showed that all scales have the allowed reliability. SI5, SI4, and PR3 have Cronbach's Alpha coefficient if the variable type is bigger than Cronbach's Alpha item–total coefficient. The author eliminated two variables, SI4 and SI5, but kept PR3 because if PR3 is eliminated, the value of Cronbach's Alpha of the total variable increases only very little, while PR3 has an essential significance in the study (Table 10).

Convergent validity is also assessed by the loadings of all the items. The result shows that composite reliability (CR) is greater than 0.7 and average variance extracted (AVE) is greater than 0.5, indicating that the reliability of this model is good [32].

Table 10. Cronbach's Alpha reliability test.

Observed Variables	Average of the Scale If Eliminating the Variable	Variance of the Scale If Eliminating the Variable	Item–Total Correlation	Cronbach's Alpha If Eliminating the Variable
Attitudes toward the purchase behavior of products with environmentally friendly packaging	Cronbach's Alpha = 0.837			
AT1	12.03	5.589	0.664	0.801
AT2	11.89	5.723	0.698	0.739
AT3	12.67	5.763	0.721	0.729
AT4	12.87	6.982	0.738	0.811
Social influence (eliminating SI5, SI4)	Cronbach's Alpha = 0.825			
SI1	7.45	2.901	0.693	0.699
SI2	7.42	3.011	0.701	0.734
SI3	7.89	3.002	0.681	0.687
Consumer's perception of effectiveness	Cronbach's Alpha = 0.788			
CP1	12.03	4.592	0.583	0.732
CP2	11.34	4.209	0.638	0.736
CP3	12.86	4.294	0.573	0.788
CP4	11.75	4.982	0.609	0.742
Personal image concerns	Cronbach's Alpha = 0.78			
PC1	6.39	3.293	0.506	0.742
PC2	6.75	3.032	0.521	0.522
PC3	7.01	2.983	0.611	0.524
Sense of community	Cronbach's Alpha = 0.820			
CS1	14.21	5.291	0.567	0.721
CS2	15.23	6.302	0.604	0.734
CS3	14.24	5.334	0.503	0.788
CS4	15.93	6.563	0.644	0.724
CS5	14.56	6.098	0.621	0.745
Quality of environmentally friendly packaging	Cronbach's Alpha = 0.783			
QL1	11.34	4.671	0.541	0.704
QL2	11.39	4.562	0.573	0.788
QL3	11.78	4.784	0.601	0.698
QL4	11.54	4.519	0.503	0.739
Prices of products with environmentally friendly packaging	Cronbach's Alpha = 0.892			
PR1	7.34	1.783	0.682	0.892
PR2	7.89	1.622	0.782	0.732
PR3	7.91	1.792	0.892	0.843
Intention to buy products with environmentally friendly packaging	Cronbach's Alpha = 0.851			
IB1	11.92	4.203	0.742	0.793
IB2	11.39	4.201	0.741	0.752
IB3	11.78	4.089	0.604	0.603
IB4	11.91	4.583	0.503	0.801

Source: Research results (2022).

5.3. Exploratory Factor Analysis (EFA)

Exploratory factor analysis is a statistical analysis method used to reduce a set of many observed variables correlated with each other into more minor variables (factors) so that they are more meaningful but still contain most of the information content of the original variable set. When the scale is reliable, the observed variables will be used in EFA exploratory factor analysis with the following requirements: KMO coefficient (Kaiser–Meyer–Olkin): $0.5 \leq KMO \leq 1$ with a significance level of Bartlett's test ≤ 0.05; factor loading ≥ 0.5; extracted variance $\geq 50\%$ and Eigenvalue >1; the difference in factor loading coefficient of an observed variable between factors must be greater than 0.3 to ensure discriminant value between factors.

5.3.1. EFA Analysis of the Scale of Factors Affecting the Intention to Buy Products with Environmentally Friendly Packaging

For the results of the first EFA analysis, 26 observed variables of 7 factors affecting the intention to buy products with environmentally friendly packaging are divided into five groups (Table 11). The KMO coefficient = 0.862 > 0.5; therefore, EFA fits the data. The chi-square statistic of Bartlett's test has a significant level of 0.000; therefore, the observed variables correlate. The extracted variance reached 66.392%, showing that five factors explain more than 66% of the variation of the data; therefore, the drawn scales are acceptable. The breakpoint for factor extraction at the fifth factor with Eigenvalue = 1.325.

