

## Article

# Digital Product Passports in Online Fashion Resale: Supporting Circular Fashion, Transparency, and Consumer Trust

Anna Elizabeth Stookey  and Chunmin Lang 

Department of Textiles, Apparel Design and Merchandising, College of Agriculture, Louisiana State University, Baton Rouge, LA 70803, USA; astook1@lsu.edu

\* Correspondence: cmlang@lsu.edu

## Abstract

As online luxury fashion resale platforms continue to emerge and expand, persistent challenges related to trust and product authenticity have become increasingly pronounced. digital product passports (DPPs) offer a potential solution to these trust-related challenges by providing detailed information about a product, thereby enhancing product transparency and traceability throughout the product lifecycle. Drawing on signaling theory, this study investigates how DPP-enabled platforms influence consumers' purchase intentions toward luxury fashion resale consumption. An online survey generated 307 valid responses. Structural equation modeling (SEM) was employed to test the proposed hypotheses. A multi-group chi-square difference test was also conducted to test the moderating role of DPP usage experience. The results demonstrate that trust and attitude are decisive predictors of consumers' intention to purchase second-hand luxury fashion products from DPP-enabled platforms. Risk reduction alone does not directly drive intention, highlighting the distinction between eliminating uncertainty and fostering positive motivation. This study focuses on consumer perception and intention regarding DPPs within the luxury fashion resale market, an area that has received limited empirical attention. By integrating signaling theory with fashion resale and digital innovation, this study offers novel insights into the role of technological transparency in driving consumer engagement in circular fashion.

**Keywords:** luxury fashion resale; Digital Product Passport (DPP); signaling theory; circular fashion; transparency; consumer trust

## 1. Introduction

The fashion industry is a leading contributor to environmental harm, accounting for a substantial portion of global carbon emissions [1]. A solution for these devastating impacts is circular fashion, which reduces waste by extending the lifespan of fashion goods instead of discarding them into landfills [2]. Recent data indicate that the fashion resale market, a format of circular fashion, is expanding significantly faster than the traditional retail market [3], and the industry is estimated to grow at a 10–15% rate over the next decade [4]. Fashion resale provides consumers with the opportunities to purchase prestige items at discounted prices and have access to items no longer available in the primary retail market. These economic motivations significantly shape consumers' attitudes toward buying pre-owned luxury fashion [5]. The growing consumer preferences for fashion resale are driving the industry toward more sustainable practices, creating an environment that



Academic Editor: Antony Bryant

Received: 21 May 2026

Revised: 20 July 2026

Accepted: 22 July 2026

Published: 24 July 2026

**Copyright:** © 2026 by the authors.

Licensee MDPI, Basel, Switzerland.

This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC BY\)](https://creativecommons.org/licenses/by/4.0/) license.

is particularly conducive to the rise in luxury fashion resale [6], which is emerging as a sustainable and economically influential force, reshaping the future of fashion retail.

Nevertheless, the luxury fashion resale industry faces significant concerns regarding counterfeiting, which necessitates a heavy reliance on authentication to maintain trust [7]. Additionally, over 55% of secondhand luxury purchases occur through online platforms [8]. The digital market makes such uncertainty even more prominent by information asymmetry and perceived risk [9]. The rise in counterfeiting is a primary driver of trust issues in digital luxury resale platforms, which exacerbates information asymmetry regarding a product's authenticity, condition, and history. Consequently, consumer confidence relies heavily on professional authentication services and standardized guarantees to mitigate the financial and functional risks associated with purchasing pre-owned luxury fashion [10].

The digital product passport (DPP), a data system connected to individual products, allows access to relevant information throughout their lifecycle [11], which provides a verification system for luxury fashion resale. By offering end-to-end visibility, DPPs establish a single source of truth accessible to all stakeholders, helping to mitigate authentication challenges and counterfeit risks. DPPs enable the creation of transparent, traceable, and reliable records of a luxury product's authenticity and lifecycle, thereby reducing uncertainty and strengthening consumer trust in the fashion resale market. Empirical evidence suggests that DPPs directly address the perceived lack of trust in resale markets by providing verifiable proof of authenticity alongside the record of product history [12]. Additionally, by integrating DPPs, luxury brands can provide an immutable record of product authenticity and ethical sourcing that helps navigate regulatory and societal pressures [13,14], suggesting that such technology secures trust by reinforcing exclusivity and sustainability, ultimately fostering deeper consumer loyalty and trust in the luxury fashion resale market.

Although previous studies have highlighted the potential of DPPs to enhance circular economy [11], there is a lack of quantitative research examining how the availability of this technology specifically improves outcomes within the luxury fashion resale market. A large gap remains in examining how these technological signals connect to consumer trust and behavioral outcomes in fashion resale [15]. Drawing on signaling theory, this study investigates how DPP-enabled platforms influence consumers' perceived transparency, traceability, credibility, familiarity, trust, attitude, and perceived risk reduction, ultimately shaping their purchase intentions toward luxury fashion resale. This study provides empirical evidence of the vital role of DPP features in trust-building signals in the digitally mediated luxury fashion resale market. The results support the existing literature on circular fashion, luxury fashion resale, and technology adoption by clarifying how transparency-enhancing technologies (DPPs) can strengthen purchase intentions. Specifically, these technologies help mitigate information asymmetry and foster greater consumer trust, thereby encouraging consumers' willingness to purchase luxury fashion items in the resale market [13]. Ultimately, this study translates the theoretical framework into practical implications for the luxury fashion resale market, demonstrating how the adoption of transparent and technology-driven solutions reduces perceived risks and supports long-term sustainability goals in the fashion industry.

