

Research Article

Circular Fashion Design and Brand Awareness in Emerging Market Apparel Startups

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Abstract

This study explores the connections among circular fashion design, sustainable brand communication, and brand awareness in apparel startups within emerging markets, while also assessing how consumer environmental consciousness moderates these links. Grounded in customer-based brand equity theory and signaling theory, it positions brand awareness as the result of interactions between sustainability-focused product design, effective communication efforts, and consumers' environmental values. Employing a quantitative cross-sectional approach, researchers gathered data from 385 consumers via a 5-point Likert-scale questionnaire shared through Google Forms, then analyzed it using IBM SPSS for reliability checks, exploratory factor analysis, multiple linear regression, and moderation analysis via Hayes' Process Macro (Model 1). Results showed that circular fashion design ($\beta = 0.588$) and sustainable brand communication ($\beta = 0.609$) both significantly boost brand awareness, highlighting how embedding sustainability in products and conveying it clearly can enhance recognition and recall. Moreover, consumer environmental consciousness acted as a notable moderator ($\beta = 0.481$), amplifying the positive impact of circular fashion design on brand awareness, as environmentally aware individuals tend to notice and appreciate such initiatives more strongly. This study contributes to the sustainable fashion and branding literature by integrating circular product design, sustainability communication, and consumer environmental consciousness within a unified framework, thereby extending customer-based brand equity and signaling perspectives to the underexplored context of emerging-market apparel startups. Practically, the findings provide actionable guidance for startups to strengthen competitive brand visibility by embedding authentic circular attributes into product design, communicating sustainability initiatives clearly

and credibly, and targeting environmentally conscious consumers who are more responsive to circular value propositions.

Keywords: Brand awareness; Circular fashion design; Sustainable brand communication; Consumer environmental consciousness; Emerging market apparel startups

INTRODUCTION

In emerging market apparel startups, building brand awareness represents a key challenge, as these young ventures must stand out to consumers while facing stiff competition from affordable fast fashion, limited store presence, and tight marketing budgets. Circular fashion design offers a way to differentiate through features like durability, repairability, reuse, and waste reduction, yet its impact on branding is not automatic—many consumers find it difficult to grasp these product qualities and may doubt their everyday functionality or style (Bocken et al., 2016; Vehmas et al., 2018). Credibility remains a central issue, since sustainable brand communication can boost recognition, but unclear environmental messages often come across as greenwashing, especially without independent certifications or open supply chain details (Dangelico & Vocalelli, 2017). These difficulties grow in emerging markets due to cost concerns and inconsistent environmental awareness, so circular approaches tend to resonate mainly with those who already hold stronger ecological values (Vehmas et al., 2018). Thus, studying consumer environmental consciousness as a moderator helps reveal when such design truly becomes a strong brand asset instead of a misunderstood or specialized claim.

Existing studies indicate that circular fashion design can lift brand awareness by setting apparel companies apart via efficient resource use, longer product life, recycling efforts, and innovative sustainable features (Niinimäki et al., 2020). In the same way, sustainable brand communication shapes how people view brands by highlighting environmental pledges and increasing visibility in markets that increasingly value responsibility (Bharadwaj et al., 2022), while growing consumer interest in fashion-related sustainability opens doors for brands to weave these principles into design and overall value (Hur & Cassidy, 2019). Still, the literature has notable shortcomings: most work centers on well-established brands in developed countries, leaving emerging market startups largely overlooked (Vehmas et al., 2018); many analyses look at circular practices and communication in isolation rather than together (Niinimäki et al., 2020); and few explore differences among consumers, such as the role of environmental consciousness in reactions to circular efforts (McNeill & Venter, 2019). As a result, the pathways linking circular design to brand awareness likely differ across groups. To bridge these gaps, this study brings circular fashion design and sustainable brand communication together in one model while testing the moderating effect of consumer environmental consciousness, yielding a fuller picture of how awareness develops for apparel startups in emerging markets.

Then, this study seeks to answer the following research questions:

- (1) To what extent does circular fashion design influence brand awareness in emerging market apparel startups?
- (2) How does sustainable brand communication affect brand awareness in emerging market apparel startups?
- (3) How does consumer environmental consciousness moderate the relationship between circular fashion design and brand awareness?

Accordingly, the research therefore seeks to test the direct influence of circular fashion design on brand awareness in these settings, explore how sustainable brand communication drives greater recognition, recall, and overall visibility for new fashion brands, and evaluate whether environmentally conscious consumers react more favorably to circular initiatives and thus magnify their branding effects. Its scholarly contribution stems from this unified framework that links product-level sustainable practices (circular fashion design), communication strategies (sustainable brand communication), and individual psychological traits (environmental consciousness), deepening insight into sustainability-driven branding in emerging contexts and filling a clear void left by prior emphasis on mature firms in developed economies.

LITERATURE REVIEW

1. Brand awareness

Brand awareness refers to the extent to which consumers can recognize and recall a brand under different conditions, reflecting the strength of a brand's presence in consumer memory and its ability to be considered during purchase decisions (Keller, 2013). As a foundational dimension of customer-based brand equity, brand awareness plays a critical role in reducing consumer uncertainty, enhancing perceived credibility, and increasing the likelihood of brand selection in competitive markets (Foroudi, 2019). Theoretically, higher brand awareness contributes to stronger brand associations and facilitates the development of long-term customer relationships, making it particularly valuable for firms with limited marketing resources.