Table 11. Results of the 1st EFA analysis.

KMO and Bartlett's Test					
Kaiser–Meyer–Olkin Measure of Sampling Adequacy					0.862
Bartlett's Test		Approx. chi-Square			5539.492
		df			401
		Sig.			0.000

Rotated Component Matrix					
	Component				
	1	2	3	4	5
PR2	0.831				
PR1	0.812	0.369			
PR3	0.729				
CS3	0.749	0.392			
CS4	0.729				
CS5	0.639				
CS2	0.692	0.341			
CS1	0.521		0.394		
AT1		0.793			
CP1		0.713			
AT2		0.721			
AT3		0.678		0.345	
CP3		0.662			0.321
CP2		0.593			0.337
AT4		0.582	0.348	0.387	
CP4		0.486			0.398
QL2			0.729		

Table 11. *Cont.*

		KMO and Bartlett's Test			
QL4		0.321	0.638		
QL1			0.642		
QL3	0.321	0.561	00.504		
SI2				0.738	
SI3				0.732	
SI1				0.783	
PC2					0.832
PC3					0.639
PC1		0.345			0.692

Eigenvalue = 1.325; Extracted variance = 66.392%. Source: Research results (2022).

In general, the results of the EFA analysis of the observed variables all meet the condition that the factor loading coefficient is greater than 0.5. However, variables CS1, CP2, CP4, AT4, and QL3 are uploaded from 2 factors; therefore, the difference in factor loading must be considered. The observed variable is discarded if the load factor difference is less than 0.3 [19]. Therefore, variables CS1, CP2, CP4, AT4, and QL3 were excluded, and the second EFA exploratory factor analysis was conducted.

The results of the second EFA analysis were performed for 21 variables of 7 factors affecting the intention to buy products with environmentally friendly packaging grouped into 5 factors. The KMO coefficient = 0.883 > 0.5; therefore, EFA is consistent with statistical data. Chi-square statistics of Bartlett's test with a significance level of 0.000. The extracted variance is 71.002%. Breakpoint to extract factors at factor 5 with Eigenvalue = 1.237. All observed variables have factor loading coefficients greater than 0.5. Therefore, the second EFA results satisfied the conditions to carry out the next steps of the research process (Table 12).

Table 12. Results of the 2nd EFA analysis.

	KMO and Bartlett's Test				
	Kaiser–Meyer–Olkin Measure of Sampling Adequacy				0.883
		Approx. chi-Square			4378.389
Bartlett's Test of Sphericity		df			310
		Sig.			0.000
Rotated Component Matrix					
			Component		
	1	2	3	4	5
PR2	0.893				
PR1	0.782				
PR3	0.891				
CS3	0.605				
CS4	0.721				
CS2	0.803				
CS5	0.682				
AT1		0.732			

Table 12. *Cont.*

KMO and Bartlett's Test				
AT2	0.771			
AT3	0.749			
CP1	0.783			
CP3	0.567			
SI2		0.801		
SI3		0.732		
SI1		0.743		
PC2			0.832	
PC3			0.789	
PC1			0.672	
QL2				0.893
QL1				0.732
QL4				0.674

Eigenvalue = 1.237; Extracted variance = 71.002%. Source: Research results (2022).

- The first factor is formed by three variables of the scales of prices of products with environmentally friendly packaging and a sense of community. This group is named the cost factor of environmentally friendly packaging and customer sense of community (CONC).
- The second factor is formed by three observed variables of the scales of attitudes toward the purchase behavior of products with environmentally friendly packaging and two observed variables of the scale of customers' perception of effectiveness. This group is named consumers' attitudes toward products with environmentally friendly and effectiveness (CANE).
- The third factor is formed by three variables of the scale of social influence. This group is named SOIN.
- The fourth factor is formed by three variables of the scale of personal image concerns. This group is named PICN.
- The fifth factor is formed by three variables of the scale of quality of environmentally friendly packaging. This group is named QLPA.