## 2. Literature Review and Hypothesis Development

### 2.1. Circular Economy and Fashion Resale

In recent years, the concept of circular economy, which emphasizes reusing products and extending their lifecycles, has been introduced to address the negative impacts of the linear system (cradle-to-grave) [16]. Circular fashion, an application of the circular economy within the fashion industry, has emerged to address environmental challenges facing the industry. It focuses on eliminating waste and promoting sustainability by keeping fashion

products in use for as long as possible through practices such as recycling, repair, resale, and upcycling [17]. There are four key strategies for circular fashion business models, including resource efficiency, circular design, product life extension, and end-of-life circularity [18]. Together, these strategies demonstrate how circular fashion is becoming a critical framework for guiding the industry toward sustainability and environmental responsibility.

Fashion resale, a major practice of circular fashion, has always played an important role in shifting consumption away from new products [19]. In recent years, this sector has become increasingly important to the luxury fashion market [20], which offers consumers the opportunity to have access to high-end fashion products at a fraction of the price [21]. In addition to bringing benefits to consumers, the global resale market is projected to reach up to \$363 billion by 2030 [22], making a great contribution to the economy. Moreover, fashion resale encourages the extended usage of existing fashion items, thereby reducing overall landfill waste.

However, the evolution of luxury resale fashion shows both the limitations of consumer participation in circular practices and persistent challenges related to trust and product authenticity. As online luxury resale platforms have rapidly emerged and expanded, these issues have become more pronounced. Consumers often hesitate to make purchases because of concerns about product authentication and uncertainty about the actual condition of resale items [21,23]. For high-value categories such as luxury fashion resale, these uncertainties are even more pronounced, as concerns about counterfeits, product condition, and quality pose significant psychological and financial risks to consumers [6]. This highlights a broader issue of information asymmetry between sellers and consumers in the online resale environment, discouraging engagement in second-hand markets. In response to these challenges, emerging technologies and policy solutions have been explored to enhance transparency and traceability within fashion supply chains. In particular, many resale platforms have introduced a digital product passport (DPP), which provides a digital identity for a product to improve product transparency and traceability.

## 2.2. Digital Product Passports (DPPs) in Fashion Resale

The DPP is a structured digital record of a product's entire lifecycle [24], which is created as a regulatory instrument supporting the circular economy. It provides people with the information needed to make rational decisions about products at every stage of its lifecycle from the raw materials stage to end-of-life [11]. This technology, which consolidates product data into a single centralized system, has the potential to address the trust, transparency, and counterfeit challenges in resale, presenting a great level of credibility [25]. The key features of DPPs include detailed information about a product's origin, materials, production processes, and even environmental impact [12], which not only supports authentication and increases trust but also aligns with resale consumers' emphasis on quality, longevity, and resale value across the product lifecycle.

Specifically, in online luxury fashion resale markets, the DPP offers a potential solution to several trust-related challenges. DPPs address concerns about authenticity and uncertainty by enabling product-level transparency, offering verifiable authentication records, detailed ownership histories, and documented repair and maintenance information [24]. Such information helps confirm whether a product is genuine and provides a clearer picture of its use and condition. As a result, DPP systems have the potential to reduce perceived risk and enhance consumer confidence when purchasing pre-owned luxury fashion goods online, representing a promising tool for fostering sustainable participation in the luxury fashion resale market.

Despite the growing prominence of DPPs, a critical gap remains in understanding their influence on consumer cognition and intention. While DPPs have been widely posi-

tioned as technological tools to enhance transparency, traceability, and sustainability across product lifecycles, existing research has largely emphasized their technical implementation, regulatory frameworks, and supply chain applications [11]. Comparatively little attention has been paid to how consumers perceive and respond to DPP-related information in their decision-making contexts. Some existing research offers only limited insight into this dimension. For instance, a qualitative study using semi-structured interviews found that consumers generally expressed positive attitudes toward DPPs, particularly when the systems were perceived as user-friendly and highly accurate [26]. However, such findings remain in an exploratory stage and do not fully explain the underlying cognitive mechanisms through which DPP cues are processed or how they translate into behavioral intentions and behaviors. This gap underscores the need for more in-depth investigation into consumers' cognitive processing of DPP information, particularly regarding how these cues shape engagement, trust formation, and purchase-related decisions within the context of luxury fashion resale markets.

