

## Because It Is Green or Unique? Exploring Consumer Responses to Unique Types of Sustainable Packaging

Ji Young Lee<sup>†</sup> · Ju-Young M. Kang\* · Ki Ho Park\*\*

Fashion and Textile Technology Dept., SUNY Buffalo State University

\*Dept. of Family and Consumer Sciences, University of Hawai'i at Mānoa

\*\*Art Department, SUNY JCC

Received August 23, 2023; Revised (October 27, 2023; November 17, 2023); Accepted November 21, 2023

### Abstract

With increasing interest in sustainability, several fashion and beauty brands have developed and offered unique types of sustainable packaging in their stores (e.g., 'knot-wrap,' 'seaweed-based' packaging). The purpose of this study was to investigate the perceived value (i.e., green, aesthetic, functional, emotional, social, self-expression) of unique types of sustainable packaging and its impact on consumers' packaging evaluation, store evaluation, and store patronage intentions in the context of a fashion retail store. This study also assessed the moderating effects of consumer innovativeness and environmental concern. Data were collected from 210 US consumers aged 18 to 26 years through Amazon MTurk. The results of structural equation modeling revealed that green, emotional, self-expression, functional, and aesthetic values perceived from unique types of sustainable packaging had significant positive impacts on packaging evaluation. Packaging evaluation, in turn, positively impacted store evaluation, subsequently influencing store patronage intentions. Consumer innovativeness and environmental concern moderated several paths between the variables. This study adds to the existing literature on sustainable packaging by investigating consumer responses to sustainable packaging that incorporates the 'uniqueness' aspect. Managerial implications regarding the importance of developing and offering unique types of sustainable packaging for fashion brands in their retail stores are discussed.

**Key words:** Sustainable retailing, Unique sustainable packaging, Perceived value of sustainable packaging, Store patronage intentions, Fashion retail store

### I. Introduction

Due to growing concerns about environmental protection, the concepts of sustainability and environmental resilience are increasingly considered in the retail context. Sustainable retailing refers to retailing practices, whereby "retailers minimize emissions, effluents, and waste through continuous improvement in their internal operations" (Tang et al., 2016, p. 394). One effort for pursuing sustainability in the retail sector is the adoption of sustainable packaging. 'Sustain-

able packaging' is packaging that is sourced responsibly, is designed to be effective and safe throughout its life cycle, is made entirely using renewable energy, and once used, is recycled efficiently (Sustainable Packaging Coalition, 2011). The retailer's commitment to sustainability positively influences consumers' perception and behavioral intentions toward the store (Lavorata, 2014).

The fashion industry is one of the industries in which sustainability is emphasized across the entire supply chain (Yang et al., 2017). Many fashion brands offer sustainable packaging, such as 100% recycled and recyclable boxes (e.g., ZARA), reusable poly bags

<sup>†</sup>Corresponding author

E-mail: [leej@buffalostate.edu](mailto:leej@buffalostate.edu)

(e.g., ASOS), and plant-based biodegradable packaging (e.g., Stella McCartney). While these sustainable packaging options prioritize the use of environmentally friendly materials, the form or shape of the packaging often remains the same as the traditional ones, such as boxes. Notably, some fashion and beauty brands have taken a step further by developing and offering unique, innovative types of sustainable packaging in their retail stores. These innovations extend beyond just materials (e.g., recyclable, reusable, or compostable packaging) and include distinctive shapes, designs, and multiple purposes. For example, LUSH, a U.K.-based beauty product brand, creates and offers a 'knot-wrap' packaging in their plastic-free stores in certain locations, named 'LUSH Naked.' Inspired by 'Furoshiki,' the traditional Japanese wrapping cloth, 'knot-wrap' is made of organic cotton and recycled plastic bottles. It features a variety of designs and patterns with vivid colors and can be re-used for other purposes (e.g., scarves, headbands) after use. Depending on how it is knotted, 'knot-wrap' can create various appearances for different products. This packaging is used to wrap a gift or transport goods as a substitute for paper gift boxes, plastic containers, or plastic bags. Another example of a unique type of sustainable packaging is 'seaweed-based' packaging, developed by Indonesian startup Evoware. This packaging is 100% biodegradable, edible, and water-soluble. It is used for wrapping foods (e.g., hamburgers) and containing clothing, beauty/cosmetic products (e.g., fragrances, soaps), wines, flowers, and home goods. A fully biodegradable wood box for jewelry and bath products used by L'Oreal-owned Seed Phytonutrients is another example of a unique type of sustainable packaging.

Sustainable packaging design has become a selling point for brands that attracts customers. In the context of a fashion retail store, the appearance or design of unique types of sustainable packaging ('aesthetic' value) plays a significant role in capturing customer attention, as fashion customers often seek hedonic shopping stimuli. The packaging's uniqueness also evokes consumer emotions ('emotional' value), such as joy,

pleasure, or excitement. 'Functional' value, related to performance, functionality, durability, and efficiency, is also significant to make consumers accept sustainable packaging. Unique sustainable packaging can serve as a means of expressing one's taste, style, identity, and environmental beliefs ('self-expression' value). Consumers can also derive a sense of social status and self-esteem ('social' value) by carrying such packaging. Because sustainable packaging is inherently eco-friendly, it also has a 'green' value. If consumers perceive various values from the unique type of sustainable packaging, they are likely to evaluate the packaging and the store positively, leading to behavioral intentions toward the store, such as visiting the store, making purchases, and spreading the word (Magnier & Crié, 2015; Steenis et al., 2017; Yang et al., 2017).

Despite the increasing adoption of unique types of sustainable packaging by fashion brands, there is a lack of research examining this topic and its impact on consumer behavior. In the following section, we reviewed prior studies related to sustainable packaging and discussed the need for further investigations. The purpose of this study was to investigate the perceived value of unique types of sustainable packaging, including green, aesthetic, functional, emotional, social, self-expression value, and its impact on consumer's evaluation of packaging, their evaluation of the store, and store patronage intentions in the context of a fashion retail store. Furthermore, we hypothesized that a consumer's level of innovativeness (i.e., the extent to which an individual seeks out and adopts new things) and environmental concern (i.e., the degree to which an individual is concerned about the environment) could moderate the relationships between variables. The unique features of the packaging would be more appealing to consumers with a higher level of innovativeness, leading them to perceive more value from the packaging, evaluate it more positively, and respond more favorably to the store offering it. Similarly, consumers with a higher level of environmental concern would likely respond more positively to this packaging due to its sustainability and eco-friend-

liness (Magnier & Schoormans, 2015). Young consumers, specifically Generation Z, were chosen as the population for this study because they place higher value on and are more willing to spend money on products and services committed to the environment compared to other generations like Generation X and Baby Boomers (Petro, 2020).

Our research aims to enhance the current body of literature on sustainable packaging by investigating sustainable packaging that incorporates the aspect of ‘uniqueness.’ This study will shed light on the significance of creating and offering unique sustainable packaging, particularly for fashion brands, as a crucial element of sustainable retailing. Our study will also highlight the effectiveness of unique types of sustainable packaging as a significant in-store stimulus in eliciting positive consumer responses in the fashion retail context. We seek to elucidate the mechanism of these consumer responses (i.e., perceptions-evaluations-behavioral intentions) within the framework of the S-O-R model.

## **II. Literature Review and Hypotheses Development**

### **1. Conceptual Framework**

This study is framed by Mehrabian and Russell's (1974) Stimulus-Organism-Response (S-O-R) model. The S-O-R model consists of three structures- stimuli (S), organism (O), and response (R). Stimuli (S) refer to an influencing, external factor related to the environment. In the retailing context, stimuli can encompass all the physical and non-physical elements of a store (e.g., merchandise, packaging, store atmosphere) (Eroglu & Machleit, 1990; Turley & Chebat, 2002). Organism (O) refers to the internal processes and structures between the external stimuli and the person, leading to their final actions, reactions, or responses. Organism is something that responds to stimuli (Eroglu et al., 2003), which includes perceptual, emotional (i.e., feelings), and cognitive (i.e., thinking) activities related to the stimuli (Bagozzi, 1986). Res-

ponse (R) refers to people's approach/avoidance behavioral responses. The response, in the retailing context, includes store visit intention, purchase intention, purchase behavior, and store visits (Bagozzi, 1986; Kumar & Kim, 2014). The S-O-R model explains that various external factors can be used as stimuli in the store, which will affect the organism (i.e., cognition and emotions of people) and the response (i.e., behavior) (Zhang et al., 2021).

The S-O-R model has been employed by numerous researchers to explain the relationship between in-store environmental stimuli and consumer behavior. Notably, some researchers have applied this model into their studies on sustainable retailing. For example, Kumar and Kim (2014) utilized the S-O-R model to explain how a socially responsible in-store cue (S) impacts consumers' positive evaluation of the store (O), subsequently increasing their patronage intentions (R). Similarly, in Sadachar et al.'s (2022) study, the researchers explored an influence of sustainable visual merchandising in the retail store (S) on consumers' affective responses (O) and store loyalty (R).

Building upon previous studies that employed the S-O-R model, we believe that it also provides a useful foundation for our study. In the context of this study, a unique type of sustainable packaging is conceptualized as an in-store stimulus (S) in the fashion retail store. This external stimulus elicits various organisms, including perceptual, cognitive, and affective responses from consumers. Therefore, consumers' perception of the values derived from the packaging (i.e., perceived values of packaging), their evaluation of the packaging, and their evaluation of the store offering such packaging become the organism (O). Finally, consumers' store patronage intentions (i.e., behavioral intentions) constitutes the response (R).

### **2. Sustainable Packaging: Fundamental Concept and Unique Types**

#### ***1) Sustainable Packaging in Retailing***

In recent years, various companies have undertaken ‘sustainable development,’ which focuses on promot-

ing sustainability and minimizing harmful environmental impacts (Syaekhoni et al., 2017). The fashion industry is involved in multi-dimensional aspects of sustainable development throughout the entire supply chain, including production, raw material, retail, use, and disposal of apparel (Islam et al., 2021). Sustainable development especially in 'retailing' encompasses several practices, including the sale of sustainable products, the use of sustainable transportation methods, and sustainable store operations (e.g., energy conservation, waste reduction, recycling) (Lee et al., 2012; Niinimäki et al., 2020; Yang et al., 2017). 'Sustainable packaging,' which refers to packaging with a relatively low environmental impact (Glavič & Lukman, 2007), is one effort for sustainable store operations. Sustainable packaging optimizes the utilization of renewable or recycled source materials and is effectively recovered and used in biological and/or industrial closed loop cycles (Sustainable Packaging Coalition, 2011).

Researchers have investigated sustainable packaging and its impact on consumer behavior in the retail context. Magnier and Crié (2015) and Steenis et al. (2017) examined the effect of sustainable packaging design (e.g., graphics, materials) on perceived benefits of packaging and consumer attitudes. Several studies (e.g., Petljak et al., 2019; Hao et al., 2019) have examined consumers' purchase intention for products in sustainable packaging and willingness to pay for sustainable packaging. Researchers have also examined factors influencing consumer behaviors related to sustainable packaging, such as individual attributes (e.g., green self-identity) and retailer-based contextual factors (e.g., sales promotions) (Su et al., 2021). However, most existing studies on sustainable packaging were conducted in non-fashion retail contexts, such as the food industry and grocery stores.

