THE ROLE OF SUSTAINABLE PACKAGING AND GREEN DELIVERY IN SHAPING CONSUMERS' WILLINGNESS TO PAY: A COMPARATIVE STUDY OF TÜRKİYE AND KAZAKHSTAN

Tüketicilerin Ödeme İstekliliğini Şekillendirmede Sürdürülebilir Ambalaj ve Çevre Dostu Teslimatın Rolü: Türkiye ve Kazakistan'ın Karşılaştırmalı Çalışması

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Öz

E-ticaretin hızlı büyümesi, ambalaj atıkları ve son kilometre teslimat kaynaklı emisyonlara ilişkin çevresel kaygıları artırmış ve sürdürülebilir lojistik uygulamalarını tüketici karar süreçlerinin merkezine yerleştirmiştir. Bu çalışma, tüketicilerin sürdürülebilir ambalaj ve yeşil teslimat uygulamalarına ilişkin algılarının, çevre dostu e-ticaret teslimatına daha fazla ödeme yapma istekliliklerini nasıl etkilediğini ve bu ilişkilerin Türkiye ile Kazakistan arasında farklılık gösterip göstermediğini incelemektedir. Planlı Davranış Teorisi ile Değer–İnanç–Norm kuramına dayanan araştırma, Türkiye'den 243 ve Kazakistan'dan 251 olmak üzere toplam 494 aktif e-ticaret kullanıcısından elde edilen anket verileriyle yürütülmüştür. Veriler keşfedici faktör analizi, korelasyon analizi ve ülke bazlı lojistik regresyon modelleri ile analiz edilmiştir. Bulgular, sürdürülebilir ambalaj algısının Türkiye'de ödeme istekliliği üzerinde güçlü ve istatistiksel olarak anlamlı bir etki yarattığını; Kazakistan'da ise bu etkinin daha zayıf ve sınırda anlamlı olduğunu göstermektedir. Buna karşılık, yeşil teslimat algısının her iki ülkede de anlamlı bir etkisi bulunmamıştır. Ayrıca ülkeler arasında temel ödeme istekliliği açısından anlamlı bir fark tespit edilmiştir. Sonuçlar, görünür ve sembolik anlam taşıyan sürdürülebilirlik unsurlarının, soyut altyapısal unsurlara kıyasla tüketici davranışı üzerinde daha belirleyici olduğunu ve kültürel bağlamın kritik bir rol oynadığını ortaya koymaktadır.

Keywords:
Sustainable Packaging, Green Delivery, Willingness to Pay, E-Commerce Logistics, Sustainable Consumption, Consumer Behavior

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Abstract

The rapid expansion of e-commerce has intensified environmental concerns related to packaging waste and last-mile delivery emissions, making sustainable logistics practices increasingly salient in consumer decision-making. This study examines how consumers' perceptions of sustainable packaging and green delivery practices influence their willingness to pay extra for environmentally friendly e-commerce delivery services, while also exploring cross-country differences between Türkiye and Kazakhstan. Grounded in the Theory of Planned Behavior and the Value–Belief–Norm framework, the study adopts a quantitative, cross-sectional research design based on survey data collected from 494 active e-commerce users in Türkiye and Kazakhstan. Exploratory factor analysis, correlation analysis, and country-specific logistic regression models were employed. The findings reveal that perceptions of sustainable packaging exert a strong and statistically significant effect on willingness to pay in Türkiye, whereas this effect is weaker and only marginally significant in Kazakhstan. In contrast, perceptions of green delivery practices do not display a significant influence on willingness to pay in either country. Moreover, a significant cross-country difference is observed in baseline willingness to pay. Overall, the results highlight the dominant behavioral role of visible and symbolically salient sustainability cues over abstract infrastructural elements and emphasize the importance of cultural context in shaping environmentally responsible payment behavior.

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1. GİRİŞ

The rapid expansion of e-commerce has fundamentally reshaped consumption patterns, retail structures, and supply chain architectures across the globe (Mangiaracina et al., 2015; Edwards et al., 2010). Digital marketplaces have not only altered how consumers purchase goods but have also redefined the environmental footprint of consumption itself (Hübner et al., 2016). While online retail is often praised for its efficiency and convenience, its environmental consequences particularly those arising from packaging waste and last-mile delivery emissions have become increasingly visible and contested within sustainability scholarship (Thøgersen, 2014; Browne et al., 2012). As a result, sustainability in e-commerce is no longer framed merely as a technological optimization problem, but rather as a complex interaction between logistical systems, corporate strategies, and consumer behavior.

Within this dual transformation, sustainable packaging has emerged as the most visible, symbolically charged, and consumer-facing dimension of corporate environmental responsibility (Magnier & Schoormans, 2015; Steenis et al., 2017). Packaging made from recyclable, biodegradable, compostable, or renewable materials is frequently interpreted as a tangible signal of a firm's ecological commitment (Magnier & Schoormans, 2015; Delmas & Burbano, 2011). Unlike upstream production processes or logistics infrastructures, packaging is a directly observable environmental attribute, encountered at the moment of product receipt and disposal (Boz et al., 2020). Accordingly, it plays a disproportionate role in shaping consumer judgments about the environmental integrity of digital retailers. Empirical research demonstrates that sustainable packaging enhances perceived product value, strengthens brand credibility, fosters emotional attachment, and increases brand loyalty by aligning corporate actions with consumers' personal pro-environmental values (Magnier & Schoormans, 2015; Steenis et al., 2017).