The importance of brand awareness is even more pronounced for apparel startups in emerging markets, where firms often face intense competition from established global brands, constrained promotional budgets, and limited retail visibility (Eggers et al., 2017). Despite the growing consumer interest in sustainability and ethical consumption, many emerging-market fashion startups struggle to translate innovative sustainability initiatives into meaningful brand recognition (Vehmas et al., 2018).

2. Critical Analysis of Theoretical Frameworks

2.1 Customer-Based Brand Equity

Customer-Based Brand Equity (CBBE) Theory, first introduced by Keller (1993), helps explain the way brand knowledge shapes how consumers react to various marketing efforts. According to this framework, brand equity develops when people have strong brand awareness paired with

positive, favorable, and distinctive associations stored in their minds (Keller, 1993). In the setting of emerging market apparel startups, CBBE offers a valuable perspective by highlighting brand knowledge as the essential base for consumer responses, where awareness serves as a vital cognitive resource that enables recognition, recall, and inclusion in purchase decisions (Keller, 2016). This matters greatly for new fashion ventures that lack the visibility of bigger competitors, turning awareness into a necessary step toward building overall equity. The theory further suggests that elements of circular fashion design, such as recyclability, durability, repairability, and waste reduction, can form meaningful brand associations once consumers clearly notice them, with sustainable brand communication playing a key role in turning these features into lasting impressions. As Foroudi (2019) notes, brand awareness supports stronger performance by enhancing familiarity, positive attitudes, and trustworthiness. Thus, CBBE supplies a solid base for connecting circular fashion design and sustainable brand communication to improved awareness in these startups, while also justifying consumer environmental consciousness as a moderator, since those with deeper ecological concern are better at absorbing sustainability details as valuable brand knowledge. The main assumption here is that consumers react more positively to brands offering clearer awareness and richer associations, especially when circular practices and communications resonate with environmentally attuned individuals who pay closer attention to such information.

2.2 Signaling Theory

Complementing this, Signaling Theory, originally proposed by Spence (1978), addresses how parties share reliable signals to bridge information gaps in uncertain situations. It highlights that people depend on visible cues to judge hidden qualities when direct assessment proves challenging (Spence, 1978). In sustainable fashion markets, these signals allow consumers to evaluate true environmental efforts amid competing messages. For this research, the theory fits well because circular fashion involves notable information asymmetry: shoppers cannot easily verify if a startup's design claims are authentic or substantial. Circular fashion design acts as a tangible product signal of responsibility, while sustainable brand communication serves as an outward explanation that builds legitimacy (Connelly et al., 2011). Without proper understanding, attributes like remanufacturing, recycled materials, longer product life, and lower waste may fail to boost awareness, making communication essential, as Vehmas et al. (2018) and Hur & Cassidy (2019) both underscore. Signaling Theory thus clarifies how startups transform sustainability actions into stronger recognition and helps account for the moderating influence of consumer environmental consciousness, as more aware individuals are quicker to detect, decode, and appreciate these signals. In emerging markets crowded with fast fashion options, such credible cues reduce doubt, set startups apart, and enhance brand visibility. The core assumption of Signaling Theory in this context is that consumers encounter uncertainty when judging sustainability claims from apparel startups, so circular design and brand communication function as trustworthy signals of commitment that gain greater strength among those with higher environmental consciousness who actively seek and process this type of information.

3. The Impact of Circular Fashion Design

Circular fashion design involves deliberately weaving principles of circularity into apparel products right from the initial design phase, with the goal of prolonging item lifespan, cutting down on resource use, and supporting reuse, repair, remanufacturing, recycling, while minimizing waste and pollution (Niinimäki et al., 2020). This approach includes practical strategies like modularity, durability, easy disassembly, standardized parts, mono-materials, and high recyclability or up cyclability (Rissanen & McQuillan, 2019). Viewed through a sustainability lens, it represents a major shift away from the traditional linear “take–make–dispose” model toward closed-loop systems, playing a pivotal part in moving the fashion sector into a true circular economy (Bocken et al., 2016). Its importance appears prominently in both environmental and marketing discussions: ecologically, it tackles the industry’s heavy burdens such as material waste, emissions, and water contamination given that design choices account for up to 80% of a product’s overall impact (Niinimäki et al., 2020). On the market side, it serves as a compelling value offer that meets rising consumer interest in ethical and responsible fashion options (Niinimäki et al., 2020). Shifting from fast fashion to circular models demands deep adjustments in value creation, delivery, and retention, opening doors for companies to stand out as forward-thinking and sustainability-driven in markets where environmental awareness is on the rise (Brydges et al., 2020). In addition, it bolsters brand authenticity and trust by making sustainability an inherent product feature rather than just a promotional message (Morhart et al., 2015).