### *2.3. Signaling Theory and Research Framework*

To explain how external authentication serves as a credible cue in digital exchanges, this study draws on signaling theory, which explains how credible signals help reduce information asymmetry when product quality or seller reliability cannot be directly observed [27]. Signaling theory proposes that information asymmetry exists because one party (the sender) possesses more information than the other (the receiver), creating uncertainty during purchase decisions [28]. Effective signals help reduce this uncertainty by communicating unobservable product attributes. However, for a signal to influence consumer perceptions and decisions, it must be perceived as credible, which depends on the extent to which the information is reliable, thereby enhancing consumer trust [29].

Within the luxury fashion resale market, digital product passports (DPPs) act as a tool to deliver credible signals by providing consumers with transparent and verifiable information about products, thereby helping to build trust. Through the DPP, consumers can access information such as product origin, authenticity, ownership history, materials, and lifecycle data; the visibility of such information often contributes to trust in luxury fashion resale markets [25]. Moreover, the availability of DPPs of fashion resale platforms sends a clear signal of transparency to consumers, which helps strengthen product credibility through the provision of detailed information [30]. From a signaling perspective, consumers are expected to interpret DPPs as trustworthy indicators of product authenticity and quality, making them more likely to form favorable purchase intentions. However, limited research has examined the factors influencing the perception of information and the extent to which such information provided through DPPs function as credible signals to reduce information asymmetry and consequently influence consumers' purchase intentions in luxury fashion resale. Addressing this gap requires integrating signaling theory with an examination of how such signals are perceived and interpreted by consumers, which is the objective of this study.

**Perceived transparency.** Transparency is defined as “seeing through” [31]. When it comes to implementing DPPs into luxury fashion resale, this application ensures transparency to consumers by decoding the information of products and materials [32]. According to Slaton [15], digital platforms increase perceived transparency by providing clear and accurate product information, building consumer trust. This trust makes consumers feel confident and informed, encouraging sustainable purchasing decisions. When it comes to interactions with luxury resale, consumers are more likely to avoid risks rather than maximize value when making purchase decisions in an uncertain consumption environment or with limited information. The integration of DPPs into luxury fashion resale

provides detailed insight into products, which ensures consumer trust [33]. Specifically, when consumers can clearly see a product's origin, authenticity, and environmental impact, they feel more confident in their decisions [13], which increases positive attitudes to those DPP-enabled fashion resale platforms, and the perceived risks will be reduced accordingly, with authentication serving as key priority in the luxury fashion resale. DPPs eliminate the concern and open the gate to an easy transition to circular fashion. Thus, the following hypotheses were proposed:

**H1.** *Perceived transparency positively impacts (a) perceived trust, (b) attitude, and (c) perceived risk reduction in DPP-enabled online fashion resale platforms.*

**Perceived traceability.** Traceability is the main function and purpose of a DPP, which is defined as the ability to track the history, application, or location of an item under consideration [34]. Digital Product Passports (DPPs) improve product traceability across the entire lifecycle. The traceability feature of DPPs reduces risks by attaching a unique digital identity to each individual item, which creates a traceable ownership chain and improves trust in the luxury fashion resale market. When DPPs are integrated with technologies such as blockchain and artificial intelligence, they enhance traceability, which translates into consumer interaction with luxury fashion resale [35]. Because the information is verifiable, consumers are more likely to trust the authenticity of the product, thereby strengthening emotional engagement with it [36]. In addition, by providing standardized and accessible product data, DPPs reduce information asymmetry and perceived risk, fostering more positive attitudes toward the product, and therefore fashion resale platforms [37]. Therefore, the following hypotheses are proposed:

**H2.** *Perceived traceability positively impacts (a) perceived trust, (b) attitude, and (c) perceived risk reduction in DPP-enabled online fashion resale platforms.*

**DPPs familiarity.** Familiarity refers to an individuals' awareness, understanding, and prior exposure to a technology or concept. DPP technology is strictly data-focused, highlighting the authentication and privacy of product information, which strengthens user trust [38]. However, if an individual is not thoroughly familiar with technology and concepts, it will be difficult for them to develop a strong trust and preference for the platform. Additionally, familiarity with DPP technology enables consumers to understand and effectively use traceable and authentic product information [39], which will significantly reduce perceived risk and uncertainty in pre-owned luxury resale transactions. When consumers recognize how DPPs verify product authenticity and seller credibility, their trust in resale platforms increases, and concerns about risks and information asymmetry reduce. Moreover, familiarity fosters positive attitudes by alleviating uncertainty, suggesting that greater awareness of DPP-enabled resale systems contributes to more favorable perceptions of these platforms [40]. Thus, the hypotheses are proposed as follows:

**H3.** *DPP familiarity positively impacts (a) perceived trust, (b) attitude, and (c) perceived risk reduction in DPP-enabled online fashion resale platforms.*