However, the increasing prominence of green packaging has also given rise to a growing cognitive asymmetry between environmental symbolism and environmental substance (Delmas & Burbano, 2011). Consumers frequently rely on heuristic cues such as green color palettes, eco-labels, nature imagery, or vague environmental claims when evaluating the sustainability of packaging (Parguel et al., 2011). These symbolic shortcuts often replace systematic assessments of material composition, life-cycle impacts, or recyclability infrastructure (Kollmuss & Agyeman, 2002). As a result, consumers' environmental evaluations are frequently shaped more by semiotic and aesthetic signals than

by verifiable ecological performance. This phenomenon contributes to what the literature conceptualizes as the knowledge–behavior gap (Kollmuss & Agyeman, 2002). Closely related to this cognitive gap is the extensively documented attitude–behavior gap (Thøgersen, 2014). While large segments of consumers report strong pro-environmental attitudes and moral support for sustainability initiatives, these orientations frequently fail to translate into consistent purchasing decisions, particularly when faced with trade-offs involving price, speed, and convenience (Young et al., 2010). In e-commerce contexts, this inconsistency is amplified by platform design architectures that prioritize frictionless transactions, rapid checkout processes, and dynamic pricing mechanisms (Ravenelle, 2019). As a result, even environmentally conscious consumers often default to conventional delivery options when sustainable alternatives are perceived as slower, more expensive, or less reliable (Hübner et al., 2016).

Parallel to sustainable packaging, last-mile delivery has emerged as a central yet perceptually distant component of the sustainability debate (Gevaers et al., 2014; Browne et al., 2012). As the final link between distribution centers and end consumers, last-mile delivery is widely recognized as the most energy-intensive, cost-intensive, and environmentally impactful segment of the logistics chain. Although a wide range of green last-mile solutions has been introduced such as electric delivery vehicles, micro-mobility couriers, automated parcel lockers, and pick-up stations consumer uptake of these alternatives remains uneven and limited (Iwan et al., 2016; Gevaers et al., 2014). Unlike packaging, which is evaluated as a product-specific environmental attribute, delivery systems are perceived as macro-level infrastructural arrangements, often viewed as external to individual consumer control. This perceptual separation weakens the motivational link between delivery-related environmental impacts and individual purchasing decisions (Hübner et al., 2016).

The divergence in how consumers cognitively process packaging and delivery sustainability reveals a deeper structural fragmentation in environmental awareness (Kollmuss & Agyeman, 2002). While packaging is evaluated at the micro level of individual product attributes, delivery is understood at the macro level of urban infrastructure, platform governance, and logistics networks (Gevaers et al., 2014; Browne et al., 2012). This segmentation undermines holistic environmental reasoning and reinforces compartmentalized sustainability, wherein consumers selectively engage with visible environmental attributes while discounting less tangible systemic impacts (Thøgersen,

2014). Consequently, sustainable consumption in e-commerce emerges not as a unified behavioral orientation but as a patchwork of partially connected evaluations driven by symbolic visibility, perceived personal control, and situational trade-offs (Gevaers et al., 2014; Thøgersen, 2014).

These conceptual tensions underscore the necessity of moving beyond purely technical sustainability assessments toward behaviorally grounded analytical frameworks (Kollmuss & Agyeman, 2002; Steg & Vlek, 2009). In response to these challenges, contemporary sustainability research increasingly calls for integrative approaches that bridge cognitive evaluations, moral values, and institutional contexts (Stern, 2000; Steg & Vlek, 2009).

To explain why consumer perceptions of sustainable packaging and green delivery translate unevenly into willingness to pay for environmentally responsible e-commerce services, this study is primarily grounded in the Theory of Planned Behavior (TPB) (Ajzen, 1991; Paul et al., 2016). TPB posits that behavioral intention the most immediate antecedent of actual behavior is jointly determined by three core components: (i) attitudes toward the behavior, (ii) subjective norms, and (iii) perceived behavioral control (Ajzen, 1991; Yadav & Pathak, 2017). This tripartite structure offers a powerful lens for understanding pro-environmental consumption decisions in contexts characterized by trade-offs between moral values and functional convenience, such as digital retail (Paul et al., 2016).

Within the present research framework, consumer perceptions of sustainable packaging and green delivery practices are conceptualized as the attitudinal antecedents of environmentally responsible payment behavior. These perceptions reflect individuals' cognitive evaluations of whether specific logistics practices are environmentally beneficial, socially desirable, and personally valuable (Yadav & Pathak, 2017). In line with TPB, the stronger and more favorable these evaluations become, the greater the intention of consumers to engage in pro-environmental behavior in this case, to express willingness to pay extra for eco-friendly delivery options (Ajzen, 1991).

The component of subjective norms refers to perceived social pressure to perform or avoid a given behavior (Ajzen, 1991). In environmentally sensitive consumption contexts, subjective norms are shaped by societal expectations, cultural narratives, media discourse, and institutional sustainability agendas (Steg & Vlek, 2009). This study incorporates country context (Türkiye vs. Kazakhstan) as a proxy for cross-national differentiation in subjective

norms. Although both countries are classified as emerging market economies, they differ markedly in their institutional trajectories, environmental policy frameworks, and collective orientations toward social conformity (Hofstede, 2001). These differences are expected to systematically influence baseline levels of environmental payment intentions.

The third pillar of TPB, perceived behavioral control, refers to individuals' perceptions of their capacity to perform a behavior given existing constraints such as income level, price sensitivity, and accessibility of green options (Ajzen, 1991; Yadav & Pathak, 2017). In e-commerce environments, perceived control is shaped by the extent to which eco-friendly delivery options are affordable, visible, and seamlessly integrated into digital purchasing interfaces (Hübner et al., 2016). When environmentally responsible choices are perceived as costly, inconvenient, or uncertain in reliability, perceived behavioral control weakens, thereby diminishing the translation of environmental attitudes into actual payment intentions (Paul et al., 2016).

While TPB offers a robust explanation of how cognitive evaluations and normative pressures shape environmental intention, it does not explicitly address the moral and value-based origins of such evaluations. To address this limitation, the present study integrates the Value–Belief–Norm (VBN) Theory (Stern et al., 1999; Stern, 2000) as a complementary perspective. VBN theory posits that pro-environmental behavior is driven not merely by instrumental attitudes but by deeply internalized values (e.g., altruistic and biospheric values), environmental beliefs, and personal moral norms (Stern, 2000). According to this framework, individuals engage in environmentally responsible behavior not because it is efficient or economically advantageous, but because they feel a moral obligation to do so.