In the realm of fashion retailing, there has been a few explorations of sustainable packaging. Jestratičević and Vrabič-Brodnjak (2022) analyzed sustainable packaging solutions across 400 international fashion brands based on three factors: sustainability mission, the availability of packaging data, and the actual sus-

tainability of the package. Another study by Jestratičević et al. (2022) identified the 7 Rs sustainable packaging framework (re-thinking, refusing, reusing, reducing, repurposing, recycling, and rot-composting) by examining packaging solutions employed by international apparel and footwear brands through data mining. Bhandari et al. (2022) conducted expert interviews to identify the challenges and enablers influencing fashion retailers in developing circular packaging. Similarly, Friedrich (2021) investigated fashion retail experts' attitudes toward bioplastics in clothing and packaging through interviews.

Despite the growing consumer interest in sustainable fashion packaging, most existing studies have focused on the brands'/retailers' point of view rather than consumers' perspectives on it. Further, the majority of studies employed qualitative research methodologies, as demonstrated above. Although sustainable packaging is a vital part of sustainable fashion retailing, prior studies predominantly focused on product-related sustainability in retailing (e.g., the sale of upcycled fashion); and sustainable packaging has received little attention within academic research in fashion (Islam et al., 2021; Jestratičević et al., 2022; Lee & DeLong, 2016; Yu & Chun, 2023).

## ***2) Unique Types of Sustainable Packaging***

In the fashion industry, acknowledging the need for environmentally friendly packaging that incorporates unique and aesthetic elements, various types of unique sustainable packaging have been created and implemented by fashion brands. In defining the concept of 'unique green packaging,' Shasha and Ibrahim (2022) demonstrated it as a novel and innovative packaging design that effectively contributes to environmental protection. The unique green packaging combines aesthetic elements, such as unique shapes, with a sustainability approach focused on resource conservation and environmental preservation (Shasha & Ibrahim, 2022). Drawing from the demonstration by Shasha and Ibrahim (2022), we define a 'unique type of sustainable packaging' as green, eco-friendly packaging presented in a novel, unique, creative, and in-

novative form. While Shasha and Ibrahim (2022) primarily focused on the 'aesthetic' uniqueness aspect, we encompass additional attributes and features of sustainable packaging in our conceptualization of the 'uniqueness.' Sustainable packaging typically comprises of a combination of materials (e.g., biodegradable materials) and design elements (e.g., colors, graphics) (Steenis et al., 2017). Moreover, functionality, aesthetics, and convenience/ease of use are its crucial components (Nordin & Selke, 2010; Steenis, 2019). Regarding these various elements of sustainable packaging, we assert that uniqueness in sustainable packaging can arise from its appearance (i.e., creative design, shapes, graphics, and forms), materials (i.e., unique eco-friendly materials), and/or functionality (i.e., versatile use, innovative disposal methods). Therefore, we demonstrate that the 'uniqueness' of unique sustainable packaging arises from various aspects, including but not limited to its appearance, materials, and functionality. It is worth noting that for some consumers, uniqueness also extends to their overall user experience. For example, carrying a unique type of sustainable packaging can serve as a means to express their inclination toward uniqueness (i.e., uniqueness seeking tendency) or their environmentally conscious identity. Consequently, the unique type of sustainable packaging can create distinctive user experiences. While there have been numerous studies on general forms of sustainable packaging, little attention has been given to 'unique types' of sustainable packaging. Our study focuses on this area, specifically exploring how consumers perceive, evaluate, and behave toward it in the fashion retail context.

It is important to note that sustainable packaging encompasses multiple values rather than a single one (Dopico-Parada et al., 2021; Nguyen et al., 2020). While the 'green' value of sustainable packaging has been extensively explored in prior research (e.g., Magnier & Schoormans, 2015; Magnier et al., 2016), other values remain underexplored. In the following section, we discussed the various values that consumers can perceive from unique types of sustainable packaging.

### **3. Perceived Values of Unique Types of Sustainable Packaging**

Consumers may perceive various dimensions of value from the unique types of sustainable packaging. Perceived value refers to "the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given." (Zeithaml, 1988, p. 14) The value of sustainable packaging primarily derives from green materials and designs (Zeng & Durif, 2020). However, in the case of a unique type of sustainable packaging, more diverse dimensions of value are intertwined and affect consumers' overall evaluation of the packaging. Also, unlike sustainable packaging for non-fashion products (e.g., food packaging), sustainable packaging for fashion products is more profound and complicated, encompassing a broader range of values, including hedonic (e.g., aesthetic, emotional), symbolic (e.g., self-expressive, social), utilitarian (e.g., functional), and green value. It is, therefore, essential to consider the extended spectrum of values stemming from sustainable packaging for fashion products.

To explore the various values that could be derived from a unique type of sustainable packaging, we reviewed previous literature. In Magnier and Crié's (2015) research, which examined the influence of eco-designed packaging on consumers' responses using an interview method, the researchers identified several perceived benefits of eco-designed packaging. These included 'individual benefits' such as convenience, social, emotional, price, health-related value, as well as 'pro-social benefits,' encompassing values related to the protection of the environment (i.e., green value) and the well-being of others. In Dinh et al.'s (2022) study, the researchers conceptualized and validated the dimensions of eco-designed retail packaging using a mixed-method research design. Those dimensions included functional, aesthetic, and three eco-related attributes (eco-material, eco-production, and eco-information). Yu and Lee (2019) also assessed green, aesthetic, functional, emotional, social, and self-expression values as perceptions associated

with upcycled products (e.g., bag/purse, accessories). They found that certain types of perceived value (green, emotional, and aesthetic) significantly influenced the attitude and purchase intention toward upcycled products among U.S. consumers. Building on the findings of these prior studies, we decided to explore the following values for the unique type of sustainable packaging: green, aesthetic, functional, emotional, and social. As some researchers (e.g., Underwood, 2003) have studied the self-expressive value of packaging to express one's image, we also included the self-expression value in our study.

A unique type of sustainable packaging for fashion products, as seen in the examples of 'knot-wrap' and 'seaweed-based' packaging, is typically made of eco-friendly materials (e.g., recycled or organic materials), thus inherently possessing a green value. Simultaneously, the packaging excels in functionality (e.g., multi-purpose, versatile), and boasts an aesthetically appealing design (e.g., vivid colors, various patterns). Furthermore, by carrying or using such unique sustainable packaging, users can experience emotions (e.g., pleasure) as well as express their inclinations (e.g., a desire for uniqueness), identity, and values (e.g., environmental concern) to others, thereby reinforcing their social image. Consequently, a unique type of sustainable packaging delivers a multitude of values, including green, aesthetic, functional, emotional, social, and self-expression value.

### **1) Green Value**

Green value, or green perceived value, pertains to the value that consumers derive from environmentally friendly products or services that benefit both people and the planet. This value is based on consumers' desires, expectations, and needs related to sustainability (Chen & Chang, 2012). Consumers perceive pro-social benefits, such as environmental protection, from eco-designed packaging (Magnier & Crié, 2015). In Dinh et al.'s (2022) study on eco-designed retail packaging, eco-material attributes and eco-production attributes were deemed significant packaging features. Consumers may perceive ecological/green value from

the materials (e.g., biodegradable materials, paper/cardboard) (Marshall, 2021), as well as from the appearance of sustainable packaging (e.g., green color, eco-label). The multi-purpose and reusable nature of unique types of sustainable packaging can also contribute to a perception of green value. The perceived green value of sustainable packaging significantly influences consumers' evaluation of the packaging and their purchase behaviors. In Herbes et al.'s (2020) study, the researchers identified green materials as one of the key factors used in the evaluation of sustainable packaging among French consumers. In an Indonesian supermarket setting, Hapsari and Widodo (2023) also found that green packaging influences consumers' perceived green value of packaging and their purchase intentions.

### **2) Aesthetic Value**

Aesthetic value is perceived by consumers based on the design and appearance of unique types of sustainable packaging. These design and appearance features of sustainable packaging are crucial for capturing greater customer attention toward the product, store, and brand because consumers encounter packaging at the point of purchase (Nicasio, 2022; Steenis et al., 2017). The appearance of packaging, encompassing aspects like color, typography, graphical forms, and shapes, has an impact on consumers' aesthetic appreciation (Celhay & Trinqucoste, 2015), expectations and evaluations of product quality (Chitturi et al., 2022; Orth et al., 2010), and choice and consumption behavior (Steenis et al., 2017). The example of LUSH's 'knot-wrap' illustrates that the design, color, pattern, and shape of such sustainable packaging are visually appealing and aesthetically pleasing. In Dinh et al.'s (2022) study, aesthetic attributes, including aesthetically appealing design and pleasant colors, were identified as vital aspects of sustainable packaging. In general packaging design research, scholars have found that the aesthetic attributes of packaging influence consumers' perception of value derived from the packaging (Vladić et al., 2015). The aesthetic appearance of sustainable packaging also influences consumers'

evaluation of the packaging (Herbes et al., 2020) and their purchase intention (Magnier & Crié, 2015).

### **3) Functional Value**

Functional value encompasses various practical considerations, including ease of use, convenience, reliability, sturdiness, durability, safety, maintenance needs, and multi-functionality (Kumar & Noble, 2016). This value fulfills consumers' practical and utilitarian needs (Yu & Lee, 2019). In the case of sustainable packaging, Dinh et al. (2022) included the functional attribute when conceptualizing the core dimensions of sustainable packaging, along with several other attributes like green and aesthetics. In packaging research, Kapoor and Kumar (2019) found that the convenience and utility of food packaging influence purchase decisions among young Indian consumers. Similarly, Hao et al. (2019) found that consumers tend to attach greater importance to the practicality of green packaging, such as convenience, reusability, and protective capability, compared to the price and appearance of packaging. A unique type of sustainable packaging can offer functional values. For example, the 'knot-wrap' is effective for transporting merchandise and can also be used for other purposes, such as a scarf or headband, making it versatile and multi-functional. Additionally, the size and shape of such packaging can be easily transformed to accommodate diverse products, such as different sizes of soaps. Sustainable packaging made from unique green materials, such as seaweed or mushrooms, can also be easily disposed (e.g., dissolved in water) or transformed after use. When consumers perceive functional values from sustainable packaging, they may evaluate the packaging positively.

### **4) Emotional Value**

Emotional value refers to a set of positive feelings, such as happiness and a sense of well-being, derived from the object (Gbadamosi, 2016). The visual design elements of product packaging, such as design, imagery, and colors, influence consumers' emotions (Chitturi et al., 2022). The material of the packaging also contributes to the emotional appeal of a product

(Smith, n.d.). In terms of emotions evoked by sustainable packaging, when sustainable packaging aligns with consumers' values related to the environment, it triggers a sense of responsibility and positive emotions (Smith, n.d.). In Koch et al.'s (2022) study, the researchers hypothesized that consumers' hedonic motives driven by positive emotions, such as feelings of joy, pride, and optimism, are positively related to their intention to use eco-friendly packaging. Magnier and Crié (2015) also found that emotional benefits derived from sustainable packaging influence consumers' intention to engage in pro-environmental actions and purchases. Consumers might perceive several positive emotions, such as feelings of joy, pleasure, pride, and excitement from the unique type of sustainable packaging due to its sustainable and innovative features. Also, this perceived emotional value may influence consumers' positive evaluation of the packaging.