The link between circular fashion design and brand awareness can be understood through Signaling Theory (Spence, 1973) and Customer-Based Brand Equity Theory (Keller, 1993), as such design serves as a concrete indicator of a startup’s environmental commitment and creative edge, easing information gaps and aiding consumers in noticing and remembering the brand (Vehmas et al., 2018). When brands showcase clear circular traits like recycled fabrics, zero-waste cuts, modular builds, or repair-friendly features, shoppers tend to pay more attention and recall them, boosting recognition and recall rates (Foroudi, 2019). Research in fashion settings points to circular efforts drawing greater consumer focus and elevating visibility by offering unique sustainability features that set brands apart from standard competitors (Vehmas et al., 2018). Embedding durability, recyclability, repairability, and efficiency into products gives buyers real-world cues that ease brand identification and build stronger associations (Niinimäki et al., 2020). This dynamic holds special weight in emerging markets, where sustainability interest is expanding yet shoppers often depend on visible product traits to judge claims and separate genuine efforts from routine marketing (Testa et al., 2021). As a result, startups that effectively apply circular fashion design can convey their values directly through items, heighten distinctiveness, and ultimately lift brand awareness.

Even so, the exact strength of this connection sparks ongoing scholarly discussion. Certain researchers maintain that circular design powerfully shapes consumer reactions, since its visible traits act as believable signs of responsibility and creativity, drawing interest and reinforcing recognition (Connelly et al., 2011; Vehmas et al., 2018), in line with signaling ideas that observable qualities help close information gaps and support evaluation. Conversely, other works highlight that success hinges on consumers’ existing knowledge and engagement levels; without solid grasp of sustainability topics or circular ideas, design elements may go unnoticed or undervalued, limiting effects on brand outcomes (McNeill & Moore, 2015; Testa et al., 2021).

This view from consumer cognition suggests circular design lifts awareness most among those motivated to decode sustainability signals. Hence, the beneficial tie between circular fashion design and brand awareness is anticipated to grow stronger with rising consumer environmental consciousness, lending support to the moderating role examined here. On the basis of this logic, the following hypothesis is put forward:

H1: Circular fashion design has a positive impact on brand awareness in emerging market apparel startups.

4. The Impact of Sustainable Brand Communication

Sustainable brand communication involves the deliberate sharing of a brand's environmental and social pledges through clear, trustworthy, and relevant messaging that enables stakeholders to grasp the true sustainability value within products, operations, and overall identity. Theoretically, it aligns closely with Signaling Theory by showing how companies bridge information gaps through reliable signals amid uncertainty (Connelly et al., 2011), and with Customer-Based Brand Equity theory, which stresses that awareness and rich brand associations form the heart of consumer knowledge (Keller, 2016). In sustainable fashion markets, such communication proves vital since buyers often struggle to interpret circular materials, ethical sourcing, or green claims without straightforward guidance, thus serving as a vital link that turns actual responsibility into understandable brand significance (Vehmas et al., 2018).

The effect of sustainable brand communication on brand awareness for emerging market apparel startups draws from both signaling and cognitive viewpoints. Through a signaling lens, honest messages, eco-labels, origin stories, impact summaries, and circularity details act as clear indicators that aid consumers in spotting, judging, and retaining the brand in memory. Studies by Atkinson & Rosenthal (2014) reveal that people frequently depend on eco-labels and targeted claims as guides when they cannot personally check green features, while Testa et al. (2015) confirm that such labels serve as powerful marketing instruments by delivering believable data that informs evaluations. For apparel startups in emerging contexts, this means robust communication heightens awareness by rendering sustainability aspects more noticeable, accessible, and lasting. A robust argument holds that the influence grows especially strong when messages are detailed, backed by evidence, and tied directly to real practices, echoing market-based brand equity ideas where repeated exposure to unique cues builds salience (Keller, 2016). In circular fashion, Vehmas et al. (2018) stress the need for explicit explanations so consumers can appreciate clothing loops, remanufacturing, and value offers; hence, consistent efforts via packaging, online channels, descriptions, narratives, and certifications make recognition and recall more probable. Yet other research warns that vague, overstated, or greenwashing-style messages can undermine this link. Schmuck et al. (2018) illustrate how deceptive eco-ads harm views of both promotions and brands, particularly with fuzzy or untrue statements, and McNeill & Moore (2015) note tensions between sustainability mindsets and actual fashion decisions, implying communication may not always yield positive outcomes. From a consumer cognition angle, effects on awareness emerge mainly when messages feel authentic, pertinent, and straightforward. In emerging markets with varying sustainability understanding, overly complex or ambiguous efforts risk falling flat. Overall, sustainable brand communication holds conceptual weight by turning internal practices into external brand meaning, with its benefits peaking under

transparent and grounded conditions but diminishing amid doubts of inconsistency or exaggeration. Based on this foundation, the following hypothesis is proposed:

H2: Sustainable brand communication has a positive impact on brand awareness in emerging market apparel startups.

5. The Moderating Role of Consumer Environmental Consciousness

Consumer environmental consciousness captures the extent to which individuals recognize environmental issues, feel worried about their impacts, and factor ecological responsibility into their assessments of products and brands. In studies of sustainable consumption, this idea links closely to concepts like environmental concern, knowledge, perceived effectiveness, and readiness to back eco-friendly options (Pagiaslis & Krontalis, 2014; Lin et al., 2022). From a theoretical standpoint, it ties into the consumer cognition viewpoint, which sees people interpreting marketplace offerings based on their existing knowledge, values, and judgments, as well as the sociological lens on ethical consumption that views buying decisions as expressions of personal responsibility, identity, and moral stance (McNeill & Moore, 2015). Within circular fashion, this consciousness matters because buyers require adequate sustainability understanding to appreciate aspects like durability, recyclability, repairability, and waste reduction built into product design.