5.3.2. EFA Analysis of the Scale of Purchase Intention for Products with Environmentally Friendly Packaging

After analyzing EFA, the four observed variables of the scale of purchase intention to buy products with environmentally friendly packaging were grouped into one factor. No observed variables were excluded. EFA is consistent with the coefficient KMO = 0.792. The extracted variance is close to 69.032%; observed variables have factor loading coefficients above 0.5, and the significance level of Bartlett's test is 0.000 (Table 13).

Table 13. EFA analysis results for the scale purchase intention of products with environmentally friendly packaging.

KMO and Bartlett's Test		
Kaiser–Meyer–Olkin Measure of Sampling Adequacy		0.792
	Approx. chi-Square	621.382
	df	6
	Sig.	0.000

Table 13. *Cont.*

KMO and Bartlett's Test	
	Component
	1
IB3	0.829
IB1	0.832
IB4	0.821
IB2	0.691

Source: Research results (2022).

From the factor analysis results, it is possible to extract a factor named intention to buy products with environmentally friendly packaging (IBEP). The author adjusted the research model and research hypothesis as follows (Figure 6):
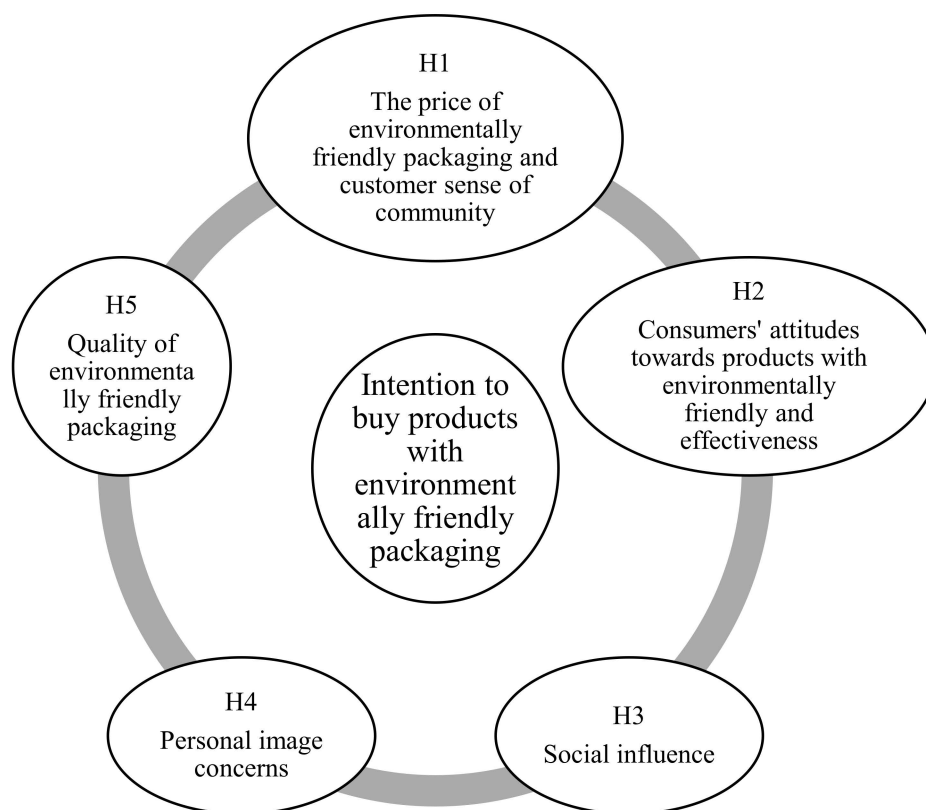

Figure 6. Adjusted research model. Source: [9,24,28].