### **5) Social Value**

Social value is derived from a product or service's ability to enhance one's social status and self-concept (Sweeney & Soutar, 2001). According to research by Magnier and Crié (2015) and Félonneau and Becker (2008), consumers' conspicuous consumption of sustainable products reinforces their self-concept, especially in contexts where pro-environmental attitudes and behaviors become social norms. The self-concept encompasses both an individual's personal identity and their relationship with society. In Johnson et al.'s (2018) study, the researchers found that individuals with both a pro-social self-concept (i.e., an individual's identification with socially-oriented values) and a need for status are likely to purchase conspicuous pro-social goods. Pro-social goods include any products and packages that reduce a negative impact or produce a positive impact on the environment or society, such as green products and reusable grocery bags. These goods can be seen as image-enhancing and are therefore conspicuously consumed (Johnson et al., 2018). As sustainability is regarded as one of today's social norms, consumers can derive social value from unique types of sustainable packaging because,

the ‘eco-friendliness’ of packaging can enhance one's social image or self-concept. Furthermore, the ‘uniqueness’ aspect of packaging increases the visibility or conspicuousness of a person carrying that packaging in social situations. When consumers perceive social value from unique sustainable packaging, they may evaluate such packaging positively.

### 6) Self-Expression Value

A unique type of sustainable packaging can also serve as an effective means of self-expression. In their study on self-expressive brands, Khalid and Khan (2022) demonstrated self-expression value as the value that consumers derive from being able to express themselves through a brand. Similarly, Ahmad and Thyagaraj (2015) described that a self-expressive benefit obtained from a brand or product (such as a tangible product, packaging, and service) enables consumers to implicitly signal or express their preferences or personal traits to others. Regarding ‘sustainable’ brands/products, these researchers also emphasized that self-expressive benefits involve consumers expressing their environmental interests or concerns. The self-expression value is external, making others perceive consumers' identity, interests, values, and

lifestyles (Khalid & Khan, 2022). Simultaneously, if consumers identify themselves as environmentally conscious, this ‘green self-identity’ increases the value that consumers perceive from sustainable packaging (Confente et al., 2020). In the case of a unique type of sustainable packaging, consumers can also express their desire for uniqueness, sensation-seeking tendencies, or fashion sense by carrying and possessing it. Such unique packaging can serve as a means of non-verbal communication to showcase one's inclinations or interests, similar to fashion items. This concept is in line with Underwood's (2003) idea that packaging functions as a vehicle for expressing the self (i.e., self-image) through its consumption and usage.

Consumers' perception of value from packaging influences their evaluation of the packaging (Steenis, 2019). Thus, we developed the following hypothesis:

**Hypothesis 1:** Perceived value of unique types of sustainable packaging (H1a green; H1b aesthetic; H1c functional; H1d emotional; H1e social; H1f self-expression value) positively influences packaging evaluation.

<Table 1> presents a summary of the previous literature studied on each value of sustainable packaging.

**Table 1. Literature overview on the values of sustainable packaging**

| Values of sustainable packaging | Specific variables investigated related to values of sustainable packaging  | References  |
|---------------------------------|---|---|
| Green value                     | - Eco-material, eco-production, and eco-information attributes<br>- Green materials<br><br>- Overall green aspects  | Dinh et al. (2022)<br>Steenis et al. (2017)<br>Magnier & Crié (2015)<br>Hapsari & Widodo (2023) |
| Aesthetic value                 | - Colors, graphics, typography, and imagery<br>- Colors, imagery, and aesthetic appealing design<br>- Colors and graphics   | Steenis et al. (2017)<br>Dinh et al. (2022)<br>Magnier & Crié, (2015)                           |
| Functional value                | - Reusability and convenience<br>- Convenience, efficiency, easiness-to-use, durability, and protective capability<br>- Practicality: Convenience, reusability, and protective capability | Magnier & Crié (2015)<br>Dinh et al. (2022)<br>Hao et al. (2019)                                |
| Emotional value                 | - Joy, pride, and optimism<br>- Overall emotional benefits  | Koch et al. (2022)<br>Magnier & Crié (2015)   |
| Social value                    | - Self-concept related to social norms<br>- Pro-social self-concept, Need for status  | Magnier & Crié (2015)<br>Johnson et al. (2018)  |
| Self-expression value           | - Green self-identity expression<br>- Environmental interest/concern expression   | Confente et al. (2020)<br>Ahmad & Thyagaraj (2015)  |



#### **4. Packaging Evaluation, Store Evaluation, and Store Patronage Intentions**

Consumer evaluation refers to the assessment of properties or performance of products and services, based on how consumers perceive them (Saint-Denis, 2018). Consumer evaluation encompasses both cognitive and emotional aspects. Cognitive evaluation involves assessing and analyzing information to form an opinion (Bettman, 1979; Zeithaml, 1988). Through cognitive evaluation, consumers assess, analyze, and develop an opinion on the object regarding its performance, quality, and efficiency. Affective evaluation is associated with emotions and feelings toward an object, such as finding it pleasant, attractive, exciting, likable, or appealing (Bagozzi, 1986; Ward & Russel, 1981). Whether it is related to packaging ('packaging evaluation') or the store offering the packaging ('store evaluation'), consumer evaluation includes both cognitive evaluation, such as forming a positive opinion about the packaging or the store, and affective evaluation, such as experiencing positive feelings from the packaging or the store.

When consumers encounter a stimulus in the store and evaluate it positively, they are likely to form a favorable evaluation of the store (Kumar & Kim, 2014). Previous research (e.g., Donovan & Rossiter, 1982; Law et al., 2012) has demonstrated that in the retail context, in-store stimuli like packaging, merchandise, and store atmosphere indirectly influence consumer behavioral reactions through their evaluation of the store. In Jara et al.'s (2017) study, the researchers found that consumers' evaluation of the packaging (i.e., whether it is informational or appealing) influence their evaluation of the store (e.g., store image, quality) in the grocery retail context. Similarly, Hwang and Kim (2022) found that packaging design has a positive impact on consumers' evaluation of the private store brand's equity, specifically in terms of the attractiveness, uniqueness, and likability.

A positive evaluation of a unique type of sustainable packaging, driven by its perceived value, may al-

so lead consumers to view the store providing such packaging positively. Based on the above discussion, we proposed the following hypothesis. In this study, for both packaging evaluation and store evaluation, we measured consumers' overall evaluation as a single variable encompassing both cognitive and affective aspects. Investigating consumers' comprehensive evaluation may be more meaningful for providing managerial implications to retailers than assessing the cognitive and affective evaluation separately.

***Hypothesis 2:*** Packaging evaluation positively influences store evaluation.

Previous studies have consistently shown that consumers' evaluation of the store is positively related to their behavioral intention toward the store, such as willingness to buy, time spent in the store, money spent, number of items purchased, store liking, and willingness to revisit the store (Kumar & Kim, 2014; Sherman et al., 1997). In Kennedy et al.'s (2016) study, the researchers found that the retailer's sustainability initiatives affect consumers' perception of the store and purchase behaviors. In a café and restaurant setting, several researchers confirmed that the store's eco-friendly practices (e.g., the use of eco-friendly packaging) have a positive influence on customers' perception of the store, attitude to the store, and subsequent store loyalty behaviors (Jeong et al., 2014; Kim & Hall, 2020). Consistent with the findings of previous literature, we hypothesized the following:

***Hypothesis 3:*** Store evaluation positively influences store patronage intentions.

As an additional investigation, we were interested in assessing whether specific individual attributes could moderate consumers' perceptions, evaluations, and behavioral intentions regarding unique types of sustainable packaging (i.e., Which characteristics would lead consumers to react more positively to unique sustainable packaging?) Several studies have

confirmed that consumers' level of innovativeness influences both their adoption of sustainable products (Li et al., 2021) and their acceptance of innovative/new types of products (Zhang et al., 2020). Researchers have also found a close link between consumers' environmental concern and their reactions to sustainable packaging (Magnier & Schoormans, 2015). Drawing upon these findings from previous studies, we assumed that the levels of one's innovativeness and environmental concern (i.e., high vs. low) could serve as moderators for consumers' responses to unique sustainable packaging. If consumers' responses to unique types of sustainable packaging vary based on their levels of innovativeness or environmental concern, fashion brands and retailers should take these factors into consideration for their targeting and promotional strategies related to such packaging. In the following section, we discuss the two moderating variables: Consumer innovativeness and environmental concern.

### **5. Moderating Variable 1: Consumer Innovativeness**

Consumer innovativeness refers to the predisposition to seek out and purchase new and different products, brands, and experiences rather than sticking with previous choices and consumption patterns (Hirschman, 1980; Venkatraman, 1991). Consumer innovativeness is also defined as the degree to which individuals adopt new ideas relatively earlier than other members in the social system (Kuswati & Irmawati, 2018). This concept has been studied by researchers investigating consumers' eco-innovative adoption and eco-friendly consumption behavior (Kuswati & Irmawati, 2018). Li et al. (2021) found that consumers' social innovativeness (i.e., a need for uniqueness) and hedonic innovativeness (i.e., a need for stimulation) positively influence their consumption of organic foods through their attitudes and knowledge. Similarly, Persaud and Schillo (2017) found that consumer innovativeness moderates the relationship between consumers' perception of value and their purchase in-

tion of organic products. Regarding sustainable packaging, Koch et al. (2022) confirmed a positive relationship between consumers' innovativeness and their intention to adopt eco-friendly packaging. Assuming that consumers with higher levels of innovativeness may evaluate both the unique type of sustainable packaging and the store more positively and exhibit more behavioral intentions toward the store, we examined the moderating effect of consumer innovativeness on all the paths in our research model. Thus, we developed the following hypotheses:

***Hypothesis 4a:*** Consumer innovativeness moderates the effect of each perceived value of unique types of sustainable packaging on packaging evaluation.

***Hypothesis 4b:*** Consumer innovativeness moderates the effect of packaging evaluation on store evaluation.

***Hypothesis 4c:*** Consumer innovativeness moderates the effect of store evaluation on store patronage intentions.

### **6. Moderating Variable 2: Environmental Concern**

Environmental concern refers to one's general orientation and attitude toward the environment (Bickart & Ruth, 2012; Kim & Choi, 2005). According to Diamantopoulos et al. (2003) and Nekmahmud and Fekete-Farkas (2020), environmental concern is one of the significant factors influencing consumers' sustainable consumption behavior. Consumers with a high level of environmental concern are more likely to engage in sustainable consumption behaviors than those with lower environmental concern. Similarly, Jeong et al. (2014) argued that green store practices influence the formation of customers' perception of a store's green image, particularly among ecologically conscious customers. Regarding sustainable packaging, Magnier and Schoormans (2015) found that the level of consumers' environmental concern influences

their affective attitude and purchase intention toward sustainable packaging, especially with regard to the visual appearance and verbal sustainability claims of packages. The greater consumers' environmental concern, the more likely they are to perceive values from the unique type of sustainable packaging, evaluate both the packaging and the store positively, and exhibit behavioral intentions toward the store. Therefore, we posited the following:

**Hypothesis 5a:** Environmental concern moderates the effect of each perceived value of unique types of sustainable packaging on packaging evaluation.