The moderating influence of consumer environmental consciousness on the link between circular fashion design and brand awareness can be viewed from both supportive and skeptical angles. According to signaling ideas, those with high environmental consciousness tend to spot and interpret sustainability signals in products more readily, as they seek out green information and show greater motivation to assess such features (Connelly et al., 2011). Thus, circular fashion design is likely to exert a stronger pull-on brand awareness among these consumers, with visible elements acting as helpful cues for recognition, recall, and differentiation of apparel startups. Supporting evidence comes from Lin et al. (2022), who linked environmental consciousness to greater intention for sustainable apparel purchases, and from Vehmas et al. (2018), who noted that grasping circular clothing hinges on consumers' ability to process related details, pointing to enhanced engagement. On the other hand, a contrasting view suggests potential negative moderation: highly conscious consumers are often more informed, critical, and exacting in judging claims. Instead of boosting awareness effortlessly, circular design might lose impact if seen as shallow, poorly supported, or misaligned with genuine sustainability, aligning with greenwashing findings where unclear messages erode trust and brand views (Schmuck et al., 2018). Johnstone & Tan (2015) add that even concerned individuals may not convert attitudes into behavior due to doubt or perceived gaps between ideals and offerings. This negative effect stands out for emerging market apparel startups, where conscious consumers face abundant sustainability messaging and demand solid proof—like certifications or transparent details—before granting attention or memory to new brands. Without such backing, circular design's awareness benefits may diminish among them, while less conscious buyers might respond more straightforwardly to visible cues as simple signs of innovation and care. In short, although circular fashion design generally aids brand awareness, its influence could weaken under high

consumer environmental consciousness because of increased scrutiny. Based on this reasoning, the following hypothesis is proposed:

H3: Consumer environmental consciousness moderates the influence of circular fashion design on brand awareness in emerging market apparel startups.

Drawing upon established theoretical foundations, this study proposes the conceptual framework presented in Figure 1 as a means of extending and enriching the existing body of knowledge:

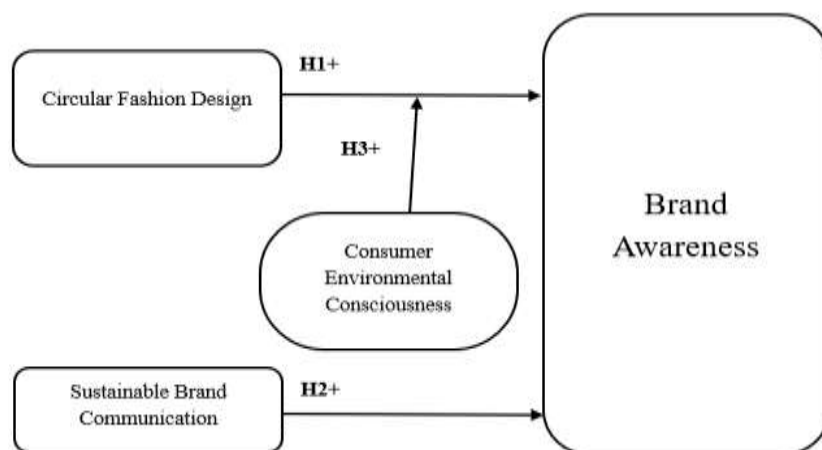


Figure 1 The Paper Conceptual Framework

METHODOLOGY

1. Sampling Strategy

This study employed a quantitative cross-sectional research design to investigate the links between circular fashion design, sustainable brand communication, and brand awareness among emerging market apparel startups, along with the moderating influence of consumer environmental consciousness. A quantitative method suited the work well as it supports rigorous hypothesis testing and clear estimation of direct and interaction effects through structured survey responses. The cross-sectional approach enabled efficient collection of consumer views at one moment in time regarding perceptions of circular initiatives, sustainability messaging, environmental awareness, and brand recognition, an established strategy for studying attitudes and behaviors in sustainability and marketing fields (Bryman, 2016).

To strengthen sample representativeness, the researchers applied stratified sampling, with the unit of analysis being individual consumers who knew apparel products and had encountered sustainability information in fashion. Data came primarily from three emerging economies including Vietnam, Indonesia, and India chosen for their fast-growing apparel sectors, rising sustainability interest, digital retail growth, and active fashion startups embracing responsible models. Participants, drawn proportionally from university students, young professionals, working adults, and online users, brought varied demographic backgrounds and experiences to enhance generalizability across groups and contexts (Bryman, 2016).

Information was gathered via a structured self-administered questionnaire adapted from established scales in prior studies. Circular Fashion Design items focused on perceptions of

durability, recyclability, repairability, and resource efficiency (Bocken et al., 2016; Vehmas et al., 2018), while Sustainable Brand Communication captured transparency, credibility, and impact of green messages (Atkinson & Rosenthal, 2014; Testa et al., 2015). Consumer Environmental Consciousness drew on measures of concern, knowledge, and responsibility (Pagiaslis & Krontalis, 2014; Lin & Chen, 2022), and Brand Awareness assessed recognition, recall, and identification of sustainable apparel startups (Keller, 2013; Foroudi, 2019). All questions used a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Before full rollout, academics in sustainability, consumer behavior, and marketing reviewed the instrument for content validity and cultural fit, leading to small wording adjustments for clarity and relevance. The survey went live on Google Forms and spread through social media, fashion groups, sustainability forums, university networks, and professional circles. After filtering out incomplete entries, duplicates, and patterned responses, the final dataset included 385 valid replies, meeting guidelines for multivariate and moderation analyses (Hair et al., 2009).