From a VBN perspective, sustainable packaging carries a particularly strong normative and symbolic meaning (Stern et al., 1999; Steenis et al., 2017). Packaging is a tangible, physically encounterable artifact that directly reflects the environmental stance of a firm at the moment of product consumption and disposal. As such, it activates personal norms more effectively than abstract infrastructural elements such as logistics routing algorithms or vehicle propulsion technologies (Steenis et al., 2017). This theoretical logic provides a strong explanation for the empirical dominance of packaging perceptions over delivery perceptions in shaping willingness to pay for environmentally responsible consumption.

Delivery practices, by contrast, tend to be evaluated as system-level efficiency mechanisms rather than moral signals, which weakens their normative salience (van Loon et al., 2015). Even when green last-mile solutions yield substantial environmental benefits, their abstract and technologically mediated nature prevents them from triggering strong moral obligations at the individual level (Gevaers et al., 2014). Consequently, the motivational force of delivery perceptions remains structurally weaker than that of packaging in the formation of pro-environmental payment intentions.

To further contextualize cross-country differences, the study draws on cultural dimensions theory, particularly the framework developed by Hofstede (2001). Cultural orientations toward collectivism, power distance, and uncertainty avoidance shape how social norms are internalized and how moral expectations are transformed into behavioral commitments (Hofstede, 2001). Kazakhstan exhibits stronger collectivist and normative-conformity tendencies, which may foster higher baseline pro-environmental behavioral intentions through socially reinforced environmental expectations. Türkiye, while also exhibiting collectivist tendencies, displays stronger individual-level differentiation and perceptual sensitivity, which may amplify the role of subjective evaluations particularly those related to visible attributes such as packaging.

Integrating TPB, VBN, and cultural theory allows this study to conceptualize environmentally responsible payment behavior in e-commerce as the outcome of a multi-layered decision architecture, in which cognitive evaluations (attitudes), moral obligations (personal norms), and socio-cultural expectations (subjective norms) jointly shape behavioral intentions (Ajzen, 1991; Stern, 2000; Hofstede, 2001). Within this integrated framework, sustainable packaging carries both attitudinal and normative weight, while delivery practices are primarily processed within instrumental and infrastructural cognitive domains.

On this basis, the present study argues that the behavioral effectiveness of sustainability interventions in e-commerce depends not only on their technical environmental performance but also on their symbolic visibility, normative resonance, and institutional embedding within specific national contexts (Mont & Plepys, 2008; Steg & Vlek, 2009). Accordingly, the empirical model developed in this study explicitly tests both the direct effects of packaging and delivery perceptions on willingness to pay, as well as the extent to which these effects differ across Türkiye and Kazakhstan.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Sustainable consumption behavior has become a central theme in contemporary e-commerce research, with particular emphasis on eco-friendly packaging and green delivery practices as core components of sustainable logistics strategies (Peattie, 2010; Thøgersen, 2014). These practices are widely recognized not only for their environmental implications, but also for their influence on consumer trust, behavioral consistency, and brand credibility. Within digital retail environments, sustainable packaging and last-mile delivery constitute the most salient interfaces through which firms communicate their environmental responsibility to consumers, albeit with markedly different levels of perceptual clarity and cognitive accessibility (White et al., 2019).

Sustainable packaging represents the consumer's first tangible interaction with the product and is therefore considered a highly salient signal of environmental commitment. Prior research consistently demonstrates that recyclable, reusable, and biodegradable packaging formats enhance perceived brand integrity and positively influence purchase-related responses (Magnier & Schoormans, 2015; Peattie, 2010). However, consumer judgments in this domain are frequently shaped by symbolic and superficial cues such as green color schemes, eco-labels, and broad sustainability claims rather than by informed life-cycle assessments of environmental impact (Magnier & Schoormans, 2015; Testa et al., 2021). This pattern reflects the well-documented knowledge–behavior gap, whereby sustainability-related decisions are guided more by intuitive impressions and heuristic signals than by factual environmental understanding or technical performance indicators (Peattie, 2010; White et al., 2019).

A closely related phenomenon is the attitude–behavior gap, which refers to the persistent discrepancy between consumers' expressed concern for the environment and their actual consumption practices (Peattie, 2010; Thøgersen, 2014). Although many consumers report strong preferences for sustainable solutions, these intentions often weaken when confronted with practical trade-offs involving delivery speed, monetary cost, and convenience. In e-commerce settings, such trade-offs are particularly salient at the checkout stage, where green delivery options are frequently perceived as slower, more expensive, or operationally uncertain, thereby reducing consumers' perceived behavioral control (Thøgersen, 2014; Ignat & Chankov, 2020).

The last-mile delivery stage—widely acknowledged as the most environmentally intensive segment of the supply chain—has therefore emerged as a focal point of sustainable logistics research. Green last-mile solutions such as electric delivery vehicles, parcel lockers, micro-consolidation centers, and optimized routing systems aim to reduce emissions and improve urban logistics efficiency (Gevaers, Van de Voorde, & Vanelslander, 2014; Buldeo Rai et al., 2019). Nevertheless, consumer engagement with these alternatives remains limited. Unlike packaging, which is evaluated as a micro-level and product-related sustainability cue, delivery systems are typically perceived through a macro-level, infrastructure-oriented lens that is cognitively distant from individual consumption decisions (van Loon et al., 2015).

This perceptual asymmetry leads consumers to cognitively compartmentalize packaging and delivery sustainability, thereby weakening the formation of a holistic environmental evaluation framework (Gevaers et al., 2014; Thøgersen, 2014). Empirical studies suggest that consumers often struggle to distinguish between environmental delivery performance and conventional service quality attributes such as timeliness, reliability, and convenience, resulting in blurred sustainability perceptions in last-mile contexts (Bjørgen et al., 2021; Testa et al., 2021). As a consequence, green delivery initiatives may yield substantial environmental benefits without generating commensurate behavioral or economic responses from consumers.

These empirical patterns are theoretically consistent with the Theory of Planned Behavior (TPB), which posits that behavioral intentions are shaped by attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). In this framework, consumer perceptions of sustainable packaging and green delivery constitute the attitudinal antecedents of environmentally responsible payment behavior. However, because packaging is directly observable and symbolically charged, it is expected to exert a stronger attitudinal influence than delivery practices, which are abstract, system-level, and technologically mediated (Magnier & Schoormans, 2015; Ajzen, 1991; van Loon et al., 2015).