**Perceived credibility** plays a critical role in the luxury fashion resale market because consumers must rely heavily on the trustworthiness of sellers and platforms when purchasing pre-owned items. Lack of credibility is perceived as a barrier in the luxury fashion resale industry, especially when it comes to digital platforms [7]. Unlike the primary retail channels, online luxury fashion resale transactions often involve uncertainty regarding product authenticity and condition [21]. The DPP plays an increasingly important role in

strengthening perceived credibility, which will shift consumer and business operations, making luxury resale a mindful experience. A DPP provides verifiable information about a product's origin, materials, production process, and ownership history, creating greater transparency throughout the product lifecycle [11], which makes the products and sellers credible, and trust will develop accordingly. By sharing detailed information about each product, consumer confidence can be fostered, not only for the product itself, but also for the DPP-enabled resale platforms. Consumers are more likely to perceive pre-owned luxury items as higher value when a product passport is provided with comprehensive and transparent product information, improving overall positive attitudes and trust [15]. Therefore, the following hypotheses are proposed:

**H4.** *Perceived credibility positively impacts (a) perceived trust, (b) attitude, and (c) perceived risk reduction in DPP-enabled online fashion resale platforms.*

**Perceived trust.** Trust is an individual's attitude that has been shown to affect decisions in a number of different contexts [41]. Trust influences whether consumers engage in a certain behavior [42] and is considered a decisive antecedent of consumer decision-making related to loyalty [43]. Consumer trust is shaped by both technical factors (e.g., security and privacy) and design elements (e.g., interface usability), creating a sense of safety that encourages engagement in online retailing [44]. In the online luxury fashion resale market, information precision and authenticity enhance trust, which in turn can translate into purchase intentions; DPPs serve as the solution to provide verified data about the product from cradle-to-grave, addressing the security and authenticity concerns [13,45]. Unlike consumer reviews or brand statements that are often biased or even false, information generated from DPPs is usually based on fact, increasing credibility and consumer trust, which encourage purchase intention [43]. Therefore, the following hypotheses are proposed:

**H5.** *Perceived trust positively impacts the intention to purchase second-hand luxury fashion products from DPP-enabled online fashion resale platforms.*

**Attitude toward DPPs.** Attitude is defined as "a relatively enduring organization of beliefs, feelings, and behavioral tendencies toward socially significant objects, groups, events, or symbols" [46] (p. 150), and is shaped by both economic and ethical motivations [47]. Within the Theory of Planned Behavior (TPB), attitude reflects an individual's overall positive or negative evaluation of performing a specific behavior [48]. In this study, attitude is conceptualized as consumers' overall favorable or unfavorable evaluation of purchasing second-hand luxury fashion products through digital product passport (DPP)-enabled resale platforms. In the context of second-hand luxury fashion consumption, DPPs are perceived as effective tools for enhancing transparency and traceability throughout the product lifecycle. Because DPPs enhance information transparency, product authenticity, and lifecycle traceability, consumers who value sustainability and ethical consumption are more likely to perceive DPP-enabled resale as trustworthy and consistent with their personal values [35,47]. Moreover, DPPs function as credible signals of product authenticity and quality, and a positive attitude toward these signals reflects greater consumer trust. Consequently, consumers are more confident in purchasing pre-owned luxury items through DPP-enabled platforms. These favorable evaluations strengthen positive attitudes toward purchasing second-hand luxury fashion through DPP-enabled platforms, thereby increasing consumers' willingness to engage in such purchasing behavior [48]. Accordingly, the following hypothesis is proposed.

**H6.** *Attitude toward DPPs positively impacts the intention to purchase second-hand luxury fashion products from DPP-enabled online fashion resale platforms.*

**Perceived risk reduction** is an important motivator for consumers in the online luxury fashion resale market. Due to the information asymmetry in online fashion resale, several risks have been identified that influence consumers' purchase decisions, such as authenticity, performance, and financial risks [21]. People are more likely to engage in certain behaviors or purchase a product when they perceive it as reliable, as this reduces perceived risk [49]. The information provided by DPPs reduces perceived risks by ensuring that resold items are authenticated by providing transparent information about the product's entire lifecycle. Such verified data addresses key concerns about product authenticity, enhances consumer confidence, and therefore strengthens purchase intentions [19]. Furthermore, when consumers perceive the information as useful and easily accessible, their perceived risk decreases, fostering more positive attitudes and ultimately leading to higher rates of product adoption [50]. Therefore, the following hypothesis is proposed:

**H7.** *Perceived risk reduction positively impacts the intention to purchase second-hand luxury fashion products from DPP-enabled online fashion resale platforms.*

**The moderating role of DPP usage experience.** Awareness can be considered a major driver of the adoption of new technology. Simoes et al. [49] confirmed that increased awareness of DPPs enables consumers to make more informed decisions about using this technology. Beyond awareness, DPP usage experience allows consumers to gain closer exposure to this technology and increase their understanding of it, which further enhances their perceptions of DPPs. However, the effects of DPPs on consumer perceptions and behavioral intentions may vary depending on consumers' level of DPP usage experience. Individuals with prior DPP usage experience may demonstrate stronger purchase intention than those without such experiences. Swazan and Youn [39] confirmed that familiarity with DPP functions and features can reduce perceived risk and increase trust, thereby strengthening the intention. In contrast, consumers with limited or no DPP experience may have difficulty evaluating the credibility or usefulness of the information, weakening these relationships. Therefore, the following hypotheses are developed:

**H8.** *DPP usage experience has moderate effects on the relationships between (a) perceived trust, (b) attitude, and (c) perceived risk reduction with purchase intention.*

### 3. Research Methods

#### 3.1. Sample and Data Collection

An online survey was developed for data collection via Qualtrics (Provo, Utah, USA), and a consumer panel representing the target population was obtained through an online research firm called CloudResearch (Flushing, New York, USA). To maintain a balance of each age group, a quota for three major age groups (18–28, 29–44, and 45–60) was utilized. Each respondent was given a brief description of the study, explaining the purpose of research, the Institutional Review Board exemption status, and the implications of participation. Participants who had never purchased fashion products from online fashion resale platforms were automatically screened out. After deleting incomplete responses and those that failed all three attention-check questions, 307 out of 619 returned responses comprised the final sample (Table 1), with an overall completion rate of 49.59%. Of the 307 participants, 134 (43.6%) reported prior experience using DPP technology, while the remaining 173 (56.4%) had no experience using DPP technology.

**Table 1.** Demographic summary of participants ( $n = 307$ ).

| Consumer Profile        |                                  | Frequency | Percentage |
|-------------------------|----------------------------------|-----------|------------|
| Gender                  | Male                             | 137       | 43.6       |
|                         | Female                           | 172       | 56.1       |
|                         | Non-binary/third gender          | 1         | 0.3        |
| Age                     | 18–28                            | 76        | 24.8       |
|                         | 29–44                            | 147       | 47.9       |
|                         | 45–60                            | 84        | 27.4       |
| Annual household income |                                  |           |            |
|                         | Less than US \$19,999            | 40        | 13.0       |
|                         | US \$20,000–US \$39,999          | 62        | 20.2       |
|                         | US \$40,000–US \$59,999          | 73        | 23.8       |
|                         | US \$60,000–US \$79,999          | 51        | 16.6       |
|                         | US \$80,000–US \$99,999          | 28        | 9.1        |
|                         | More than US\$100,000            | 53        | 17.3       |
| Highest education       |                                  |           |            |
|                         | High school graduate             | 87        | 28.3       |
|                         | Some college                     | 111       | 36.2       |
|                         | College graduate                 | 79        | 25.7       |
|                         | Master/MBA                       | 24        | 7.8        |
|                         | PhD                              | 2         | 0.7        |
|                         | Other                            | 4         | 1.3        |
| Ethnicity               |                                  |           |            |
|                         | African American/Black           | 77        | 25.1       |
|                         | Hispanic/Latino                  | 31        | 10.1       |
|                         | Asian/Pacific Islander           | 10        | 3.3        |
|                         | Caucasian/White                  | 180       | 58.6       |
|                         | Native American, Inuit, or Aleut | 2         | 0.7        |
|                         | Other                            | 6         | 2.0        |
|                         | I prefer not to answer           | 1         | 0.3        |

### 3.2. Instrument Development

The questionnaire consisted of four sections. The first section included three screening questions to ensure that all participants had prior experience with fashion resale. The second section collected participants' demographic information. In the third section, participants were introduced to the digital product passport (DPP); they were required to spend at least 15 s reading a description of the DPP and its key features. The description is presented below:

*Imagine you are shopping on an online luxury resale platform that specializes in second-hand designer fashion. Every item listed on the platform includes a digital product passport (DPP)—a secure digital record stored using blockchain technology. When you browse an item, such as a pre-owned designer handbag, you can access its DPP with a single click. The passport shows:*

- *Authenticity details: Proof that the item is genuine, verified directly by the brand at the time of the original purchase.*
- *Ownership history: Information about previous owners, including the dates of resale transactions.*
- *Condition and care records: Repairs, maintenance, or refurbishments are documented by certified service providers.*

- *Sustainability insights: Details about the product's materials, manufacturing, and estimated carbon footprint, allowing you to understand its environmental impact.*

Only participants who demonstrated an understanding of how DPPs function in fashion resale proceeded to the final section. The last section comprised a series of multi-item scales designed to measure the study's variables. All items were measured utilizing a 5-point Likert scale ranging from 1 = "strongly disagree" to 5 = "strongly agree." Specifically, a four-item scale was adopted and modified from Hina et al. [51] to measure perceived transparency. Perceived traceability was measured using five items adopted from Hina et al. [51]. Four items modified from Casalo' et al. [52] were used to evaluate DPP familiarity. A five-item scale modified from Yoo and Gretzel [53] and Lock and Seele [54] was applied to measure perceived credibility. In addition, six items adopted from Corritore et al. [55] and five items modified from Lang [56] and Lou et al. [57] were used to measure perceived trust and perceived risk reduction, respectively. Attitude was measured using a semantic differential scale with five items borrowed from Lang and Joyner Armstrong [48]. Finally, intention was measured using four items adopted from Lou et al. [57].