H1. *The price of environmentally friendly packaging and the sense of community has a positive relationship with the intention to buy products with environmentally friendly packaging;*

H2. *Consumers' attitudes towards products with environmentally friendly and efficient packaging are positively related to the intention to purchase products with environmentally friendly packaging;*

H3. *Social influence has a positive relationship with the intention to buy products with environmentally friendly packaging;*

H4. *Personal image concern has a positive relationship with the intention to buy products with environmentally friendly packaging;*

H5. *Quality of environmentally friendly packaging has a positive relationship with the intention to buy products with environmentally friendly packaging.*

5.4. Analysis of the Influence of Variables on the Intention to Buy Products with Environmentally Friendly Packaging

After going through the factor analysis stage, five factors are included in the model test (Table 14). The factor value is the average of the observed variables that belong to that factor. Pearson correlation analysis was used to consider the fit when the components were included in the regression model. The regression model has the following form:

$$IBEP = Bo + B1CONC + B2CANE + B3SOIN + B4PICN + B5QLPA + \varepsilon$$

In which,
Bo: regression constant;
Bi: regression weight;
ε: error.

Table 14. Correlation matrix between intention to buy products with environmentally friendly packaging and influencing factors.

	CONC	CANE	SOIN	PICN	QLPA	IBEP
CONC	1	0.431	0.493	0.392	0.443	0.532
CANE	0.431	1	0.495	0.384	0.456	0.635
SOIN	0.432	0.432	1	0.403	0.394	0.432
PICN	0.456	0.392	0.378	1	0.475	0.414
QLPA	0.492	0.593	0.374	0.493	1	0.582
IBEP	0.583	0.601	0.389	0.394	0.593	1

Source: Research results (2022).

According to the results of the correlation matrix, the variables are all correlated and significant at the 0.000 level. The correlation coefficient of the dependent variable is the intention to buy products with environmentally friendly packaging with the independent variables at a relative level (greater than 0.3). Therefore, we can conclude that these independent variables can be included in the model to explain the dependent variable intention to buy products with environmentally friendly packaging. Regression analysis was performed with five independent variables, including the price of environmentally friendly packaging and customer sense of community (CONC), consumer's attitude towards products with environmentally friendly packaging and effectiveness for the environment (CANE), social influence (SOIN), personal image concerns (PICN), quality of environmentally friendly packaging (QLPA), and the dependent variable is the intention to buy products with environmentally friendly packaging (IBEP). Variables are included one at a time to see which ones are accepted. The regression analysis results are as follows. The results show that the given regression model is relatively consistent with the significance level of 0.05. The adjusted coefficient $R^2 = 0.684$ means there is about a 68% variance of intention to buy products with environmentally friendly packaging, which is explained by the above five independent variables. The remaining 32% of consumers' intention to buy products with eco-friendly packaging in Ho Chi Minh City is explained by other factors (Table 15).

Table 15. Adjusted R square coefficient.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.753	0.543	0.684	0.430083

Source: Research results (2022).

The F-test used in the analysis of the variance table is a hypothesis test about the fit of the overall linear regression model. This test of the linear relationship between the depen-

dent and independent variables is to see if the dependent variable has a linear relationship with the entire independent variable. Hypothesis Ho: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$. If hypothesis Ho is rejected, it means that the independent variables in the model can explain the change of the dependent variable, which is a model that fits the data set (Table 16).

Table 16. ANOVA analysis results.

ANOVA						
	Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
	Regression	80.392	6	18.348	81.324	0.000
1	Residual	78.329	456	0.193		
	Total	158.721	484			

Source: Research results (2022).

In the ANOVA analysis table, we see the sig. value is minimal (sig. = 0.00 < 0.05); therefore, the regression model fits the data set and can be used. The regression coefficient can be expressed in two forms:

(1)   Unstandardized;
(2)   Standardized.

The standardized regression coefficient (β) is the coefficient we have standardized for the variables (Table 17). Therefore, they are used to compare the impact of dependent variables on independent variables. The β coefficient is used to form the regression equation as follows:

$$IBEP = 0.348 + 0.294CONC + 0.382CANE + 0.012SOIN + 0.074PICN + 0.301QLPA$$

Table 17. Results of regression analysis of factors affecting the intention to buy products with environmentally friendly packaging.