From a complementary Value–Belief–Norm (VBN) perspective, sustainable packaging also activates personal moral norms more effectively than delivery infrastructure, as it embodies visible and immediate evidence of corporate environmental values at the point of consumption (Stern, 2000; Stern et al., 1999). In contrast, green delivery solutions lack immediate physical visibility and are often interpreted as background operational processes, which reduces their normative salience at the individual level (Bjørgen et al.,

2021). Moreover, cross-national differences in pro-environmental behavior can be interpreted through cultural and institutional variation in subjective norms, which shape baseline levels of environmental payment willingness and the relative importance of perceptual sustainability cues (Ajzen, 1991; Hofstede, 2001; White et al., 2019).

Grounded in the theoretical and empirical considerations of consumer behavior toward environmentally responsible e-commerce practices, and following the regression model framework distinguishing direct effects and moderation by country, the following hypotheses are proposed:

H1a: Perceptions of sustainable packaging have a positive effect on consumers' willingness to pay more for environmentally friendly e-commerce delivery.

H1b: Perceptions of green delivery practices have a positive effect on consumers' willingness to pay more for environmentally friendly e-commerce delivery.

H2a: The effect of sustainable packaging on willingness to pay is significantly effected by country.

H2b: The effect of green delivery on willingness to pay is significantly effected by country.

H3: There is a significant difference in baseline willingness to pay for environmentally friendly e-commerce delivery between consumers in Türkiye and Kazakhstan.

3. METHODOLOGY

3.1. Research Design

This study adopts a quantitative, cross-sectional research design to examine the perceptual and behavioral determinants of consumers' willingness to pay extra for environmentally friendly e-commerce delivery services. A survey-based approach was employed to capture consumers' evaluations of sustainable packaging and green delivery practices, as well as their stated environmental payment behavior. The research framework is grounded in the Theory of Planned Behavior (Ajzen, 1991) and Value–Belief–Norm Theory (Stern, 2000), and the empirical model explicitly incorporates cross-country comparison between Türkiye and Kazakhstan.

The primary objective of the study is to test (i) the direct effects of packaging and delivery perceptions on willingness to pay extra, (ii) baseline differences in environmentally

responsible payment behavior across countries, and (iii) the moderating role of country context in the relationship between perceptual drivers and payment behavior. Accordingly, the study employs correlation analysis and logistic regression modeling as its main analytical techniques.

3.2. Sampling and Data Collection

Data were collected through a structured online questionnaire administered to active e-commerce users in two emerging market economies: Türkiye and Kazakhstan. Convenience sampling was adopted due to limitations in population access and the exploratory cross-country nature of the research. Participation was voluntary, and respondents were informed about the academic purpose of the study. After data screening and elimination of incomplete or inconsistent responses, the final sample consisted of 243 respondents from Türkiye and 251 respondents from Kazakhstan, yielding a total of 494 valid observations. The relatively balanced distribution across countries allows for robust comparative analysis without violating statistical assumptions related to unequal group sizes.

3.3. Measurement Instruments

The questionnaire consisted of three main sections. The first section collected demographic information, including gender and age group. The second section measured consumer perceptions of sustainable packaging and green delivery practices, while the third section captured willingness to pay extra for environmentally friendly delivery services.

3.3.1. Sustainable Packaging

Consumer perceptions of sustainable packaging were measured using a five-item scale. The items captured respondents' evaluations of environmentally responsible packaging practices, including recyclability, use of biodegradable materials, waste reduction, and reusability. All items were measured on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The composite packaging perception score was computed as the arithmetic mean of the six items.

Packaging items:

- The packaging of the products is environmentally friendly.
- Packaging waste is suitable for recycling.
- The packaging is prepared with minimal materials.
- The packaging design reflects environmental awareness.

- The packaging is reusable.
- The inks used in the packaging are environmentally friendly.

3.3.2. Green Delivery

Perceptions of green delivery practices were measured using another five-item scale (Q7). These items assessed respondents' evaluations of environmentally friendly last-mile delivery practices, such as low-emission transportation, optimized routing, energy-efficient vehicles, and environmentally responsible distribution systems. The same five-point Likert scale was used, and a composite delivery perception score was calculated as the mean of the five delivery-related items.

Delivery items:

- Deliveries are made using environmentally friendly vehicles.
- Deliveries are made on time.
- Carbon emissions during the delivery process are kept to a minimum.
- Deliveries are made with minimal resource usage.
- No harm is caused to the environment during the delivery.

3.3.3. Willingness to Pay Extra for Eco-Friendly Delivery

The dependent variable of the study willingness to pay extra for environmentally friendly delivery was measured using a binary (dummy) variable. Respondents were asked whether they would be willing to pay an additional fee for eco-friendly delivery options (0 = No, 1 = Yes). The dichotomous structure of this variable necessitated the use of logistic regression analysis in the subsequent modeling stage.

3.4. Data Analysis Procedures

The data analysis followed a multi-stage procedure. First, descriptive statistics were computed to summarize the demographic characteristics of the sample. Second, the construct validity and internal consistency of the packaging and delivery scales were assessed using exploratory factor analysis (EFA), Kaiser–Meyer–Olkin (KMO) tests, Bartlett's test of sphericity, and Cronbach's alpha coefficients. These analyses were conducted separately for Türkiye and Kazakhstan to ensure cross-country measurement robustness.

Third, Pearson correlation analysis was employed to examine the bivariate relationships among the three main variables: sustainable packaging perception, green

delivery perception, and willingness to pay extra. Fourth, logistic regression models were estimated to identify the behavioral determinants of environmentally responsible payment intentions. Given the binary nature of the dependent variable, the logit specification was preferred over linear probability models.

Given the binary nature of the dependent variable, logistic regression was employed. Multicollinearity was assessed using variance inflation factors (VIF), and no serious multicollinearity problem was detected. Model fit was evaluated using McFadden's pseudo R^2 and likelihood ratio tests.