**Hypothesis 5b:** Environmental concern moderates the effect of packaging evaluation on store evaluation.

**Hypothesis 5c:** Environmental concern moderates the effect of store evaluation on store patronage intentions.

The hypothesized relationships among the variables were shown in <Fig. 1>.

### III. Methods

#### 1. Survey Questionnaire Development

The survey questionnaire was developed and consisted of three parts. The first part supplied a scenario describing a fictitious fashion brand's unique type of sustainable packaging offered in their store. The second part included established measures to assess perceived value of sustainable packaging (green, aesthetic, functional, emotional, social, self-expression), packaging evaluation, store evaluation, and store patronage intentions using 7-point Likert scales (1= *strongly disagree*, 7= *strongly agree*). The two moderating variables, consumer innovativeness and environmental concern, were also measured using 7-point Likert scales. The final part of the questionnaire contained demographic questions (e.g., age, gender, ethnicity). Other questions inquired about the survey participants' frequency of visiting a store that offers packaging/containers and whether they engage in behaviors to protect the environment in daily lives.

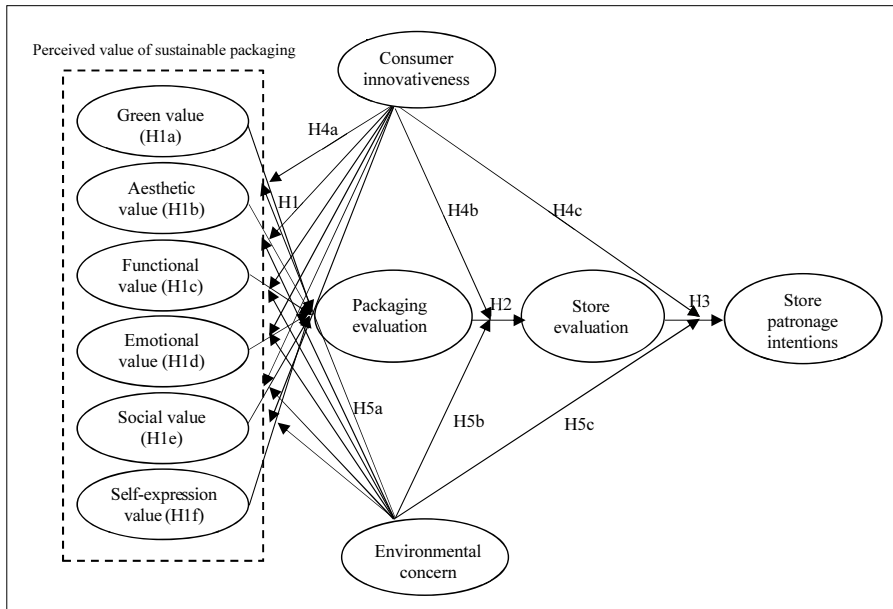


Fig. 1. Diagram of hypothesized relationships among the variables.

### 1) Scenario Development

A scenario representing a unique type of sustainable packaging was developed by the researchers. To create a realistic stimulus, the scenario was based on two existing empirical instances of sustainable packaging for fashion/beauty products: LUSH's 'knot-wrap' and Evoware's 'seaweed-based' packaging. The scenario described that a certain fashion brand offers a distinctive sustainable packaging option in their store for gift-wrapping and carrying merchandise. The scenario description was as follows:

Please read the following cases. Then, close your eyes and imagine that you will visit the fashion store that offers the types of packaging described in these cases.

Case 1. "A cosmetic brand, XX, has developed unique gift-wrapping materials. Inspired by the Japanese tradition of Furoshiki, this gift-wrap is an excellent way to wrap any gift, including soaps, body lotions, shower gels, and other products. Made from either organic cotton or recycled plastic bottles, this gift-wrap is environmentally friendly and can be re-used as a scarf, accessory, or tote bag."

Case 2. "A cosmetic brand, ZZ, introduces a unique type of packaging made of 'seaweed.' This seaweed-based packaging is designed for storing and carrying cosmetic products, soap, fragrance, and other items like wine, flowers, and foods. The seaweed-based

packaging is 100% biodegradable, edible, and dissolves in warm water."

Since it is possible that an authentic brand name could influence participants' responses, a fictitious brand name was used. The scenario description was reviewed by three individuals who have professional knowledge about sustainability and fashion retailing. All reviewers agreed that the text description included in the scenario reflects unique types of sustainable packaging.

### 2) Measures

The measurement items used in the questionnaire were derived from previous literature and were modified to better fit our research topic. Perceived value of sustainable packaging was measured using 18 items adopted from Yu and Lee's (2019) study. Yu and Lee (2019) originally sourced these items from several extant studies (e.g., Chen & Chang, 2012). For both packaging evaluation and store evaluation, Wakefield and Baker's (1998) four-item scale and Eroglu et al.'s (2003) four-item scale were adopted to measure both cognitive and affective evaluation. To measure store patronage intentions, four items were adopted from Niehmet al.'s (2007) study. This scale measured consumers' intentions of purchasing products, visiting the store, and engaging in positive word-of-mouth. Consumer innovativeness was measured using Manning et al.'s (1995) consumer innovativeness scale, and environmental concern was measured using Koenig-Lewis et al.'s (2014) scale. All items are listed in <Table 2>.

**Table 2. Measurement model evaluation**

| Construct                                     | Path coefficients  | Standardized factor loading | Reliability | <sup>a</sup> Composite reliability | <sup>b</sup> AVE |
|---|--|-----------------------------|-------------|------------------------------------|------------------|
| Perceived value of sustainable packaging      | • Green value  |                             |             |                                    |                  |
|   | – This packaging has more environmental benefits than other packaging. | .97                         | .89         | .90                                | .81              |
|   | – This packaging is environmentally friendly.                          | .83                         |             |                                    |                  |
|   | • Aesthetic value  |                             |             |                                    |                  |
|   | – The design of this packaging is appealing to me.                     | .87                         | .92         | .93                                | .80              |
|   | – I like the aesthetics of this packaging.                             | .94                         |             |                                    |                  |
| – The design of this packaging is attractive. | .88  |                             |             |                                    |                  |

**Table 2. Continued**

| Construct  | Path coefficients  | Standardized Factor Loading | Reliability | <sup>a</sup> Composite Reliability | <sup>b</sup> AVE |
|--|--|-----------------------------|-------------|------------------------------------|------------------|
| Perceived value of sustainable packaging   | • Functional value   |                             |             |                                    |                  |
|  | – This packaging looks having good quality.  | .88                         |             |                                    |                  |
|  | – This packaging looks having an acceptable standard of quality.                                 | .94                         | .92         | .92                                | .79              |
|  | – I think this packaging would perform well.   | .84                         |             |                                    |                  |
|  | • Emotional value  |                             |             |                                    |                  |
|  | – This packaging is one that I would enjoy to use.   | .88                         |             |                                    |                  |
|  | – This packaging would make me want to use it.   | .91                         | .95         | .95                                | .82              |
|  | – This packaging would make me feel good.  | .94                         |             |                                    |                  |
|  | – This packaging would give me pleasure.   | .90                         |             |                                    |                  |
|  | • Social value   |                             |             |                                    |                  |
|  | – The use of this packaging would improve the way I am perceived.                                | .84                         |             |                                    |                  |
|  | – The use of this packaging would make a good impression on other people.                        | .92                         | .90         | .91                                | .78              |
|  | – This packaging would give its user social approval.  | .88                         |             |                                    |                  |
|  | • Self-expression value  |                             |             |                                    |                  |
|  | – The use of this packaging may have a personal meaning to me.                                   | .88                         |             |                                    |                  |
| – This packaging would help me express myself.   | .94  | .92                         | .92         | .79                                |                  |
| – I think that a main benefit of this packaging is the ability for customers to express their own beliefs, values, or personalities. | .85  |                             |             |                                    |                  |
| Packaging evaluation   | I have a favorable opinion about this kind of packaging.   | .79                         |             |                                    |                  |
|  | I like this kind of packaging.   | .83                         |             |                                    |                  |
|  | I have a positive opinion about this kind of packaging.  | .81                         |             |                                    |                  |
|  | This kind of packaging is good to me.  | .88                         |             |                                    |                  |
|  | This packaging is...   |                             | .94         | .96                                | .76              |
|  | – exciting   | .77                         |             |                                    |                  |
|  | – interesting  | .73                         |             |                                    |                  |
| – appealing  | .75  |                             |             |                                    |                  |
| – sensational  | .73  |                             |             |                                    |                  |
| Store evaluation   | I would have a favorable opinion about the store that offers this kind of packaging.             | .83                         |             |                                    |                  |
|  | I would like the store that offers this kind of packaging.                                       | .84                         |             |                                    |                  |
|  | I would have a positive opinion about the store that offers this kind of packaging.              | .89                         |             |                                    |                  |
|  | This store that offers this kind of packaging is good to me.                                     | .88                         | .96         | .98                                | .72              |
|  | The store that offers this kind of packaging is...   |                             |             |                                    |                  |
|  | – exciting   | .89                         |             |                                    |                  |
|  | – interesting  | .70                         |             |                                    |                  |
| – appealing  | .93  |                             |             |                                    |                  |
| – sensational  | .78  |                             |             |                                    |                  |
| Store patronage intentions   | I want to experience the store that offers this kind of packaging in the future.                 | .81                         |             |                                    |                  |
|  | I would visit the store that offers this kind of packaging.                                      | .72                         |             |                                    |                  |
|  | I would consider buying the products from the store that offers this kind of packaging.          | .87                         | .91         | .88                                | .65              |
|  | If I have an opportunity, I would recommend others the store that offers this kind of packaging. | .81                         |             |                                    |                  |

<sup>a</sup>Composite Reliability =  $(\sum \text{standardized loading})^2 / (\sum \text{standardized loading})^2 + \sum \text{measurement error}$

<sup>b</sup>Average Variance Extracted =  $\sum (\text{standardized loading})^2 / \sum (\text{standardized loading})^2 + \sum \text{measurement error}$

A pilot study was conducted with 30 undergraduates at a college in the Eastern U.S. to estimate the reliability of measures before the main data collection. The computed reliabilities of all selected measures revealed adequate Cronbach's alpha coefficients (greater than .80). As a result, the measures were considered suitable for inclusion in the questionnaire for the main data collection.

## 2. Data Collection, Sample, and Procedure

The sample for the study was drawn from the general population of U.S. consumers aged 18-26. Using an online survey method, data were collected from 220 consumers through the Amazon Mechanical Turk online survey platform. After excluding incomplete responses, a total of 210 data were used for the main analyses. Each participant received \$0.50 as an incentive. After consenting to participate, participants were briefed about the survey. They were then asked to read a scenario about unique types of sustainable packaging and complete a questionnaire. Participants spent approximately 7 minutes completing the questionnaire.

Among all participants, the majority were women (77.8 %) with ages ranging from 18 to 26 ( $m = 20.1$ ). Many participants identified as Caucasian (41.6 %). A majority (71.2 %) indicated that they visit a store that offers packaging/containers 1-4 times a week. A significant portion (88.3 %) reported that they engage in environmental protection behaviors in their daily lives, such as recycling.