### 3.3. Data Analysis

Statistical analyses were conducted using SPSS 29.0 and Mplus 7.0. Reliability and validity were assessed prior to hypothesis testing. Structural equation modeling (SEM) was employed to examine the proposed hypotheses. Model fit was evaluated using multiple goodness-of-fit indices, including the chi-square to degrees of freedom ratio ( $\chi^2/\text{df}$ ), with values below 3 indicating good fit [58]; the Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI), with thresholds of  $\geq 0.90$  for acceptable fit and  $\geq 0.95$  for good fit; and the Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR), where values between 0.05 and 0.08 indicate acceptable fit and values below 0.05 indicate good fit [58].

## 4. Results

### 4.1. Measurement Model

To evaluate the potential threat of common method variance (CMV), Harman's single-factor test was first conducted with all self-reported items. Prior to extraction, data adequacy was verified using the Kaiser–Meyer–Olkin measure, which yielded an excellent sampling adequacy score of 0.948. Additionally, Bartlett's test of sphericity was highly significant ( $\chi^2_{(2346)} = 16,874.147, p < 0.001$ ), confirming that the correlation matrix was suitable for factor analysis. The extraction constrained to a single factor revealed that it accounted for only 25.983% of the total variance, which is well below the standard 50% threshold, indicating that common method bias was not a significant threat to the validity of this study.

Confirmatory factor analysis was then conducted to test the measurement model using Mplus 7.0. The result of the measurement model, including eight latent constructs with a total of 38 items, exhibited an excellent model fit ( $\chi^2_{(\text{df}=637)} = 1125.878, p = 0.000, \chi^2/\text{df} = 1.78; \text{RMSEA} = 0.050; \text{CFI} = 0.950; \text{TLI} = 0.944; \text{SRMR} = 0.036$ ). Construct validity was also confirmed by assessing convergent and discriminant validity (See Tables 2 and 3). All CFA loadings were higher than 0.5, which provided evidence for convergent validity [58], and the average variance extracted (AVE) for each construct was greater than 0.5 [59], suggesting that each construct is well represented by its own indicators. In addition, discriminant validity between constructs was also established because all AVEs ranging from 0.620 to 0.679 exceeded squared correlations between the constructs, ranging from 0.085 to 0.433. Cronbach's alpha estimates of all constructs ranged from 0.889 to 0.927, which exceeded the recommended 0.70 cut-off point [60], confirming the reliability of measurement.

Table 2. Scales and measurement model results.

| Constructs/Indicators                                                                                                 | CFA Loading | $\alpha$ | AVE   |
|-----------------------------------------------------------------------------------------------------------------------|-------------|----------|-------|
| <b>Perceived Transparency</b> (I believe that using a DPP-enabled fashion resale platform. . .)                       |             |          |       |
| would make the product's history (e.g., ownership, repairs) clearly visible to me                                     | 0.8         | 0.894    | 0.678 |
| would provide transparent information about the origin and authenticity of items                                      | 0.829       |          |       |
| would help me feel informed about what I am buying                                                                    | 0.826       |          |       |
| would enhance my confidence in the accuracy of product claims                                                         | 0.839       |          |       |
| <b>Perceived Traceability</b> (I believe that using DPPs allows me. . .)                                              |             |          |       |
| to track product sustainability conveniently                                                                          | 0.811       | 0.891    | 0.62  |
| to easily trace the origin of sustainable products                                                                    | 0.77        |          |       |
| to easily trace the history of sustainable products                                                                   | 0.791       |          |       |
| to easily verify all information ranging from the origin of a sustainable product to its sale                         | 0.81        |          |       |
| to track to have a better understanding of how all processes are sustainable                                          | 0.755       |          |       |
| <b>DPPs Familiarity</b>                                                                                               |             |          |       |
| I am familiar with how digital product passport technology works                                                      | 0.847       | 0.889    | 0.674 |
| I understand the basic principles of digital product passport technology                                              | 0.833       |          |       |
| I have a good knowledge of digital product passport technology and its applications                                   | 0.832       |          |       |
| I feel confident explaining digital product passport technology to others                                             | 0.769       |          |       |
| <b>Perceived Credibility</b> [I believe that digital product passports (DPPs). . .]                                   |             |          |       |
| are reliable tools for verifying product authenticity in fashion resale                                               | 0.836       | 0.91     | 0.674 |
| can be trusted to provide accurate and tamper-proof product information                                               | 0.827       |          |       |
| enhance the credibility of the resale platform                                                                        | 0.798       |          |       |
| reduce the risk of encountering counterfeit or misrepresented items                                                   | 0.796       |          |       |
| offer a secure way to access trustworthy information about secondhand products                                        | 0.846       |          |       |
| <b>Perceived Trust</b>                                                                                                |             |          |       |
| I trust that this platform uses digital product passport (DPP) technology to verify the authenticity of fashion items | 0.803       | 0.927    | 0.679 |
| I believe the digital product passport (DPP) technology implemented by this platform ensures secure transactions      | 0.816       |          |       |
| The DPP system on this platform provides transparent and reliable information about each product's history            | 0.824       |          |       |
| I trust that DPP technology helps prevent counterfeit or fraudulent items on this platform                            | 0.799       |          |       |
| This platform's use of DPP technology increases my overall trust in purchasing secondhand fashion items here          | 0.84        |          |       |
| I feel safe buying fashion resale items on this platform because of the DPP technology it employs                     | 0.861       |          |       |
| <b>Perceived Risk Reduction</b>                                                                                       |             |          |       |
| Using this platform/technology reduces my concerns about losing money                                                 | 0.731       | 0.905    | 0.658 |
| This platform/technology helps me feel less worried about product quality or authenticity                             | 0.842       |          |       |
| I feel that this platform/technology minimizes the risk of fraud or scams                                             | 0.799       |          |       |
| Using this platform/technology reduces my uncertainty about the purchase process                                      | 0.82        |          |       |
| This platform/technology makes me feel safer when buying second-hand fashion                                          | 0.86        |          |       |
| <b>Attitude</b> [I think resale platforms using digital product passport (DPPs) technology is. . .]                   |             |          |       |
| Unfavorable–favorable                                                                                                 | 0.73        | 0.899    | 0.649 |
| Negative–positive                                                                                                     | 0.834       |          |       |
| Unappealing–appealing                                                                                                 | 0.798       |          |       |
| Unreliable–reliable                                                                                                   | 0.796       |          |       |
| Unbeneficial–beneficial                                                                                               | 0.864       |          |       |
| <b>Purchase Intention</b>                                                                                             |             |          |       |
| I intend to buy second-hand luxury goods in the future on the resale platform having DPPs                             | 0.829       | 0.889    | 0.674 |
| I have a high chance of buying second-hand luxury goods on the resale platform having DPPs                            | 0.857       |          |       |
| My desire to buy second-hand luxury from the resale platform having DPPs in the future is high                        | 0.871       |          |       |
| I am more likely to recommend platforms having DPPs to a friend buying second-hand fashion                            | 0.719       |          |       |