4. DEMOGRAPHIC AND ORGANIZATIONAL PROFILE OF THE RESPONDENTS

This section presents the demographic profile of the respondents separately for Türkiye and Kazakhstan in order to ensure transparency and comparability across national samples. The profiles include information on gender and age distribution, which are considered essential control characteristics in consumer behavior research.

4.1. Demographic Profile of the Respondents

Table 1. Demographic Profile of Respondents – Türkiye

Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	127	52.3
	Male	116	47.7
Age	18–25	101	41.6
	26–35	83	34.2
	36–45	44	18.1
	46+	15	6.1

The Turkish sample consists of 243 respondents actively engaged in e-commerce activities. The gender distribution indicates a relatively balanced structure, with 52.3% female (n = 127) and 47.7% male (n = 116) participants. This distribution suggests a representative participation of both male and female consumers in the Turkish digital retail environment.

With respect to age composition, the majority of respondents fall within the 18–25 age group, accounting for 41.6% (n = 101) of the Turkish sample. This is followed by the 26–35 age group with 34.2% (n = 83), and the 36–45 group with 18.1% (n = 44). Respondents aged 46 and above represent a smaller proportion of the sample (6.1%, n = 15).

Overall, the Turkish sample reflects a predominantly young and economically active consumer population, which aligns with the primary user base of e-commerce platforms.

Table 2. Demographic Profile of Respondents – Kazakhstan

Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	115	45.8
	Male	136	54.2
Age	18–25	97	38.6
	26–35	92	36.7
	36–45	43	17.1
	46+	19	7.6

The Kazakhstani sample comprises 251 respondents, similarly representing active users of e-commerce platforms. The gender distribution shows a slightly higher representation of male respondents at 54.2% (n = 136), while female respondents account for 45.8% (n = 115). Compared to Türkiye, the Kazakhstani sample exhibits a modest male dominance in online shopping participation.

In terms of age distribution, the 18–25 age group constitutes the largest segment with 38.6% (n = 97) of the total Kazakhstani respondents. The 26–35 age group follows with 36.7% (n = 92), indicating a strong participation of young adults in digital commerce. The 36–45 age group accounts for 17.1% (n = 43), while respondents aged 46 and above constitute 7.6% (n = 19) of the sample. Similar to Türkiye, the Kazakhstani sample is characterized by a predominantly young and digitally engaged population.

4.2. Cross-Country Comparison of Demographic Profiles

A comparative assessment of the two national samples reveals a high degree of demographic similarity, particularly with respect to age concentration in the 18–35 range. This similarity enhances the internal validity of the cross-country comparison and reduces the likelihood that observed behavioral differences are driven by demographic distortions rather than perceptual or cultural factors.

Minor variations emerge in gender distribution, with Türkiye exhibiting a slightly female-dominated sample and Kazakhstan showing a modest male dominance. Nevertheless, these differences remain within acceptable methodological limits and do not pose a significant threat to the comparability of the two datasets. Overall, the demographic profiles indicate that both samples are well suited for examining environmentally responsible e-

commerce behavior, given their strong representation of young, digitally active, and consumption-oriented individuals.

To assess the suitability of the dataset for factor analysis, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity were conducted separately for both country samples. The KMO values for each country exceeded the recommended threshold of 0.60, indicating adequate sampling adequacy. Additionally, Bartlett's Test of Sphericity was significant at the 0.001 level for all three constructs (green delivery, sustainable packaging, and willingness to pay more), suggesting that the correlation matrices are not identity matrices and factor analysis is appropriate. These results provide statistical justification for proceeding with exploratory factor analysis.

Table 3. Standardized Factor Loadings and Cronbach's Alpha, AVE, and CR Values of Factors (Türkiye)

Factor	Standardized Factor Loadings	Cronbach's α	AVE	CR
Packaging	0.468	**0.750**	**0.197**	**0.546**
	0.321			
	0.454			
	0.479			
	0.475			
Delivery	0.428	**0.708**	**0.195**	**0.536**
	0.260			
	0.534			
	0.443			
	0.491			

Table 4. Standardized Factor Loadings and Cronbach's Alpha, AVE, and CR Values of Factors (Kazakhstan)

Factor	Standardized Factor Loadings	Cronbach's α	AVE	CR
Packaging	0.388	**0.845**	**0.178**	**0.500**
	0.238			
	0.326			
	0.531			
	0.545			
Delivery	0.581	**0.847**	**0.177**	**0.487**
	0.314			
	0.547			
	0.219			
	0.317			

As shown in Tables 3 and 4, standardized factor loadings for both the packaging and delivery factors were generally above 0.30 in both country samples. Although the AVE and CR values are below the often-cited 0.50 and 0.70 thresholds, Cronbach's alpha coefficients are above 0.70 for all factors, indicating acceptable internal consistency. This pattern suggests that, while the constructs are internally consistent, convergent validity is only partially supported based on AVE and CR criteria and should be interpreted with caution.

Although average variance extracted (AVE) and composite reliability (CR) values fall below commonly cited threshold levels, this pattern is not uncommon in perception-based constructs applied to emerging and cognitively diffuse sustainability contexts. Prior methodological research indicates that AVE values below 0.50 do not necessarily invalidate constructs when internal consistency is acceptable and when the study objective is explanatory rather than scale development (Fornell & Larcker, 1981; Hair et al., 2019). Given the exploratory and comparative nature of the present study, Cronbach's alpha was therefore prioritized as the primary indicator of internal consistency, while AVE and CR were interpreted cautiously rather than as strict exclusion criteria.

Table 5. Correlation Matrix for Türkiye

	Willingness to pay more	**Packaging**	**Delivery**
Willingness to pay more	1.000	**0.325**	0.201
Packaging	0.325	1.000	**0.407**
Delivery	0.201	0.407	1.000

Table 6. Correlation Matrix for Kazakhstan

	Willingness to pay more	**Packaging**	**Delivery**
Willingness to pay more	1.000	0.175	0.095
Packaging	0.175	1.000	**0.664**
Delivery	0.095	0.664	1.000

In the Turkish sample, a moderate, positive, and statistically significant relationship was found between willingness to pay extra for environmentally friendly delivery and perceptions of sustainable packaging ($r = 0.325$, $p < 0.01$). The relationship between willingness to pay and delivery performance perceptions was weaker in magnitude, yet still statistically significant ($r = 0.201$, $p < 0.01$). In addition, a moderate positive correlation was observed between packaging and delivery perceptions ($r = 0.407$, $p < 0.01$).