2. Data analysis

Data analysis in IBM SPSS followed a stepwise process. Descriptive statistics first outlined participant demographics and variable distributions, reporting frequencies, percentages, means, and standard deviations. Reliability testing via Cronbach's Alpha then checked internal consistency, retaining scales with alphas over 0.70 and corrected item-total correlations above 0.30 (Tavakol & Dennick, 2011). Next, Exploratory Factor Analysis using Principal Component Analysis with Varimax rotation verified construct validity and factor structure, with the Kaiser-Meyer-Olkin measure and Bartlett's Test confirming suitability, and only loadings above 0.50 kept for strong validity (Hair et al., 2009). Multiple linear regression subsequently tested the direct impacts of Circular Fashion Design and Sustainable Brand Communication on Brand Awareness at the 5% significance level ($p < 0.05$), while multicollinearity checks via VIF and tolerance ensured stable results (Shrestha, 2020). Finally, Hayes' Process Macro (Model 1) examined the moderating effect of consumer environmental consciousness on the relationship between circular fashion design and brand awareness, allowing detailed assessment of interaction terms and conditional effects per standard moderation procedures (Hayes, 2022).

RESULTS

1. Descriptive Statistical Analysis

Table: 1. Cross-Tabulation of Respondent Characteristics

Characteristic	Category	Percentage (%)
Country of Residence	Vietnam	34%
	Indonesia	31%
	India	29%
	Other Emerging Markets	6%
Age Group	Under 18 years old	8%
	18–24 years old	42%
	25–34 years old	30%

	35–44 years old	14%
	45 years old or above	6%
Occupation	Student	28%
	Young Professional / Employee	42%
	Self-employed / Entrepreneur	15%
	Government Employee	8%
	Other	7%
Familiarity with Sustainable Fashion	Not familiar at all	6%
	Slightly familiar	16%
	Moderately familiar	34%
	Very familiar	28%
	Extremely familiar	16%

Source: (The authors, 2026)

As presented in Table 1, the sample showed a fairly even spread across the three emerging markets, with 35% of respondents from Vietnam, 33% from Indonesia, and 32% from India. The dominant age bracket was 18–24 years (42%), followed by those aged 25–34 (30%), reflecting a sample largely composed of younger consumers who tend to encounter sustainability topics and digital fashion developments more frequently. In terms of occupation, young professionals and salaried employees formed the biggest group (42%), while students made up 28%. On familiarity with sustainable fashion, a substantial portion indicated moderate knowledge (34%), with another 44% reporting high or very high levels, implying that participants possessed enough background to meaningfully assess topics such as circular fashion design, sustainable brand communication, and environmental responsibility.

2. Reliability analysis

Table 2: Reliability analysis of “Brand Awareness”.

Reliability Statistics

Cronbach's Alpha	N of Items
.782	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
BA1	6.723	5.998	.722	.774
BA2	7.897	6.800	.695	.713

BA3	6.920	6.352	.742	.756
BA4	6.011	6.519	.735	.743

Source: (The authors, 2026)

Where the four survey items for brand awareness, labeled BA1 to BA4, corresponded directly to questions 1 through 4 and were specifically designed to measure the construct of brand awareness.

As shown in Table 2, all items achieved corrected item-total correlations well above the 0.3 threshold. The full scale yielded a Cronbach's alpha of 0.782, exceeding the standard 0.7 cutoff and demonstrating solid internal reliability. Notably, deleting any individual item resulted in only slight changes to the alpha value, indicating that none undermined the scale's overall consistency. In addition, the alpha-if-item-deleted figures for each of the four items remained higher than their respective corrected item-total correlations, verifying that every item added positively to the scale's coherence. Consequently, all four items were kept for subsequent analyses. Similar reliability levels were observed across the other measurement scales in the study (Hair et al., 2009; Tavakol & Dennick, 2011)

3. Exploratory factor analysis (EFA)

Table: 3 Factor Loading Matrix.

Rotated Component Matrix ^a				
Component with loading factors				
1	2	3	4	
CFD1 .782	SBC1 .708	CEC1 .766	BA1 .622	
CFD2 .791	SBC2 .638	CEC2 .733	BA2 .631	
CFD3 .711	SBC3 .639	CEC3 .704	BA3 .691	
CFD4 .687	SBC4 .711	CEC4 .785	BA4 .699	
Extraction Method: Principal Component Analysis.				
Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 7 iterations.				

Source: (The authors, 2026)

Where the measurement items labeled SBC1–SBC4, CFD1–CFD4, and CEC1–CEC4 were specifically crafted to capture the two independent variables and the moderating variable, with each construct represented by four thoughtfully selected indicators.

Table 3 displays the results of the exploratory factor analysis, which successfully identified four distinct factors that corresponded exactly to the dependent variable, the two independent

variables, and the moderator. All 16 items achieved factor loadings above the recommended 0.50 threshold (Hair et al., 2009), indicating strong convergent validity with their intended constructs. Consequently, no items were dropped, and the complete set was retained, offering robust support for the construct validity of the study variables.