**Table 3.** Discriminant and convergent validity of constructs.

|                             | 1            | 2            | 3            | 4            | 5            | 6            | 7            | 8            |
|-----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 1. Perceived transparency   | <b>0.678</b> |              |              |              |              |              |              |              |
| 2. Perceived traceability   | 0.291        | <b>0.620</b> |              |              |              |              |              |              |
| 3. DPPs familiarity         | 0.204        | 0.274        | <b>0.674</b> |              |              |              |              |              |
| 4. Perceived credibility    | 0.303        | 0.297        | 0.294        | <b>0.674</b> |              |              |              |              |
| 5. Perceived trust          | 0.275        | 0.320        | 0.308        | 0.418        | <b>0.679</b> |              |              |              |
| 6. Perceived risk reduction | 0.278        | 0.287        | 0.284        | 0.401        | 0.433        | <b>0.658</b> |              |              |
| 7. Attitude                 | 0.134        | 0.158        | 0.157        | 0.230        | 0.230        | 0.254        | <b>0.649</b> |              |
| 8. Purchase intention       | 0.085        | 0.127        | 0.195        | 0.143        | 0.167        | 0.174        | 0.150        | <b>0.674</b> |

Note. The numbers below the diagonal are the squared correlation coefficients between the variables. The numbers in diagonal are the average variance extracted by each variable.

#### 4.2. Structural Model and Hypothesis Test

Structural equation modeling (SEM) was employed to test the proposed model hypotheses. Overall, the structural model fit was excellent ( $\chi^2_{(df=798)} = 1539.999$ ,  $p = 0.000$ ,  $\chi^2/df = 1.93$ ; RMSEA = 0.055; CFI = 0.930; TLI = 0.924; SRMR = 0.045). Table 4 presents the conceptual model and results of the hypotheses test. The statistical results indicated that perceived transparency positively influences participant perceived trust in fashion resale platforms having DPPs ( $\beta = 0.518$ ,  $p < 0.000$ ), the attitude toward fashion resale platforms having DPPs ( $\beta = 0.355$ ,  $p = 0.040$ ), and perceived risk reduction in purchasing second-hand luxury fashion ( $\beta = 0.386$ ,  $p = 0.009$ ); therefore, H1 was supported. However, only a positive relationship between perceived traceability and perceived trust ( $\beta = 0.378$ ,  $p < 0.000$ ) was supported, and there was no significant relationship between perceived traceability with attitude ( $\beta = 0.160$ ,  $p = 0.257$ ) and perceived risk reduction ( $\beta = 0.230$ ,  $p = 0.053$ ); therefore, H2a was supported. Not as expected, no significant relationships were found between DPPs' familiarity with perceived trust ( $\beta = 0.022$ ,  $p = 0.697$ ), attitude ( $\beta = 0.026$ ,  $p = 0.732$ ), or perceived risk reduction ( $\beta = 0.048$ ,  $p = 0.440$ ); therefore, H3 was not supported. In addition, positive relationships between perceived credibility and perceived trust ( $\beta = 0.352$ ,  $p < 0.000$ ), attitude ( $\beta = 0.508$ ,  $p < 0.000$ ), and perceived risk reduction ( $\beta = 0.344$ ,  $p < 0.000$ ) were also found. Thus, H4 was also supported. The analysis results also indicated positive relationships between the intention to purchase second-hand luxury fashion products from DPP-enabled platforms with perceived trust ( $\beta = 0.482$ ,  $p < 0.000$ ) and attitude ( $\beta = 0.421$ ,  $p < 0.000$ ), but not with perceived risk reduction ( $\beta = 0.112$ ,  $p = 0.904$ ). Therefore, H5 and H6 were supported, but H7 was rejected. Furthermore, to test the moderating role of DPP usage experience, a multi-group chi-square difference test was conducted. The results indicated that DPP usage experiences have a significantly moderating effect on the relationships between attitude, perceived trust, and perceived risk reduction with intention ( $\chi^2_{diff} = 8.588$ ,  $df_{diff} = 5$ ,  $p = 0.005$ ). Specifically, DPP usage experiences significantly moderate the effect of perceived trust and perceived risk reduction on intention (Table 5). Therefore, H8a and H8c were supported, but H8b was not supported.