## IV. Results

### 1. Measurement Model

The data analysis was conducted using AMOS 26.0 and SPSS 26.0. The results of confirmatory factor analysis (CFA) demonstrated that the measurements exhibited acceptable construct validity, with all item factor loadings exceeding .50 (Kim, 2007). Convergent validity, which assesses the extent to which multi-

ple measures of the same theoretical constructs are consistent (Byrne, 1998), was evaluated using the following criteria: (1) all factor loadings are significant ( $p < .001$ ), (2) the composite reliability for each construct exceeds .70, and (3) the average variance extracted (AVE) for each construct meets the recommended benchmark of .50 (Kim, 2007). All factor loadings were statistically significant ( $p < .001$ ), and the composite reliabilities exceeded .88, with AVE values all exceeding .65. To establish discriminant validity, it is required that the squared correlations between constructs be less than the AVE of each construct (Hair et al., 1998). In all cases, the square of the correlation between constructs was not greater than the AVE of the constructs, indicating that the constructs within each pair were different from each other (Table 3). The Cronbach's alpha coefficients were higher than .89, indicating acceptable reliability for all measures. See <Table 2> for the measurement model evaluation. The results of CFA also revealed the goodness of fit for the measurement model ( $\chi^2/df = 2.66$ , CFI = .90, NNFI = .90, IFI = .91, and RMSEA = .08).

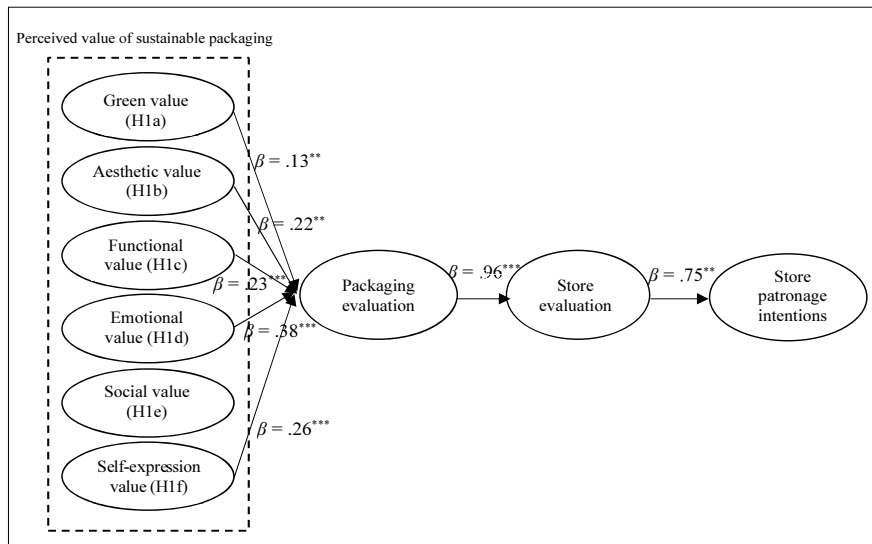
### 2. Structural Model and Hypotheses Testing

A structural analysis was conducted using the maximum likelihood estimation method. The measures of goodness of fit for the structural model were satisfactory ( $\chi^2/df = 2.64$ , CFI = .90, NNFI = .90, IFI = .90, and RMSEA = .08). Among the six types of perceived value of sustainable packaging, the emotional value (H1d,  $\beta = .38$ ,  $t = 5.24$ ,  $p < .001$ ), self-expression value (H1f,  $\beta = .26$ ,  $t = 4.06$ ,  $p < .001$ ), functional value (H1c,  $\beta = .23$ ,  $t = 4.74$ ,  $p < .001$ ), aesthetic value (H1b,  $\beta = .22$ ,  $t = 2.65$ ,  $p < .01$ ), and green value (H1a,  $\beta = .13$ ,  $t = 2.90$ ,  $p < .01$ ) had positive and significant effects on packaging evaluation. Social value had no significant impact. Packaging evaluation had a positive and significant impact on store evaluation ( $\beta = .96$ ,  $t = 11.86$ ,  $p < .001$ ), supporting H2. Store evaluation positively influenced store patronage intentions ( $\beta = .75$ ,  $t = 11.34$ ,  $p < .001$ ), supporting H3 (Fig. 2).

**Table 3. Correlation matrix**

|                                      | 1          | 2          | 3          | 4          | 5          | 6          | 7          | 8          | 9          |
|--------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Perceived green value (#1)           | <b>.81</b> |            |            |            |            |            |            |            |            |
| Perceived aesthetic value (#2)       | .69        | <b>.80</b> |            |            |            |            |            |            |            |
| Perceived functional value (#3)      | .62        | .75        | <b>.79</b> |            |            |            |            |            |            |
| Perceived emotional value (#4)       | .65        | .73        | .71        | <b>.82</b> |            |            |            |            |            |
| Perceived social value (#5)          | .54        | .71        | .64        | .71        | <b>.78</b> |            |            |            |            |
| Perceived self-expression value (#6) | .67        | .78        | .69        | .79        | .74        | <b>.79</b> |            |            |            |
| Packaging evaluation (#7)            | .71        | .79        | .77        | .78        | .74        | .78        | <b>.76</b> |            |            |
| Store evaluation (#8)                | .61        | .72        | .69        | .76        | .68        | .77        | .74        | <b>.72</b> |            |
| Store patronage intentions (#9)      | .52        | .62        | .60        | .63        | .59        | .66        | .69        | .70        | <b>.65</b> |

Note: The average variance extracted (AVE) of each construct is shown on the diagonal. The square of the correlation between constructs is shown bottom of diagonal.



**Fig. 2. Structural model.**

### 3. Moderating Tests: Consumer Innovativeness and Environmental Concern

To test the moderating effects of consumer innovativeness and environmental concern, a multi-group SEM analysis was conducted. Participants were median split into two groups based on their ratings of each moderating variable (Kim, 2007): high ( $N = 100$ ) vs. low ( $N = 110$ ) consumer innovativeness group; high ( $N = 104$ ) vs. low ( $N = 106$ ) environmental con-

cern group. Next, we tested metric invariance for a multi-group comparison.

#### 1) Test for Metric Invariance

To assess the moderating effect, a test for metric invariance was conducted. If metric invariance is established, it means that participants across groups (low vs. high innovativeness; low vs. high environmental concern) understood and responded to the measures in an equivalent manner (Steenkamp & Baumgartner,

1998). The test for model equivalency involved two key assessments: 1) the invariance of the factor pattern and 2) the equality of factor loadings (Childers et al., 2001). To test the invariance of the factor pattern, a confirmatory factor analysis was conducted. The results indicated a reasonably good fit for the stacked model ( $\chi^2/df = 2.73$ , CFI = .90, RMSEA = .08). This indicated that the factor pattern of the model was invariant across the high- and low- innovativeness groups. Next, to test the equality of factor loadings, a chi-square difference test was performed by comparing the baseline model (non-restricted model), where free parameters among factors were allowed, with the full metric invariance model (a model with structural invariance assuming the same path coefficients between groups) that contained fixed parameters. The full metric invariance model was supported as the chi-square difference between the baseline model and the full metric invariance model was not significant. The same procedure for the test of metric invariance was conducted for environmental concern. The results of the invariance of the factor pattern test showed a reasonably good fit for the stacked model ( $\chi^2/df = 2.71$ , CFI = .90, RMSEA = .08). Thus, the factor pattern of the model was confirmed as invariant between the high- and low- environmental concern groups. The test for equality of factor loadings also revealed that the chi-square difference between the baseline model

and the full metric invariance model was not significant. Therefore, the full metric model was supported.

## 2) Group Difference Test

To assess whether there are statistically significant differences in the parameter estimate between the high- and low- consumer innovativeness (also, environmental concern) groups, a chi-square difference test was conducted. For group comparisons, each path for the moderating test was fixed to be equal between groups in the restricted model, while the baseline (non-restricted) model was estimated by allowing all model parameters to be free estimates. A chi-square value was compared between the baseline and the restricted model. The results revealed a significant chi-square difference in several paths, indicating that there is a statistically significant difference between the groups (Table 4, Table 5). In the case of consumer innovativeness, the path from perceived functional value  $\rightarrow$  packaging evaluation exhibited a significant difference between the high- and low-innovativeness groups ( $\chi^2 d(1) = 7.47, p < .05$ ). This path was found to be significant only for the high-innovativeness group ( $\beta = .35, p < .001$ ) and not for the low-innovativeness group ( $p > .05$ ). Likewise, the path from store evaluation  $\rightarrow$  store patronage intentions was significantly different between the high-innovativeness group ( $\beta = .86, p < .001$ ) and the low-innovativeness group ( $\beta =$

**Table 4. Significant paths in the moderating test: Consumer innovativeness**

| Paths   | Std. estimate   |                 | Chi-square difference         |
|---|-----------------|-----------------|-------------------------------|
|   | Low             | High            |                               |
| H4a. Perceived functional value<br>$\rightarrow$ packaging evaluation | Not Significant | $B = .35^{***}$ | $\chi^2 d(1) = 7.47, p < .05$ |
| H4c. Store evaluation<br>$\rightarrow$ Store patronage intentions     | $B = .80^{***}$ | $B = .86^{***}$ | $\chi^2 d(1) = 9.25, p < .01$ |

\*\*\* $p < .001$

**Table 5. Significant paths in the moderating test: Environmental concern**

| Paths   | Std. estimate   |                 | Chi-square difference         |
|---|-----------------|-----------------|-------------------------------|
|   | Low             | High            |                               |
| H5c. Store evaluation<br>$\rightarrow$ Store patronage intentions | $B = .68^{***}$ | $B = .80^{***}$ | $\chi^2 d(1) = 3.86, p < .05$ |

\*\*\* $p < .001$



.80,  $p < .001$ ) ( $\chi^2 d(1) = 9.25, p < .01$ ). Therefore, H4a was partially supported, while H4c was fully supported. As for environmental concern, only the path from store evaluation  $\rightarrow$  store patronage intentions exhibited a significant difference between the high-environmental concern group ( $\beta = .80, p < .001$ ) and the low-environmental concern group ( $\beta = .68, p < .001$ ) ( $\chi^2 d(1) = 3.86, p < .05$ ). Therefore, H5c was supported. No significant differences were observed between groups in other paths for both moderating variables. Consequently, H4b, H5a, and H5b were rejected.

## V. Discussion and Implications

By employing the S-O-R model as a conceptual framework, the results of this study revealed that the unique type of sustainable packaging holds a crucial role as a stimulus in the fashion retail store, influencing perceptions of values from the packaging, packaging evaluation, store evaluation, and store patronage intentions among young consumers. Furthermore, the results indicated that the level of consumers' innovativeness and environmental concern moderates certain relationships between these variables. Our findings provide both theoretical and practical implications applicable to sustainable retailing research and the fashion retail industry. The following section delves into the findings and implications in more detail.