4. Multiple linear regression model

Table 4: Coefficients^a.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.091	.711		4.554	.000
1 SBC	.685	.743	.609	3.256	.000
CFD	.597	.657	.588	3.675	.000

a. Dependent Variable: BA

Source: (The authors, 2026)

Where **CFD**: Mean of CFD1 - CFE4; **SBC**: Mean of SBC1– SBC4; **BA**: Mean of BA1– BA4

As shown in Table 4, the t-test results indicate that both SBC and CFD have positive and statistically significant effects on BA ($p < 0.001$). SBC demonstrates a slightly stronger influence ($\beta = 0.609$, $t = 3.256$) than CFD ($\beta = 0.588$, $t = 3.675$). Therefore, increases in both SBC and CFD are associated with higher levels of BA, providing clear empirical backing for the acceptance of the two proposed hypotheses.

5. Moderator analysis

Table 5: Results analysis of “Brand Awareness”.

Model: 1 Y: BA X: CFD W: CEC Sample Size: 385

*

OUTCOME VARIABLE: BA Model Summary

R	R-sq	MSE	F	dl1	dl2	p
.708	.501	.617	5.109	3.000	381.000	.000

Model

	coeff	se	t	p	LLCI	ULCI
Constant	6.732	0.696	9.677	.000	5.368	8.096
CFD	0.591	0.118	5.012	.000	0.360	0.822
CEC	0.611	0.128	4.785	.000	0.361	0.861
Int_1	0.481	0.104	4.629	.000	0.277	0.685

Source: (The authors, 2026)

Where CEC was calculated as the mean score of items CEC1 to CEC4.

The positive interaction coefficient ($\beta = 0.481$) in Table 5 suggests that greater consumer environmental consciousness amplifies the positive influence of circular fashion design on brand awareness. In essence, the role of circular initiatives in strengthening brand recognition grows more evident among consumers with higher levels of environmental awareness and concern. These individuals tend to notice, value, and react more favorably to circular fashion practices, thereby enhancing their effect on brand visibility. Moreover, the confidence interval for the interaction effect (LLCI = 0.277; ULCI = 0.685) excludes zero, further affirming the significance and stability of the moderating influence. Overall, the results highlight consumer environmental consciousness as a key boundary condition that boosts the impact of circular fashion design on brand awareness in emerging market apparel startups. Thus, Hypothesis H3 is empirically supported.

DISCUSSION

1. Result Summary

Circular fashion design and sustainable brand communication both demonstrated significant positive effects on brand awareness, with standardized regression coefficients of 0.588 and 0.609, respectively. The findings indicate that sustainability-oriented product design and effective sustainability communication both contribute substantially to strengthening consumer recognition and recall of emerging-market apparel startups. In addition, consumer environmental consciousness played a significant moderating role by strengthening the positive relationship between circular fashion design and brand awareness, as reflected by the positive interaction coefficient of 0.481. This suggests that the branding value of circular fashion initiatives becomes more pronounced among consumers who possess higher levels of environmental awareness and concern. Overall, these findings provide strong empirical support for all three proposed hypotheses and confirm the validity of the study's conceptual framework linking circular fashion design, sustainable brand communication, consumer environmental consciousness, and brand awareness.

2. Theoretical Implications

The empirical findings provide strong support for H1, demonstrating that circular fashion design exerts a positive and significant influence on brand awareness. This finding strongly concurs with the signaling perspective advanced by Connelly et al. (2011) and Vehmas et al. (2018), which argues that observable sustainability attributes function as credible signals that reduce information asymmetry and enhance consumer recognition. The results further reinforce Customer-Based Brand Equity theory (Keller, 1993; Keller, 2016), suggesting that circular design characteristics such as durability, recyclability, repairability, and waste reduction can become meaningful brand associations that strengthen consumer memory and facilitate brand recall. In this respect, the present study supports the argument of Niinimäki et al. (2020) that sustainability embedded within the product itself constitutes a powerful source of brand differentiation rather than merely an environmental practice. However, the findings only partially concur with the consumer cognition perspective proposed by McNeill and Moore (2015) and Testa et al. (2021). These scholars contend that sustainability-oriented product attributes may have limited effectiveness because consumers often lack the knowledge required to interpret circular fashion concepts. While this argument remains theoretically valid, the significant positive relationship identified in this study suggests that consumers in emerging markets may be more capable of recognizing circular fashion attributes than previously assumed. This result challenges the traditional assumption that sustainability awareness in emerging economies is insufficient to generate meaningful branding outcomes. Instead, the findings imply that the increasing visibility of environmental issues, digital information channels, and sustainability-oriented consumption trends may have enhanced consumers' ability to interpret circular design cues. Therefore, the study argues that circular fashion design should no longer be viewed solely as an environmental innovation but also as a strategic branding mechanism capable of strengthening brand awareness among emerging-market apparel startups.