	Model	**Standardized Coefficients**		**t**	**Sig.**	**VIF**
		B	**Std. Error**			
	(Constant)	0.348	0.138	2.439	0.006	1.482
	CONC	0.294	0.043	5.343	0.000	1.618
	CANE	0.382	0.045	7.043	0.000	1.379
1	SOIN	0.012	0.049	0.401	0.008	1.432
	PICN	0.074	0.031	2.432	0.034	1.789
	QLPA	0.301	0.048	2.439	0.000	1.767

Source: Research results (2022).

In the multivariable regression model, the VIF coefficient is also used to test the multicollinearity of the explanatory variables. The VIF values are all less than 2; therefore, there is no multicollinearity [10]. Through the regression equation and the regression analysis results, we find that the consumer's attitude toward products with environmentally friendly and effectiveness has the most significant influence on consumers' intention to buy products with environmentally friendly packaging by urban residents, followed by the two factors prices of environmentally friendly packaging and customer sense of community and the quality of the packaging.

6. Discussion

This study shows the factors affecting the intention to buy products with environmentally friendly packaging in the urban area of Vietnam. Research results show that there are 5 main factors affecting consumers' buying behavior of environmentally friendly products in Ho Chi Minh City. Within the 5 impacting factors, consumers' attitudes toward buying behavior of products with environmentally friendly packaging has the strongest impact on customers' intention. This result is consistent with the studies of [9,11,13]. However, this study gives contradictory results to [21,24], which show that price is the strongest impact variable. A common point of this study with the studies of [16,23] is that personal image concern and social influence significantly impact customer buying behavior. The reason is that people with environmentally friendly behavior are often more concerned with their social image and social impact. This finding is consistent with the observations of [10,12,19].

The regression analysis results show that all factors of the adjusted model are acceptable, including attitudes towards buying behavior of products with environmentally friendly packaging, social influence, customers 'perception of effectiveness, personal image concerns, sense of community, quality, and price of environmentally friendly packaging. The specific results are as follows.

- The factor consumers' attitudes toward buying behavior of products with environmentally friendly packaging and perceived effectiveness strongly influences people's intention to buy products with environmentally friendly packaging. Urban areas in Ho Chi Minh City have the most significant influence ($\beta = 0.382$, sig = 0.00), which shows that when information on the effectiveness of eco-friendly behavior is widely propagated and disseminated, urban people in Ho Chi Minh City will have more awareness of environmental protection and will have a positive attitude toward buying products with eco-friendly packaging

- The factor prices of products with environmentally friendly packaging and the sense of community have the second influence ($\beta = 0.294$, sig = 0.00). This result shows that in Ho Chi Minh City, people who care more about the benefits of others will increase their behavior of buying products with environmentally friendly packaging, specifically out of concern for society's common good. However, this factor also affects the price of environmentally friendly products. That means when the interest in the community's common good increases, the reasonable price of products with environmentally friendly packaging will positively promote buying behavior of eco-friendly products. This is entirely consistent with the actual logic, showing that the new factor has practical significance.

- The factor quality of products with environmentally friendly packaging has the third influence ($\beta = 0.301$, sig = 0.00). One barrier that makes it difficult for products with environmentally friendly packaging to dominate the market is the fear of the quality of environmentally friendly packaging. This result shows that if environmentally friendly packaging can fully perform packaging functions such as protecting products, promoting products, facilitating use, etc., then urban people in Ho Chi Minh City will be willing to buy and use products with environmentally friendly packaging.

- The remaining two factors are personal image concern and social influence, the fourth and fifth influences, respectively. The influence level is not as significant as the four factors mentioned above. This result is consistent with the influence of other factors. Urban people are also interested in personal image, and social influences positively impact purchasing products with environmentally friendly packaging. However, these are effective only when urban people are aware of the effectiveness of environmentally friendly buying behavior and have a positive attitude towards buying products with eco-friendly packaging, prices, and quality of products with environmentally friendly packaging that meet the requirements of consumers in Ho Chi Minh City.