### 1. Summary of Findings

The findings from this study suggest that unique types of sustainable packaging can effectively elicit positive responses from consumers. Among the six perceived values derived from unique types of sustainable packaging, the emotional, self-expression, functional, aesthetic, and green value had positive influences on packaging evaluation. This finding can be interpreted that, in addition to the fundamental 'green' value that is inherently associated with sustainable packaging, other 'non-sustainability-related' values, such as emotional, aesthetic, and functional aspects,

also play a pivotal role in shaping consumers' positive evaluation of unique types of sustainable packaging. As for the emotional value, consumers might experience positive emotions like joy or pleasure from a unique type of sustainable packaging. In terms of the aesthetic and functional value, consumers may find appreciation in both the aesthetic qualities (e.g., aesthetically pleasing design) and the functional or practical features (e.g., ease of use, usefulness) of the unique type of sustainable packaging. This result aligns with previous research findings (e.g., Magnier & Cri , 2015) that consumers' perceptions of aesthetic, emotional, functional, and green values derived from sustainable packaging significantly influence positive consumers responses. Concerning self-expression value, our result implies that unique types of sustainable packaging for fashion products may function as a symbolic and communicative medium. Carrying or using such unique sustainable packaging allows individuals to express their green self-identity or self-concept, unique style preference, or personal taste (e.g., uniqueness-seeking tendency). For instance, repurposing a 'knot wrap' as a scarf after its use for packaging can express a consumer's green self-identity and fashion sense. Likewise, giving a gift in packaging made of mushroom allows an individual to express their care for the environment. This aligns with Sung et al.'s (2015) idea that consumers aim to uphold their self-image by purchasing and using products that convey their self-identity. While all the perceived values of unique sustainable packaging (i.e., emotional, self-expression, functional, aesthetic, and green) emerged as significant predictors of positive packaging evaluation, the social value did not. It is assumed that sustainable packaging does not play such a powerful role in increasing one's status, social image, or visibility in social contexts. This finding contradicts Magnier and Cri 's (2015) notion that certain consumers conspicuously purchase and use sustainable products to reinforce their self-concept, particularly when sustainability becomes a social norm. It is possible that social value might be derived from more visible, core symbolic markers like fashion 'products' rather than

packaging.

Our results also revealed that young consumers who positively evaluate unique types of sustainable packaging, both cognitively and affectively, tend to extend this positive evaluation to the store providing such packaging. In other words, when young consumers hold a favorable and positive opinion about the unique type of sustainable packaging (cognitive evaluation) and assess the packaging as appealing, interesting, or sensational (affective evaluation), they are likely to evaluate the fashion retail store that offers such packaging in a similar positive manner. Subsequently, our findings showed that this positive evaluation of the store significantly influences consumers' store patronage intentions, such as product purchases, store visits, and word-of-mouth intentions. This finding is consistent with prior research (e.g., Jeong et al., 2014), which indicated that consumers' perception of a retailer's green practices, such as offering sustainable packaging, affects their perception of the store, in turn, influences their behavioral intentions toward the store.

In terms of the moderating effect of consumer innovativeness, we observed significant differences between the high- and low- innovativeness groups in two paths: the effect of perceived 'functional' value on packaging evaluation and the effect of store evaluation on store patronage intentions. For the first path (perceived functional value → packaging evaluation), the result can be interpreted to mean that if individuals with high-innovativeness perceive functional value from the unique sustainable packaging, they are more likely to evaluate the packaging positively compared to those with low-innovativeness. Highly innovative consumers may actively seek and value the innovative functions of unique sustainable packaging. This includes appreciating the versatility or multi-functional usage, as observed in the 'knot-wrap'; and recognizing the transformability (i.e., transformable shapes for various product sizes) as well as innovative disposal methods (i.e., water-soluble characteristics), as seen in 'seaweed-based' packaging. Consequently, highly innovative consumers may evaluate the store that offers such packaging more positively. For the second sig-

nificant path (store evaluation → store patronage intentions), our findings suggest that highly innovative consumers, when expressing a favorable opinion of and preference for the store providing unique sustainable packaging, are more inclined to exhibit patronage intentions toward the store (i.e., having more intentions to visit the store and spread the word) compared to consumers with low innovativeness. As for the moderating effect of environmental concern, we found that the impact of store evaluation on store patronage intentions significantly differed between the high- and low- environmental concern groups. Consumers with higher environmental concern are more inclined to evaluate and respond positively to a store providing unique sustainable packaging than those with lower environmental concern. Consumers with higher environmental concern may appreciate and value the sustainable retail practices of such stores in caring for the environment, having a greater intention to visit and make purchases from them.

Despite our initial hypotheses, no other paths exhibited significant differences between the high- and low-level groups for both moderating variables. It seems that the unique type of sustainable packaging has broad appeal to a wide range of consumers and may be perceived as eco-friendly and distinctive by most consumers, regardless of their level of innovativeness or environmental concern. Regarding several insignificant paths observed in the moderating test for consumer innovativeness, we posit that these results stem from the 'uniqueness' or 'distinctiveness' aspect of sustainable packaging, which is the focus of our study. Unlike general or conventional sustainable packaging, sustainable packaging that incorporates the 'uniqueness' aspect may have broader consumer appeal. For example, it is often perceived as aesthetically pleasing and elicits pleasurable emotions, irrespective of consumer's level of innovativeness. In terms of the insignificant moderating effects of environmental concern in most of the paths, our finding was similar to that of Magnier and Schoormans's (2015) study, where the level of consumer environmental concern did not significantly influence their

sensitivity to aspects of sustainable packaging (e.g., whether it is 'ecological-looking' or not). Most consumers, regardless of their level of environmental concern, may perceive diverse values from the unique type of sustainable packaging. This is because it represents an advanced level of invention or green innovation where the brand's or retailer's efforts are reflected in enhancing its sustainability in a unique way, through its design, material, and function.

## 2. Theoretical Implications

First, based on the S-O-R model framework, we investigated a unique type of sustainable packaging as a store stimulus (S) influencing consumers' organisms (O) (i.e., an evaluation of the packaging and the store) and responses (R) (i.e., store patronage intentions). This study adds to the existing body of literature on sustainable retailing as well as on in-store stimuli in the retail context. Like other store stimuli such as products or store atmosphere, which have been extensively investigated by researchers, we found that unique sustainable packaging also becomes an important in-store stimulus, eliciting customers' positive reactions in the fashion retail store context. Moreover, while prior research on sustainable retailing primarily examines product-related sustainability (e.g., sales of sustainable products), we included sustainable packaging and confirmed its significance as one of the key sustainable retail practices.

Second, to the best of our knowledge, this study is the first to explore sustainable packaging where a 'uniqueness' or 'distinctiveness' aspect is incorporated, specifically in the field of fashion. Although scholars have concentrated on a general/traditional form of sustainable packaging across industry sectors (e.g., the food industry), our study highlighted a significance of the uniqueness or distinctiveness aspect to be embedded in sustainable packaging, especially for fashion products. This study also advances the existing literature on the values or attributes of sustainable packaging by identifying diverse, multi-faceted value aspects (i.e., green, aesthetic, functional, emotional,

self-expression) that can be derived from the unique types of sustainable packaging.

Third, as reviewed earlier, most existing studies on sustainable packaging in fashion academia were conducted using qualitative methods (e.g., interviews, content analysis). Methodologically, our study is the first to assess the effectiveness of unique types of sustainable packaging in influencing consumer responses through a survey method and quantitative analysis.

## 3. Practical Implications

For practical and managerial implications, first, our findings provide valuable insights to fashion brands and retailers on the pivotal role of a unique type of sustainable packaging in the context of fashion retail. Our findings encourage fashion brands to develop and adopt such packaging for their retail stores, as we found it to be an effective store stimulus influencing positive perceptions, evaluations, and behavioral intentions related to both the packaging and the store, among young consumers. Consumers perceive all the hedonic (e.g., aesthetic, emotional), symbolic (e.g., self-expression), and utilitarian (e.g., functional) values, along with the green value, from the unique type of sustainable packaging for fashion products. Unlike general types of sustainable packaging that typically emphasize green value only (e.g., compostable paper coffee cups), our findings suggest that multiple dimensions of values should be comprehensively considered in the design and development of unique sustainable packaging especially for 'fashion' products.

Second, fashion marketers should not only seek sustainable/green solutions (e.g., use of recycled materials) but also incorporate packaging that embeds innovative, creative, distinctive, and unique ideas. According to Kieselbach (2019), most recycling technologies currently require a significant amount of energy, but the quality of the recycled material is lower than that of pure material. In other words, sustainable packaging solely relied on recycled materials often has a less-than-desirable impact on the environment.

While the most common type of sustainable packaging from fashion brands is the use of sustainable materials (e.g., H&M's shoe box made from 100% recycled paperboard), our study emphasizes the importance of developing sustainable packaging in a more innovative and durable manner. For instance, LUSH's 'knot-wrap,' which is versatile, multi-purposeful, and re-usable, represents a higher-level, creative invention for sustainability compared to packaging focused solely on recycling. This kind of sustainable packaging enhances uniqueness by incorporating multifaceted values like aesthetics and functionality. Our study emphasizes that 'uniqueness' can be embedded in sustainable packaging in various forms- through appearance (i.e., creative design), materials (i.e., unique eco-friendly materials), and/or functionality (i.e., durability, innovative disposal methods). As far as sustainable materials, fashion marketers can explore the use of various novel materials for sustainable packaging, such as seaweed, cassava starch (derived from a root vegetable), and mushroom. These materials are not only eco-friendly but also provide unique sensory experiences to consumers.

#### 4. Limitations and Future Research

In this study, we investigated consumer responses to unique types of sustainable packaging among young consumers, particularly Gen-Z (aged 18-26). However, considering that other age groups (e.g., mature consumers) also express concern for the environment and often appreciate the unique aspects of things, future research could expand the pool of consumer participants. It is possible that some generations of consumers will respond more positively to the unique type of sustainable packaging than others. Second, while this study primarily focused on the unique type of sustainable packaging in the context of a fashion retail store, future research could explore its applicability in other industry categories, such as interior/furniture stores, to assess potential differences in consumer reactions or expectations for packaging across various sectors. Third, in a future study, the effectiveness of general or

conventional types of sustainable packaging (e.g., 100% recycled boxes) could be compared to unique types (e.g., 'knot-wrap'). If there are significant differences in consumer responses, marketers can prioritize the more effective type of sustainable packaging. Fourth, future researchers can test the effects of additional moderating variables, such as consumers' desire for uniqueness, utilitarian or hedonic shopping orientations, or environmental knowledge, within our proposed model.

---

#### 1. Acknowledgement

Not applicable

#### 2. Ethics and consent

Not applicable

#### 3. Availability of data and materials

The datasets collected and analyzed in this study are not available to the public due to another ongoing study that will be generated from the current datasets.

#### 4. Conflicting interests

Not applicable

#### 5. Funding

Not applicable

#### 6. Authors' contributions

JYL was mainly responsible for conceptualization, literature review, method and survey design, data analysis, interpretation, and manuscript writing; JYMK was mainly responsible for data analysis and manuscript writing; KHP was mainly responsible for conceptualization and data collection. All authors have read and approved the final manuscript.