The findings provide strong empirical support for H2, indicating that sustainable brand communication significantly enhances brand awareness. This result strongly supports the communication-based and signaling perspectives advanced by Atkinson and Rosenthal (2014), Testa et al. (2015), and Connelly et al. (2011), which emphasize that sustainability messages function as important informational signals that help consumers evaluate and recognize environmentally responsible brands. The findings also align closely with Customer-Based Brand Equity theory (Keller, 2016), suggesting that sustainability communication strengthens brand salience by repeatedly exposing consumers to distinctive sustainability-related meanings. In particular, the results reinforce the argument of Vehmas et al. (2018) that circular and sustainability-related practices cannot effectively contribute to brand outcomes unless consumers clearly understand their purpose and value. Nevertheless, the findings are not fully consistent with the more skeptical stream of literature represented by Schmuck et al. (2018) and McNeill and Moore (2015). These studies argue that sustainability communication may lose effectiveness when consumers perceive environmental claims as exaggerated, unclear, or disconnected from actual business practices. While such concerns remain highly relevant, the significant positive relationship observed in this study suggests that sustainable brand communication continues to function as an effective awareness-building mechanism in the context of emerging-market apparel startups. One possible explanation is that consumers increasingly expect brands to communicate sustainability efforts transparently and therefore reward firms that provide

understandable and credible environmental information. Consequently, the present study argues that communication should not be viewed merely as a supporting activity for sustainability initiatives. Rather, sustainable brand communication serves as a critical strategic resource that transforms environmental practices into consumer-recognizable brand knowledge. Thus, the study extends prior literature by demonstrating that sustainability communication itself constitutes an important source of competitive visibility and brand awareness in emerging fashion markets.

The findings provide strong support for H3 by demonstrating that consumer environmental consciousness positively moderates the relationship between circular fashion design and brand awareness. This result strongly supports the signaling perspective proposed by Connelly et al. (2011) and the consumer cognition arguments advanced by Vehmas et al. (2018) and Lin & Chen (2022), which suggest that environmentally conscious consumers are more capable of identifying, interpreting, and valuing sustainability-related product attributes. The positive interaction effect indicates that circular fashion design becomes substantially more effective in generating brand awareness when consumers possess higher levels of environmental concern and knowledge. Therefore, the findings confirm that consumer interpretation plays a crucial role in determining whether sustainability signals are transformed into meaningful brand outcomes. More importantly, the findings challenge a critical argument developed in the literature review. Drawing upon greenwashing research, Schmuck et al. (2018) and Johnstone & Tan (2015) suggested that highly environmentally conscious consumers may become increasingly skeptical toward sustainability claims, thereby weakening the influence of circular fashion initiatives on brand-related outcomes. Contrary to this expectation, the present study finds no evidence that environmental consciousness reduces the effectiveness of circular fashion design. Instead, environmental consciousness strengthens the relationship. This finding suggests that highly conscious consumers may not necessarily respond with greater skepticism when evaluating circular fashion initiatives. Rather, they may possess greater capability to recognize authentic sustainability efforts and reward brands that demonstrate visible environmental commitment through product design. Consequently, this study argues that environmental consciousness functions primarily as an enabling rather than constraining condition in emerging-market fashion contexts. Theoretically, this finding extends both Signaling Theory and Customer-Based Brand Equity Theory by demonstrating that the effectiveness of sustainability signals depends not only on signal credibility but also on consumers' willingness and ability to interpret those signals positively.

3. Practical Implications

The findings offer several important practical implications for apparel startups operating in emerging markets. First, the significant positive effect of circular fashion design on brand awareness suggests that sustainability should not be viewed merely as an environmental responsibility but as a strategic branding asset. Startup founders should integrate circular principles such as durability, recyclability, repairability, and waste reduction directly into product development rather than treating sustainability as an afterthought. This implication is particularly important because consumers increasingly use visible sustainability attributes as cues for evaluating brand identity and authenticity (Vehmas et al., 2018; Niinimäki et al., 2020).

Consequently, startups can strengthen brand recognition and differentiation by embedding circularity into the product itself.

Second, the positive impact of sustainable brand communication highlights the importance of translating sustainability practices into clear consumer-facing messages. Many sustainability initiatives fail to generate market value because consumers do not fully understand their significance. Therefore, managers should communicate sustainability commitments consistently through digital media, product descriptions, packaging, storytelling, eco-labels, and transparency reports. The findings reinforce previous arguments that sustainability communication becomes most effective when it is specific, credible, and supported by evidence rather than vague environmental claims (Atkinson & Rosenthal, 2014; Testa et al., 2015). For emerging-market startups with limited advertising budgets, transparent sustainability communication can serve as a cost-effective mechanism for increasing brand visibility and consumer familiarity.

Third, the moderating role of consumer environmental consciousness indicates that not all consumers respond equally to circular fashion initiatives. Environmentally conscious consumers appear particularly responsive to sustainability-oriented design attributes, making them a strategically valuable market segment. Managers should therefore adopt market segmentation strategies that target consumers with stronger environmental values through educational campaigns, sustainability-focused communities, and digital engagement platforms. Furthermore, the results suggest that increasing consumer environmental awareness may indirectly enhance the branding effectiveness of circular fashion design. Rather than focusing exclusively on product innovation, startups should invest in consumer education initiatives that explain the environmental benefits of circular fashion. Such efforts can help consumers better recognize and appreciate sustainability-related product attributes, thereby amplifying brand awareness outcomes. Overall, the findings suggest that successful brand-building in emerging-market fashion startups requires a coordinated strategy that combines authentic circular product design, credible sustainability communication, and consumer awareness development.