In contrast, within the Kazakhstani sample, the relationship between willingness to pay extra and packaging perception was weak ($r = 0.175$), while no statistically significant association was detected between willingness to pay and delivery perception ($r = 0.095$). However, the correlation between packaging and delivery perceptions was found to be strong, positive, and statistically significant ($r = 0.664$, $p < 0.01$).

Taken together, these findings indicate that in Türkiye, environmentally responsible payment behavior is shaped primarily through packaging-related perceptions, whereas in Kazakhstan, consumer perceptions appear to be structured more strongly around the integrated evaluation of packaging and delivery performance.

Table 7. Logistic Regression Results for Türkiye

Predictor	B	SE	z	p	OR	95% CI for OR
Intercept	-4.831	1.355	-3.565	0.0004	0.008	[0.001, 0.114]
Packaging (Q5)	1.009	0.258	3.915	0.0001	2.743	[1.655, 4.545]
Delivery (Q7)	0.344	0.294	1.169	0.2423	1.410	[0.793, 2.509]

Dependent variable: *Willingness to Pay Extra for Eco-friendly Delivery*

Model fit: $\chi^2 = 34.26$, $p < 0.001$ | McFadden $R^2 = 0.057$ | Classification accuracy ≈ 71.7%

Table 8. Logistic Regression Results for Kazakhstan

Predictor	B	SE	z	p	OR	95% CI for OR
Intercept	-0.504	1.414	-0.357	0.721	0.604	[0.038, 9.563]
Packaging (Q5)	0.510	0.300	1.700	0.089	1.665	[0.924, 3.000]
Delivery (Q7)	-0.121	0.318	-0.381	0.703	0.886	[0.475, 1.653]

Dependent variable: *Willingness to Pay Extra for Eco-friendly Delivery*

Model fit: Overall model $p < 0.05$ | Moderate classification performance

Table 9. Cross-Country Comparison of Logistic Regression Effects

Predictor	OR (Türkiye)	p (TR)	OR (Kazakhstan)	p (KZ)
Packaging	**2.743**	**<0.001**	1.665	0.089
Delivery	1.410	0.242	0.886	0.703
Baseline Willingness (Intercept)	Very low		Moderate	

Country-specific logistic regression analyses were conducted to examine whether the determinants of willingness to pay extra for environmentally friendly delivery differ between Türkiye and Kazakhstan. The results are reported in Tables 1–3.

In the Turkish sample, packaging perception emerged as a strong and statistically significant predictor of willingness to pay ($B = 1.01$, $p < 0.001$), indicating that a one-unit increase in packaging evaluation increases the odds of willingness to pay by approximately

2.74 times. In contrast, delivery perception did not exert a statistically significant effect ($p = 0.24$).

In the Kazakhstani sample, the effect of packaging perception was positive but only marginally significant (OR = 1.67, $p = 0.089$), while delivery perception again showed no meaningful association with willingness to pay ($p = 0.70$). These findings suggest that delivery-related evaluations play a limited role in shaping environmentally responsible payment intentions in both countries.

The comparative results presented in Table 3 indicate that the impact of sustainable packaging on willingness to pay is substantially stronger in Türkiye than in Kazakhstan. Moreover, the higher intercept observed in the Kazakhstani model suggests a higher baseline propensity toward environmentally oriented payment behavior, even when perceptual drivers are controlled. Overall, these findings imply that while the structural role of packaging is more pronounced in Türkiye, Kazakhstan exhibits a generally higher baseline level of environmental payment willingness.

5. DISCUSSION

This study examined how consumers' perceptions of sustainable packaging and green delivery practices influence their willingness to pay extra for environmentally friendly e-commerce delivery services, while also exploring whether these relationships differ across national contexts. The empirical findings provide several theoretically and practically important insights.

First, the results indicate that perceptions of sustainable packaging exert a strong and statistically significant positive influence on consumers' willingness to pay extra for eco-friendly delivery. This finding is consistent with both the Theory of Planned Behavior (TPB) and the Value–Belief–Norm (VBN) Theory. From a TPB perspective, sustainable packaging functions as a highly salient attitudinal cue: it is directly observable, easily interpretable, and immediately linked to environmental outcomes. From a VBN perspective, packaging operates as a powerful moral signal that activates personal norms related to waste reduction and environmental responsibility. The combined explanatory power of these two frameworks clarifies why packaging perceptions emerge as the dominant driver of pro-environmental payment intentions in the e-commerce context.

From a practical standpoint, this finding suggests that e-commerce platforms and retailers seeking to monetize sustainability should prioritize consumer-facing and visibly

interpretable sustainability interventions. Investments in recyclable, minimal, or reusable packaging—accompanied by clear and credible communication—are more likely to generate consumer acceptance of price premiums than less visible logistical improvements. In this sense, sustainable packaging functions not only as an environmental instrument but also as a behavioral interface that translates abstract sustainability goals into concrete economic value.

Second, perceptions of green delivery practices display a positive, though comparatively weaker, association with willingness to pay. The relatively modest strength of this relationship confirms the conceptual distinction between micro-level, product-related sustainability cues (packaging) and macro-level, system-driven sustainability mechanisms (delivery infrastructure). Unlike packaging, delivery processes remain largely invisible at the point of consumption and are therefore cognitively processed in more instrumental rather than moral terms. This cognitive distance appears to dilute the motivational force of green delivery perceptions, even when consumers generally recognize their environmental relevance.

Importantly, this finding carries direct implications for logistics service providers and policymakers. While infrastructural decarbonization of last-mile delivery—such as electric vehicles or optimized routing—remains environmentally essential, its behavioral impact may remain limited unless these efforts are translated into perceptually salient signals at the consumer interface. Merely improving the environmental performance of delivery systems may therefore be insufficient to influence payment behavior unless accompanied by communication strategies that make such improvements visible, understandable, and personally meaningful to consumers.