#### 7. Authors' information

##### Ji Young Lee

Fashion and Textile Technology Department, SUNY Buffalo State University, Assistant Professor

##### Ju-Young M. Kang

Department of Family and Consumer Sciences, University of Hawai'i at Mānoa, Associate Professor

##### Ki Ho Park

Art Department, SUNY JCC, Instructor; and American Might Apparel Company, President

---

## References

- Ahmad, A., & Thyagaraj, K. S. (2015). Consumer's intention to purchase green brands: The roles of environmental concern, environmental knowledge and self expressive benefits. *Current World Environment*, *10*(3), 879–889. <http://dx.doi.org/10.12944/CWE.10.3.18>
- Bagozzi, R. P. (1986). *Principles of marketing management*. Science Research Associates.
- Bettman, J. R. (1979). *An information processing theory of consumer choice*. Addison-Wesley Publishing Company.
- Bhandari, N., Garza-Reyes, J. A., Rocha-Lona, L., Kumar, A., Naz, F., & Joshi, R. (2022). Barriers to sustainable sourcing in the apparel and fashion luxury industry. *Sustainable Production and Consumption*, *31*, 220–235. <https://doi.org/10.1016/j.spc.2022.02.007>
- Bickart, B. A., & Ruth, J. A. (2012). Green eco-seals and advertising persuasion. *Journal of Advertising*, *41*(4), 51–67. <https://doi.org/10.1080/00913367.2012.10672457>
- Byrne, B. (1998). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS*. Lawrence Erlbaum Associates.
- Celhay, F., & Trinquécoste, J. F. (2015). Package graphic design: Investigating the variables that moderate consumer response to atypical designs. *The Journal of Product Innovation Management*, *32*(6), 1014–1032. <https://doi.org/10.1111/jpim.12212>
- Chen, Y.-S., & Chang, C.-H. (2012). Enhance green purchase intentions: The roles of green perceived value, green perceived risk, and green trust. *Management Decision*, *50*(3), 502–520. <https://doi.org/10.1108/00251741211216250>
- Childers, T. L., Carr, C. L., Peck, J., & Carson, S. (2001). Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of Retailing*, *77*(4), 511–535. [https://doi.org/10.1016/S0022-4359\(01\)00056-2](https://doi.org/10.1016/S0022-4359(01)00056-2)
- Chitturi, R., Londoño, J. C., & Henriquez, M. C. (2022). Visual design elements of product packaging: Implications for consumers' emotions, perceptions of quality, and price. *Color Research & Application*, *47*(3), 729–744. <https://doi.org/10.1002/col.22761>
- Confente, I., Scarpi, D., & Russo, I. (2020). Marketing a new generation of bio-plastics products for a circular economy: The role of green self-identity, self-congruity, and perceived value. *Journal of Business Research*, *112*, 431–439. <https://doi.org/10.1016/j.jbusres.2019.10.030>
- Diamantopoulos, A., Schlegelmilch, B. B., Sinkovics, R. R., & Bohlen, G. M. (2003). Can socio-demographics still play a role in profiling green consumers? A review of the evidence and an empirical investigation. *Journal of Business Research*, *56*(6), 465–480. [https://doi.org/10.1016/S0148-2963\(01\)00241-7](https://doi.org/10.1016/S0148-2963(01)00241-7)
- Dinh, M. T. T., Su, D. N., Tran, K. T., Luu, T. T., Duong, T. H., & Johnson, L. W. (2022). Eco-designed retail packaging: The empirical conceptualization and measurement. *Journal of Cleaner Production*, *379*, 134717. <https://doi.org/10.1016/j.jclepro.2022.134717>
- Donovan, R. J., & Rossiter, J. R. (1982). Store atmosphere: An environmental psychology approach. *Journal of Retailing*, *58*(1), 34–47.
- Dopico-Parada, A., López-Miguens, M. J., & Álvarez-González, P. (2021). Building value with packaging: Development and validation of a measurement scale. *Journal of Retailing and Consumer Services*, *63*, 102685. <https://doi.org/10.1016/j.jrctconser.2021.102685>
- Eroglu, S. A., & Machleit, K. A. (1990). An empirical study of retail crowding: Antecedents and consequences. *Journal of Retailing*, *66*(2), 201–221.
- Eroglu, S. A., Machleit, K. A., & Davis, L. M. (2003). Empirical testing of a model of online store atmospherics and shopper responses. *Psychology & Marketing*, *20*(2), 139–150. <https://doi.org/10.1002/mar.10064>
- Félonneau, M.-L., & Becker, M. (2008). Pro-environmental attitudes and behaviors: Revealing perceived social desirability. *Revue Internationale de Psychologie Sociale*, *21*(4), 25–53.
- Friedrich, D. (2021). What makes bioplastics innovative for fashion retailers? An in-depth analysis according to the Triple Bottom Line Principle. *Journal of Cleaner Production*, *316*, 128257. <https://doi.org/10.1016/j.jclepro.2021.128257>
- Gbadamosi, A. (2016). *Handbook of research on consumerism and buying behavior in developing nations*. IGI Global.
- Glavič, P., & Lukman, R. (2007). Review of sustainability terms and their definitions. *Journal of Cleaner Production*, *15*(18), 1875–1885. <https://doi.org/10.1016/j.jclepro.2006.12.006>
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis* (5th ed.). Prentice Hall.
- Hao, Y., Liu, H., Chen, H., Sha, Y., Ji, H., & Fan, J. (2019). What affect consumers' willingness to pay for green packaging? Evidence from China. *Resources, Conservation and Recycling*, *141*, 21–29. <https://doi.org/10.1016/j.resconrec.2018.10.001>
- Hapsari, S. D., & Widodo, A. (2023). The effect of green packaging on green purchase intention through green perceived value at Sumer Indo in Bandung City (Case study on Super Indo consumers in Bandung City). *Jurnal Ilmu Sosial*, *3*(1), 184–190.
- Herbes, C., Beuthner, C., & Ramme, I. (2020). How green is your packaging -A comparative international study of cues consumers use to recognize environmentally friendly pac-

- kaging. *International Journal of Consumer Studies*, 44(3), 258–271. <https://doi.org/10.1111/ijcs.12560>
- Hirschman, E. C. (1980). Innovativeness, novelty seeking, and consumer creativity. *Journal of Consumer Research*, 7(3), 283–295. <https://doi.org/10.1086/208816>
- Hwang, J., & Kim, S. (2022). The effects of packaging design of private brands on consumers' responses. *Psychology & Marketing*, 39(4), 777–796. <https://doi.org/10.1002/mar.21620>
- Islam, M. M., Perry, P., & Gill, S. (2021). Mapping environmentally sustainable practices in textiles, apparel and fashion industries: A systematic literature review. *Journal of Fashion Marketing and Management: An International Journal*, 25(2), 331–353. <https://doi.org/10.1108/JFMM-07-2020-0130>
- Jara, M., Cliquet, G., & Robert, I. (2017). A comparison between economic and organic store brands: Packaging as a key factor of store brand equity. *International Journal of Retail & Distribution Management*, 45(12), 1298–1316. <https://doi.org/10.1108/IJRDM-07-2016-0107>
- Jeong, E., Jang, S. S., Day, J., & Ha, S. (2014). The impact of eco-friendly practices on green image and customer attitudes: An investigation in a café setting. *International Journal of Hospitality Management*, 41, 10–20. <https://doi.org/10.1016/j.ijhm.2014.03.002>
- Jestratijevec, I., Maystorovich, I., & Vrabčič-Brodnjak, U. (2022). The 7 Rs sustainable packaging framework: Systematic review of sustainable packaging solutions in the apparel and footwear industry. *Sustainable Production and Consumption*, 30, 331–340. <https://doi.org/10.1016/j.spc.2021.12.013>
- Jestratijevec, I., & Vrabčič-Brodnjak, U. (2022). Sustainable and innovative packaging solutions in the fashion industry: Global report. *Sustainability*, 14(20), 13476. <https://doi.org/10.3390/su142013476>
- Johnson, C. M., Tariq, A., & Baker, T. L. (2018). From Gucci to green bags: Conspicuous consumption as a signal for prosocial behavior. *Journal of Marketing Theory and Practice*, 26(4), 339–356. <https://doi.org/10.1080/10696679.2018.1487769>
- Kapoor, S., & Kumar, N. (2019). Does packaging influence purchase decisions of food products? A study of young consumers of India. *Academy of Marketing Studies Journal*, 23(3), 1–16
- Kennedy, A.-M., Kapitan, S., & Soo, M. (2016). Eco-warriors: Shifting sustainable retail strategy via authentic retail brand image. *Australasian Marketing Journal*, 24(2), 125–134. <https://doi.org/10.1016/j.ausmj.2016.03.001>
- Khalid, H. B., & Khan, M. I. (2022). The role of self-expressive brands and brand tribalism in advocating apparel brands. *Journal of Positive School Psychology*, 6(11), 1148–1158.
- Kieselbach, S. (2019, October 31). *Top 9 Sustainable packaging trends*. Sphera. <https://sphera.com/blog/top-9-sustainable-packaging-trends/>
- Kim, G.-S. (2007). *AMOS 7.0 구조방정식모형 분석* [Analysis structural equation modeling]. Hannarae.
- Kim, M. J., & Hall, C. M. (2020). Can sustainable restaurant practices enhance customer loyalty? The roles of value theory and environmental concerns. *Journal of Hospitality and Tourism Management*, 43, 127–138. <https://doi.org/10.1016/j.jhtm.2020.03.004>
- Kim, Y., & Choi, S. M. (2005). Antecedents of green purchase behavior: An examination of collectivism, environmental concern, and PCE. *Advances in Consumer Research*, 32(1), 592599.
- Koch, J., Frommeyer, B., & Schewe, G. (2022). Managing the transition to eco-friendly packaging -An investigation of consumers' motives in online retail. *Journal of Cleaner Production*, 351, 131504. <https://doi.org/10.1016/j.jclepro.2022.131504>
- Koenig-Lewis, N., Palmer, A., Dermody, J., & Urbye, A. (2014). Consumers' evaluations of ecological packaging -Rational and emotional approaches. *Journal of Environmental Psychology*, 37, 94–105. <https://doi.org/10.1016/j.jenvp.2013.11.009>
- Kumar, A., & Kim, Y.-K. (2014). The store-as-a-brand strategy: The effect of store environment on customer responses. *Journal of Retailing and Consumer Services*, 21(5), 685–695. <https://doi.org/10.1016/j.jretconser.2014.04.008>
- Kumar, M., & Noble, C. H. (2016). Beyond form and function: Why do consumers value product design? *Journal of Business Research*, 69(2), 613–620. <https://doi.org/10.1016/j.jbusres.2015.05.017>
- Kuswati, R., & Irmawati. (2018). *Consumer innovativeness: Literature review and measurement scales* [Paper presentation]. 2018 International Conference on Economics, Business and Economic Education, Semarang City, Indonesia.
- Lavorata, L. (2014). Influence of retailers' commitment to sustainable development on store image, consumer loyalty and consumer boycotts: Proposal for a model using the theory of planned behavior. *Journal of Retailing and Consumer Services*, 21(6), 1021–1027. <https://doi.org/10.1016/j.jretconser.2014.01.003>
- Law, D., Wong, C., & Yip, J. (2012). How does visual merchandising affect consumer affective response? An intimate apparel experience. *European Journal of Marketing*, 46(1/2), 112–133. <https://doi.org/10.1108/03090561211189266>
- Lee, N., Choi, Y. J., Youn, C., & Lee, Y. (2012). Does green fashion retailing make consumers more eco-friendly? The influence of green fashion products and campaigns on green consciousness and behavior. *Clothing and Textile Research*