4. Limitations

Several limitations should be acknowledged when interpreting the findings of this study. First, the research adopted a cross-sectional design, preventing the examination of causal relationships and changes in consumer perceptions over time. Second, data were collected from consumers in only three emerging-market countries, which may limit the generalizability of the findings to other cultural or economic contexts. Third, the study relied on self-reported survey responses, which may be subject to common method bias and social desirability effects. Finally, the model focused on circular fashion design, sustainable brand communication, and environmental consciousness, while other potentially relevant factors such as brand trust, perceived quality, green skepticism, and sustainability knowledge were not incorporated into the analysis.

5. Future Research Directions

Future studies should consider adopting longitudinal research designs to examine how sustainability-oriented branding strategies influence brand awareness over time. Researchers may also extend the model to developed economies and compare results across different cultural and institutional environments. In addition, future research could incorporate mediating variables

such as brand trust, perceived authenticity, or consumer-brand identification to better explain the mechanisms through which circular fashion initiatives influence brand awareness. Given the growing relevance of digital commerce, future studies may also investigate how social media engagement, influencer marketing, or AI-driven sustainability communication interact with circular fashion design. Finally, experimental research designs could provide stronger causal evidence regarding consumer responses to sustainability-related branding strategies.

CONCLUSION

This study examined the effects of circular fashion design and sustainable brand communication on brand awareness among emerging-market apparel startups while investigating the moderating role of consumer environmental consciousness. The findings demonstrate that both circular fashion design and sustainable brand communication positively contribute to brand awareness. Furthermore, consumer environmental consciousness strengthens the positive influence of circular fashion design on brand awareness, indicating that environmentally conscious consumers are more responsive to sustainability-oriented product attributes. These results extend Customer-Based Brand Equity Theory and Signaling Theory by demonstrating that sustainability-related product and communication strategies can function as effective mechanisms for building brand awareness in emerging markets. Overall, the study highlights the strategic importance of integrating authentic sustainability practices, credible communication, and consumer environmental engagement to enhance brand visibility and competitiveness in the evolving fashion industry.

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The author(s) declare that not applicable.

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The author(s) declare no competing interests.

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APPENDIX: Survey

Table 6. Survey Questionnaire

Participants’ Background Profile

1. Which country do you	Vietnam	Indonesia	India	Others (Please	
				e	

currently reside in?				specif y):	
2. What is your age group?	Under 18 years old	18–24 years old	25–34 years old	35–44 years old	45 years old or above
3. What is your current occupation?	Student	Young Professional / Employee	Self-employed / Entrepreneur	Government Employee	Others (Please specify):
4. How familiar are you with sustainable or environmentally friendly fashion products?	Not familiar at all	Slightly familiar	Moderately familiar	Very familiar	Extremely familiar

	Variables	Code Observed Variables	Content
	Circular Fashion Design (CFD)	CFD1	The apparel products offered by this brand are designed to be durable and usable for a long period of time. (Bocken et al., 2016; Niinimäki et al., 2020)

		CF D2	The products of this brand can be easily repaired, reused, or repurposed after purchase. (Rissanen & McQuillan, 2023; Bocken et al., 2016)
		CF D3	This brand incorporates recyclable or environmentally responsible materials into its apparel products. (Niinimäki et al., 2020; Bocken et al., 2016)
		CF D4	The design of this brand's products reflects efforts to reduce waste and resource consumption. (Bocken et al., 2016; Niinimäki et al., 2020)
	Sustainable Brand Communication (SBC)	SB C1	The sustainable brand clearly communicates its environmental and sustainability commitments. (Vehmas et al., 2018; Connelly et al., 2011)
		SB C2	The sustainability information provided by this brand is credible and trustworthy. (Atkinson & Rosenthal, 2014; Testa et al., 2015)
		SB C3	This brand effectively explains how its products contribute to environmental sustainability. (Vehmas et al., 2018; Connelly et al., 2011)
		SB C4	The sustainability messages of this brand are easy for consumers to understand. (Vehmas et al., 2018; Keller, 2016)
	Consumer Environmental Consciousness	CE C1	I am concerned about environmental problems and their consequences for society. (Pagiaslis & Krontalis, 2014)
		CE C2	Environmental considerations influence my decisions when purchasing apparel products.

	ness (CEC)		(Lin & Chen, 2022)
		CE C3	I prefer to support brands that demonstrate environmental responsibility. (Pagiaslis & Krontalis, 2014; McNeill & Moore, 2015)
		CE C4	I actively seek information about the environmental impacts of fashion products before making a purchase. (Lin & Chen, 2022; Pagiaslis & Krontalis, 2014)
	Brand Awarenes s (BA)	B A1	I can quickly recall this brand when I think about sustainable fashion products. (Keller, 2013; Foroudi, 2019)
		B A2	I can easily recognize this apparel brand among competing fashion brands. (Keller, 1993; Foroudi, 2019)
		B A3	I am familiar with this brand and its sustainability-related activities. (Keller, 2016; Foroudi, 2019)
		B A4	This brand would be one of the first brands that comes to my mind when considering sustainable apparel products. (Keller, 1993; Keller, 2013)

Survey link:

<https://docs.google.com/forms/d/e/1FAIpQLSfvyZqfO1MFCxuTFxakIVP6qGGLKCtRt14EYghxtpzOoGT5rg/formResponse>

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