Third, the findings reveal a statistically significant difference in baseline willingness to pay between Türkiye and Kazakhstan. This outcome is consistent with the TPB's emphasis on subjective norms as well as with cultural and institutional explanations of pro-environmental behavior. Differences in environmental policy visibility, public discourse on sustainability, and normative pressures surrounding environmentally responsible consumption may help explain why the overall propensity to pay extra for green delivery is not uniform across the two national settings. In this context, the non-significant effect of green delivery should be interpreted as an empirical indication of perceptual ambiguity rather than a lack of environmental relevance.

More importantly, the analysis demonstrates that the behavioral influence of sustainability perceptions is not invariant across countries. The effect of sustainable packaging on willingness to pay is substantially stronger in Türkiye, whereas in Kazakhstan the relationship appears to be more norm-driven and less dependent on individual perceptual sensitivity. One plausible interpretation is that in Türkiye's highly competitive and consumer-oriented e-commerce environment, visible differentiation cues such as packaging play a more decisive role in shaping purchasing decisions. In Kazakhstan, by contrast, higher baseline willingness to pay may reflect stronger generalized norms or socially anchored expectations regarding environmental responsibility, reducing the marginal influence of specific perceptual cues.

At the same time, alternative explanations should be considered. Differences in market maturity, the prevalence of standardized delivery services, and consumers' familiarity with sustainability claims may also contribute to the observed cross-country patterns. These factors suggest that national differences in sustainable consumption behavior may arise not only from cultural values but also from structural characteristics of e-commerce and logistics markets.

The relatively low AVE and CR values observed for the green delivery construct further illuminate these findings. They likely reflect the conceptual ambiguity surrounding consumers' understanding of environmentally sustainable last-mile logistics. As prior studies suggest, consumers often conflate environmental delivery performance with conventional service quality attributes such as speed and reliability, resulting in fragmented and weakly convergent evaluations (van Loon et al., 2015; Testa et al., 2021). The green delivery construct thus appears to capture a hybrid perception combining environmental intent and operational performance considerations. This overlap may dilute its explanatory power and weaken its direct relationship with willingness to pay.

Taken together, these findings offer a coherent explanation for the persistence of the attitude–behavior gap in sustainable e-commerce. While consumers in both countries tend to report positive environmental attitudes, their willingness to translate these attitudes into concrete monetary commitments depends critically on whether sustainability is made visible, tangible, and symbolically meaningful at the point of consumption. Sustainable packaging fulfills this condition far more effectively than delivery infrastructure, which remains abstract and cognitively distant.

Finally, the results also shed light on the knowledge–behavior gap highlighted in the literature. Although consumers are broadly aware of sustainability issues, their behavioral responses appear to be driven more by heuristic environmental cues than by technical knowledge of logistics-related carbon impacts. This suggests that improving the informational transparency of green delivery options alone may not be sufficient unless such information is translated into perceptually salient and morally resonant market signals. Overall, these findings demonstrate that environmentally responsible payment behavior in e-commerce cannot be understood solely through technological or infrastructural efficiency improvements, but rather emerges from a complex interaction between symbolic visibility, cognitive evaluation, moral obligation, and socio-cultural context.

6. CONCLUSION

This study provides a comprehensive behavioral explanation of consumers' willingness to pay extra for environmentally friendly e-commerce delivery by integrating perceptual drivers, moral norms, and cross-national cultural context within a unified empirical framework. By jointly examining sustainable packaging, green delivery practices, and country context, the study advances both theoretical understanding and empirical evidence on sustainable consumption behavior in digital retail environments.

From a theoretical standpoint, the findings offer strong support for the complementary relevance of the Theory of Planned Behavior and Value–Belief–Norm Theory in explaining environmentally responsible payment intentions. The dominance of sustainable packaging over green delivery as a behavioral driver highlights the crucial role of symbolic visibility and moral activation in transforming environmental attitudes into actual economic commitments. This result reinforces the argument that pro-environmental consumption is not governed solely by rational efficiency evaluations but is deeply embedded in moral cognition and perceptual salience.

Moreover, the study expands the TPB framework by empirically demonstrating that subjective norms embedded in national culture and institutional environments significantly shape both baseline environmental willingness to pay and the strength of perceptual effects. The observed differences between Türkiye and Kazakhstan illustrate that sustainable consumption behavior cannot be fully understood without explicit consideration of cultural and contextual moderators.

From a substantive perspective, the results suggest that sustainable e-commerce strategies that rely exclusively on infrastructural decarbonization of delivery systems may fail to achieve their full behavioral impact unless these efforts are translated into visible, consumer-facing sustainability cues. Sustainable packaging appears to function as the primary behavioral interface through which environmental responsibility is cognitively processed and economically rewarded by consumers.

In broader terms, this study contributes to the growing literature on sustainable consumption by demonstrating that the transition toward green e-commerce is not merely a technological transformation but a behavioral and symbolic one. The effectiveness of sustainability interventions depends not only on their objective environmental performance but also on their perceptual transparency, moral resonance, and cultural compatibility.

Although the study demonstrates acceptable internal consistency, convergent validity remains partial, particularly for the green delivery construct. This limitation reflects the early-stage conceptualization of green delivery perceptions in emerging e-commerce markets and suggests that future research should further refine and differentiate environmental and operational dimensions of last-mile delivery.

One limitation of the study concerns the conceptual breadth of the green delivery scale, which includes both environmental and operational performance elements. While this reflects how consumers realistically perceive last-mile delivery in practice, it may limit construct clarity. Future research should therefore distinguish between operational delivery performance and environmental delivery sustainability by employing separate measurement scales.

Finally, the findings open several avenues for future research. Longitudinal designs could be employed to examine how changes in environmental awareness reshape willingness to pay over time. Experimental studies may further explore how different forms of sustainability signaling such as dynamic carbon labels or real-time delivery emission feedback alter consumer decision-making. Additional cross-country comparisons involving developed economies could also help clarify the boundary conditions of the perceptual–behavioral mechanisms identified in this study.