- Journal*, 30(1), 67–82. <https://doi.org/10.1177/0887302X12446065>
- Lee, Y. K., & DeLong, M. (2016). Re-birth design analysis for developing sustainable fashion products. *Journal of the Korean Society of Clothing and Textiles*, 40(3), 566–573. <https://doi.org/10.5850/JKST.2016.40.3.566>
- Li, L., Wang, Z., Li, Y., & Liao, A. (2021). Consumer innovativeness and organic food adoption: The mediation effects of consumer knowledge and attitudes. *Sustainable Production and Consumption*, 28, 1465–1474. <https://doi.org/10.1016/j.spc.2021.08.022>
- Magnier, L., & Crié, D. (2015). Communicating packaging eco-friendliness: An exploration of consumers' perceptions of eco-designed packaging. *International Journal of Retail & Distribution Management*, 43(4/5), 350–366. <https://doi.org/10.1108/IJRDM-04-2014-0048>
- Magnier, L., & Schoormans, J. (2015). Consumer reactions to sustainable packaging: The interplay of visual appearance, verbal claim and environmental concern. *Journal of Environmental Psychology*, 44, 53–62. <https://doi.org/10.1016/j.jenvp.2015.09.005>
- Magnier, L., Schoormans, J., & Mugge, R. (2016). Judging a product by its cover: Packaging sustainability and perceptions of quality in food products. *Food Quality and Preference*, 53, 132–142. <https://doi.org/10.1016/j.foodqual.2016.06.006>
- Manning, K. C., Bearden, W. O., & Madden, T. J. (1995). Consumer innovativeness and the adoption process. *Journal of Consumer Psychology*, 4(4), 329–45. [https://doi.org/10.1207/s15327663jcp0404\\_02](https://doi.org/10.1207/s15327663jcp0404_02)
- Marshall, D. (2021, May 26). *How and why you should make the switch to sustainable retail packaging*. Immago. <https://immago.com/sustainable-retail-packaging/>
- Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. The MIT Press.
- Nekmahmud, M., & Fekete-Farkas, M. (2020). Why not green marketing? Determinates of consumers' intention to green purchase decision in a new developing nation. *Sustainability*, 12(19), 7880. <https://doi.org/10.3390/su12197880>
- Nguyen, A. T., Parker, L., Brennan, L., & Lockrey, S. (2020). A consumer definition of ecofriendly packaging. *Journal of Cleaner Production*, 252, 119792. <https://doi.org/10.1016/j.jclepro.2019.119792>
- Nicasio, F. (2022). *5 Reasons to use eco-friendly retail packaging and how to do it*. Noissue. <https://noissue.co/blog/5-reasons-to-implement-eco-friendly-retailpackaging-and-how-to-do-it/>
- Niehm, L. S., Fiore, A. M., Jeong, M., & Kim, H.-J. (2007). 'Pop-up retail' acceptability as an innovative business strategy and enhancer of the consumer shopping experience. *Journal of Shopping Center Research*, 13(2), 1–30.
- Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., & Gwilt, A. (2020). The environmental price of fast fashion. *Nature Reviews Earth and Environment*, 1(4), 189–200. <https://doi.org/10.1038/s43017-020-0039-9>
- Nordin, N., & Selke, S. (2010). Social aspects of sustainable packaging. *Packaging Technology and Science*, 23(6), 317–326. <https://doi.org/10.1002/pts.899>
- Orth, U. R., Campana, D., & Malkewitz, K. (2010). Formation of consumer price expectation based on package design: Attractive and quality routes. *The Journal of Marketing Theory and Practice*, 18(1), 23–40. <https://doi.org/10.2753/MTP1069-6679180102>
- Persaud, A., & Schillo, S. R. (2017). Purchasing organic products: Role of social context and consumer innovativeness. *Marketing Intelligence & Planning*, 35(1), 130–146. <https://doi.org/10.1108/MIP-01-2016-0011>
- Petljak, K., Naletina, D., & Bilogrević, K. (2019). Considering ecologically sustainable packaging during decision-making while buying food products. *Економика пољопривреде*, 66(1), 107–126.
- Petro, G. (2020, January 31). *Sustainable retail: How Gen Z is leading the pack*. Forbes. <https://www.forbes.com/sites/greppetro/2020/01/31/sustainable-retail-how-gen-z-is-leading-the-pack/?sh=259fd61f2ca3>
- Sadachar, A., Konika, K., & Chakraborty, S. (2022). The role of sustainable visual merchandising practices in predicting retail store loyalty. *International Journal of Fashion Design, Technology and Education*, 15(3), 257–266. <https://doi.org/10.1080/17543266.2021.2014985>
- Saint-Denis, C. Y. (2018). The foundations of consumer evaluation. In C. Y. Saint-Denis (Ed.), *Consumer and sensory evaluation techniques: How to sense successful products* (pp. 63–122). John Wiley & Sons. <https://doi.org/10.1002/9781119405559.ch3>
- Shasha, Z., & Ibrahim, R. (2022, August 24–25). *Green aesthetic approach for upcycling packaging products* [Paper presentation]. The 2nd International Conference on Design Industries & Creative Culture, Kedah, Malaysia.
- Sherman, E., Mathur, A., & Smith, R. B. (1997). Store environment and consumer purchase behavior: Mediating role of consumer emotions. *Psychology & Marketing*, 14(4), 361–378. [https://doi.org/10.1002/\(SICI\)1520-6793\(199707\)14:4<361::AID-MAR4>3.0.CO;2-7](https://doi.org/10.1002/(SICI)1520-6793(199707)14:4<361::AID-MAR4>3.0.CO;2-7)
- Smith, K. (n.d.). *Packaging design and the emotional purchase*. Smashbrand. <https://www.smashbrand.com/articles/packaging-design-and-the-emotional-purchase/>
- Steenis, N. D. (2019). *Consumer response to sustainable packaging design* [Unpublished doctoral dissertation]. Wageningen University and Research.

- Steenis, N. D., van Herpen, E., van der Lans, I. A., Ligthart, T. N., & van Trijp, H. C. M. (2017). Consumer response to packaging design: The role of packaging materials and graphics in sustainability perceptions and product evaluations. *Journal of Cleaner Production*, 162, 286–298. <https://doi.org/10.1016/j.jclepro.2017.06.036>
- Steenkamp, J.-B. E. M., & Baumgartner, H. B. (1998). Assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research*, 25(1), 78–90. <https://doi.org/10.1086/209528>
- Su, D. N., Duong, T. H., Dinh, M. T. T., Nguyen-Phuoc, D. Q., & Johnson, L. W. (2021). Behavior towards shopping at retailers practicing sustainable grocery packaging: The influences of intra-personal and retailer-based contextual factors. *Journal of Cleaner Production*, 279, 123683. <https://doi.org/10.1016/j.jclepro.2020.123683>
- Sung, K., Cooper, T., & Kettley, S. (2015, June 8-9). *An exploratory study on the consequences of individual upcycling: Is it worth making people feel attached to their upcycled products?* [Paper presentation]. College of Art, Design and the Built Environment Doctoral Conference 2015, Nottingham Trent University, Nottingham, England.
- Sustainable Packaging Coalition. (2011). *Definition of sustainable packaging*. [https://kidv.nl/media/rapportages/definities\\_n\\_for\\_sustainable\\_packaging.pdf?1.2.1](https://kidv.nl/media/rapportages/definities_n_for_sustainable_packaging.pdf?1.2.1)
- Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing*, 77(2), 203–220. [https://doi.org/10.1016/S0022-4359\(01\)00041-0](https://doi.org/10.1016/S0022-4359(01)00041-0)
- Syaekhoni, M. A., Alfian, G., & Kwon, Y. S. (2017). Customer purchasing behavior analysis as alternatives for supporting in-store green marketing decision-making. *Sustainability*, 9(11), 2008. <https://doi.org/10.3390/su9112008>
- Tang, A. K. Y., Lai, K.-H., & Cheng, T. C. E. (2016). A multi-research-method approach to studying environmental sustainability in retail operations. *International Journal of Production Economics*, 171(3), 394–404. <https://doi.org/10.1016/j.ijpe.2015.09.042>
- Turley, L. W., & Chebat, J.-C. (2002). Linking retail strategy, atmospheric design and shopping behavior. *Journal of Marketing Management*, 18(1-2), 125–144. <https://doi.org/10.1362/0267257022775891>
- Underwood, R. L. (2003). The communicative power of product packaging: Creating brand identity via lived and mediated experience. *Journal of Marketing Theory and Practice*, 11(1), 62–76. <https://doi.org/10.1080/10696679.2003.11501933>
- Venkatraman, M. P. (1991). The impact of innovativeness and innovation type on adoption. *Journal of Retailing*, 67(1), 51–67.
- Vladić, G., Kecman, M., Kašiković, N., Pál, M., & Stančić, M. (2015). Influence of the shape on the consumers perception of the packaging attributes. *Journal of Graphic Engineering & Design*, 6(2), 27–32.
- Wakefield, K. L., & Baker, J. (1998). Excitement at the mall: Determinants and effects on shopping response. *Journal of Retailing*, 74(4), 515–539. [https://doi.org/10.1016/S0022-4359\(99\)80106-7](https://doi.org/10.1016/S0022-4359(99)80106-7)
- Ward, L. M., & Russel, J. A. (1981). The psychological representation of molar physical environments. *Journal of Experimental Psychology*, 110(2), 121–152. <https://doi.org/10.1037/0096-3445.110.2.121>
- Yang, S., Song, Y., & Tong, S. (2017). Sustainable retailing in the fashion industry: A systematic literature review. *Sustainability*, 9(7), 1266. <https://doi.org/10.3390/su9071266>
- Yu, H., & Chun, J. (2023). Exploring sustainable values in up-cycled Korean fashion brands through their corporate activities. *Journal of the Korean Society of Clothing and Textiles*, 47(3), 425–441. <https://doi.org/10.5850/JKSC.2023.47.3.425>
- Yu, S., & Lee, J. (2019). The Effects of consumers' perceived values on intention to purchase upcycled products. *Sustainability*, 11(4), 1034. <https://doi.org/10.3390/su11041034>
- Zhang, F., Sun, S., Liu, C., & Chang, V. (2020). Consumer innovativeness, product innovation and smart toys. *Electronic Commerce Research and Applications*, 41, 100974. <https://doi.org/10.1016/j.elerap.2020.100974>
- Zhang, G., Yue, X., Ye, Y., & Peng, M. Y.-P. (2021). Understanding the impact of the psychological cognitive process on student learning satisfaction: Combination of the social cognitive career theory and SOR model. *Frontiers in Psychology*, 12, 712323. <https://doi.org/10.3389/fpsyg.2021.712323>
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2–22. <https://doi.org/10.2307/1251446>
- Zeng, T., & Durif, F. (2020). The impact of eco-design packaging on food waste avoidance: A conceptual framework. *Journal of Promotion Management*, 26(5), 768–790. <https://doi.org/10.1080/10496491.2020.1729320>