- The correction factor R2 is 0.684. The results show that the intention to buy products with eco-friendly packaging of urban people in Ho Chi Minh City is explained by 68% of factors from the research model and 32% by the factors from the other factors.

This research adds to the scale system of scales of attitudes towards purchasing behavior of products with environmentally friendly packaging and consumers' perception of effectiveness, the price factor of products with eco-friendly packaging, sense of community, quality of eco-friendly packaging, personal image concerns, and social influence. These contribute partly to the theory of purchasing behavior of products with environmentally friendly packaging.

7. Conclusions

The problem of environmental pollution is becoming more severe and is a global threat. Countries worldwide are making positive changes in consumption trends, especially the tendency to buy high-quality products with environmentally friendly packaging. In Vietnam, this concept has interested consumers. The number of urban residents in Vietnam accounts for more than 50% of the population, with high growth. This is the group that can quickly grasp modern trends in the world. Urban people's consciousness about consuming environmentally friendly packaging products has changed positively. Products with environmentally friendly packaging have not had a strong foothold in the minds of urban customers. Motivating urban people to buy products with environmentally friendly packaging is not easy. This requires determining the factors affecting the intention of urban people to buy products with environmentally friendly packaging to serve as a basis for administrators to have policies to encourage urban residents to use those products.

This study was carried out by synthesizing domestic and international studies and Ho Chi Minh City consumer characteristics. The author gives seven factors affecting the intention to buy products with environmentally friendly packaging of urban residents in Ho Chi Minh City, including:

(1) Attitudes toward purchase behaviors of products with environmentally friendly packaging;
(2) Social influence;
(3) Consumers' perception of effectiveness;
(4) Personal image concerns;
(5) Sense of community;
(6) Quality of environmentally friendly packaging;
(7) Prices of products with environmentally friendly packaging with a total of 26 observed variables. The scales are tested for reliability and factor analysis.

The research results show the impact of five factors: (1) the price of products with environmentally friendly packaging on the customers' sense of community, (2) the consumer's attitude towards the products with eco-friendly packaging with customers' conception of effectiveness, (3) social influence, (4) personal image concerns, and (5) quality of environmentally friendly packaging to intention to buy products with environmentally friendly packaging of urban residents in Ho Chi Minh City.

The results of this study have management implications for companies, retailers, and management agencies. Considering consumers' environmental concerns, appropriate strategies should be developed. The strategies should focus on specific consumer segments, increasing consumers' awareness and knowledge of eco-friendly products by providing customer satisfaction. Eco-friendly packaging is a signal to consumers, who may not know whether a product is produced using environmental protection processes unless they are informed. Therefore, consumers' awareness and knowledge about products play a significant role in making purchase-related decisions. This study provides guidelines and suggestions for retailers who are selling eco-friendly goods. In addition, this study can be helpful for manufacturers to identify their target consumers by showing the influence of socio-demographic factors on product purchases. Based on the factors affecting the intention to buy products with environmentally friendly packaging, businesses can build

effective advertising and promotional strategies that strongly impact urban customers' attitudes and perceptions in order to make products with environmentally friendly packaging more popular in the urban market.

For leaders and managers of Ho Chi Minh City, this study may also provide some suggestions. Consumer attitudes and perceptions of the effectiveness of purchasing behavior with environmentally friendly packaging have the most decisive impact on consumers in urban areas. Therefore, managers should take active and specific propaganda actions about the environment and the need for environmentally friendly consumption to raise urban people's environmental awareness. This can be through communication channels, propaganda activities on the street, and practical and feasible daily activities.

This paper also has limitations.

First, space limitation. This study was conducted in Ho Chi Minh City, focusing on the urban residents of Ho Chi Minh City. In order to have better findings on product intentions with eco-friendly packaging, additional surveys in other cities in Vietnam should be carried out. This is also a suggestion for further research.

Second, this research only focuses on customers who are urban residents living in Ho Chi Minh City. Further research on customers of different ages and backgrounds is needed for a broader view of this topic.

Third, many other factors that can also affect the purchase of products with environmentally friendly packaging, such as environmental responsibility, awareness of the harmful effects of plastic packaging on the environment, etc., should be included in future studies.

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