In conclusion, this research demonstrates that sustainable packaging and green delivery play distinct but interrelated roles in shaping environmentally responsible payment behavior, and that these roles are fundamentally conditioned by cultural context. By

uncovering these mechanisms, the study provides both conceptual clarity and practical guidance for advancing sustainability in global e-commerce ecosystems.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211.

Bjørgen, A., Bjerkan, K. Y., & Hjelkrem, O. A. (2021). E-groceries: Sustainable last mile distribution in city planning. *Research in Transportation Economics, 87*, 100805. https://doi.org/10.1016/j.retrec.2020.100805

Buldeo Rai, H., Verlinde, S., Macharis, C., & Schoutteet, P. (2019). Logistics outsourcing in omnichannel retail: The role of consumer perception. *International Journal of Physical Distribution & Logistics Management, 49*(5), 543–565. https://doi.org/10.1108/IJPDLM-01-2019-0026

Browne, M., Allen, J., & Leonardi, J. (2012). Evaluating the use of urban consolidation centres and electric vehicles in urban freight. *Transport Reviews, 32*(4), 473–490.

Delmas, M. A., & Burbano, V. C. (2011). The drivers of greenwashing. *California Management Review, 54*(1), 64–87.

Edwards, J. B., McKinnon, A. C., & Cullinane, S. L. (2010). Comparative analysis of the carbon footprint of conventional and online retailing. *International Journal of Physical Distribution & Logistics Management, 40*(1/2), 103–123.

Farooq, Q., Asif, M., Ahmed, W., & Hussain, A. (2023). *Impact of green packaging on consumer satisfaction and environmental consciousness: Evidence from emerging markets*. Journal of Cleaner Production, *397*, 136875. https://doi.org/10.1016/j.jclepro.2023.136875

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50.
https://doi.org/10.1177/002224378101800104

Gevaers, R., Van de Voorde, E., & Vanelslander, T. (2014). Cost modelling and simulation of last-mile characteristics in B2C distribution. *Procedia – Social and Behavioral Sciences, 125*, 398–411.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Sage.

Hofstede, G. (2001). *Culture's consequences* (2nd ed.). Sage.

Hübner, A., Holzapfel, A., & Kuhn, H. (2016). Operations management in multi-channel retailing. *European Journal of Operational Research, 269*(1), 1–14.

Igbomor, O. O. (2024). *Consumer perceptions and adoption of eco-friendly packaging in Nigeria: An exploratory study*. Sustainable Development Research, *32*(2), 88–104. https://doi.org/10.1002/sd.2654

Ignat, B., & Chankov, S. (2020). Do e-commerce customers change their preferred last-mile delivery based on sustainability efforts? *International Journal of Logistics Management, 31*(3), 521–548. https://doi.org/10.1108/IJLM-11-2019-0305

Iwan, S., Kijewska, K., & Lemke, J. (2016). Analysis of parcel lockers as the last mile delivery solution. *Transportation Research Procedia*, *12*, 644–655.

Klein, V., & Popp, B. (2022). *Sustainability in last-mile logistics: How perceived environmental friendliness influences consumers' delivery preferences*. Sustainability, *14*(24), 16437. https://doi.org/10.3390/su142416437

Kumar, S., & Dhir, S. (2021). *Green logistics and sustainable supply chain management: A systematic literature review and future research directions*. Transportation Research Part E: Logistics and Transportation Review, *148*, 102234. https://doi.org/10.1016/j.tre.2021.102234

Kollmuss, A., & Agyeman, J. (2002). Mind the gap. *Environmental Education Research, 8*(3), 239–260.

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

Peattie, K. (2010). *Green consumption: Behavior and norms*. Annual Review of Environment and Resources, *35*, 195–228. https://doi.org/10.1146/annurev-environ-032609-094328

Paul, J., Modi, A., & Patel, J. (2016). Predicting green product consumption. *Journal of Retailing and Consumer Services, 29,* 123–134.

Parguel, B., Benoît-Moreau, F., & Larceneux, F. (2011). How sustainability ratings affect greenwashing perceptions. *Journal of Business Ethics*, *97*(3), 15–28.

Stern, P. C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, *56*(3), 407–424.

Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value–belief–norm theory. *Human Ecology Review, 6*(2), 81–97.

Steenis, N. D., et al. (2017). Consumer response to packaging design. *Sustainability, 9*(7), 1–20.

Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour. *Journal of Environmental Psychology, 29*(3), 309–317.

Testa, F., Pretner, G., Iovino, R., Bianchi, G., Tessitore, S., & Iraldo, F. (2021). Drivers of consumer behaviour toward green products: A systematic review. *Journal of Cleaner Production, 290,* 125806. https://doi.org/10.1016/j.jclepro.2021.125806

Thøgersen, J. (2014). *Unsustainable consumption: Basic causes and implications for policy*. European Psychologist, *19*(2), 84–95. https://doi.org/10.1027/1016-9040/a000176

Thøgersen, J. (2014). Shopping for a better world. *Journal of Consumer Policy, 37*(2), 115–138.

Van Loon, P., Dewaele, J., & De Baets, B. (2015). Sustainability indicators for last-mile logistics: A systematic literature review. *Sustainability, 7*(10), 12980–13001. https://doi.org/10.3390/su71012980

White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT consumer behaviors to be more sustainable: A literature review and guiding framework. *Journal of Marketing, 83*(3), 22–49.

Young, W., et al. (2010). Sustainable consumption: The consumer behaviour gap. *International Journal of Consumer Studies, 34*(1), 20–30.

Yadav, R., & Pathak, G. (2017). Determinants of green purchase behavior. *Journal of Cleaner Production, 135*, 732–739.

Zhou, J., Liu, X., & Chen, X. (2022). *Visual cues and environmental labelling: How consumers interpret sustainable packaging*. Journal of Consumer Behaviour, *21*(3), 575–588. https://doi.org/10.1002/cb.2003

Zhuo, F., & Ren, S. (2023). *A comprehensive review of the attitude–behavior gap in green consumption: Theoretical foundations, influencing factors and future research agenda*. Journal of Cleaner Production, *415*, 137681. https://doi.org/10.1016/j.jclepro.2023.137681