**Table 4.** Hypotheses test results.

| Hypothesis Path               | Std. $\beta$ -Value | S.E.  | $p$ -Value | Testing Results |
|-------------------------------|---------------------|-------|------------|-----------------|
| H1: Perceived transparency to |                     |       |            |                 |
| (a) perceived trust;          | 0.518               | 0.142 | <0.000 *** | Supported       |
| (b) attitude;                 | 0.355               | 0.173 | 0.040 *    | Supported       |
| (c) perceived risk reduction. | 0.386               | 0.147 | 0.009 **   | Supported       |

Table 4. Cont.

| Hypothesis Path                           | Std. $\beta$ -Value | S.E.  | $p$ -Value | Testing Results |
|-------------------------------------------|---------------------|-------|------------|-----------------|
| H2: Perceived traceability to             |                     |       |            |                 |
| (a) perceived trust;                      | 0.378               | 0.111 | <0.000 *** | Supported       |
| (b) attitude;                             | 0.16                | 0.141 | 0.257      | Not supported   |
| (c) perceived risk reduction.             | 0.23                | 0.119 | 0.053      | Not supported   |
| H3: DPPs familiarity to                   |                     |       |            |                 |
| (a) perceived trust;                      | 0.022               | 0.057 | 0.697      | Not supported   |
| (b) attitude;                             | 0.026               | 0.076 | 0.732      | Not supported   |
| (c) perceived risk reduction.             | 0.048               | 0.062 | 0.44       | Not supported   |
| H4: Perceived credibility to              |                     |       |            |                 |
| (a) perceived trust;                      | 0.352               | 0.1   | <0.000 *** | Supported       |
| (b) attitude;                             | 0.508               | 0.116 | <0.000 *** | Supported       |
| (c) perceived risk reduction.             | 0.344               | 0.106 | <0.000 *** | Supported       |
| H5: Perceived trust to intention          | 0.482               | 0.109 | <0.000 *** | Supported       |
| H6: Attitude to intention                 | 0.421               | 0.1   | <0.000 *** | Supported       |
| H7: Perceived risk reduction to intention | 0.112               | 0.144 | 0.904      | Not supported   |

Note. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Table 5. The moderating effect of DPP usage experiences.

| Hypothesis | Path                                        | DPP Usage<br>Experience (YES)<br>Std. $\beta$ | DPP Usage<br>Experience (NO)<br>Std. $\beta$ | $\beta$ Diff | $p$ -Value | Testing Results |
|------------|---------------------------------------------|-----------------------------------------------|----------------------------------------------|--------------|------------|-----------------|
| H8a        | Perceived trust to<br>intention             | 0.601                                         | 0.306                                        | 0.295        | 0.008 **   | Supported       |
| H8b        | Attitude to<br>intention                    | 0.642                                         | 0.602                                        | 0.040        | 0.678      | Not supported   |
| H8c        | Perceived risk<br>reduction to<br>intention | 0.443                                         | 0.055                                        | 0.388        | <0.001 *** | Supported       |

Note. \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

## 5. Discussion and Implications

Drawing on signaling theory, this study investigates how DPP-enabled fashion resale platforms influence consumers' perceptions and intentions in the context of luxury fashion resale. Specifically, this study investigates whether the perceived transparency, traceability, credibility, and familiarity of DPPs can serve as signals of product authenticity and quality. It further explores how these signals shape the attitudes, foster trust, and reduce perceived risks associated with luxury online fashion resale. By examining the interplay between these cognitive and affective responses, trust, attitude, and risk perception, this study seeks to understand how DPPs ultimately impact consumers' purchase intentions within circular fashion markets.

As expected, the results demonstrate that perceived transparency exerts a significant positive influence on perceived trust, perceived risk reduction, and attitudes toward DPP-enabled resale platforms. The particularly strong effect on trust suggests that transparent disclosure of product-related information, such as authenticity, ownership history, or condition, directly addresses key uncertainties associated with second-hand luxury fashion consumption. This aligns with the statement that reducing information asymmetry is critical in high-risk markets [9]. In resale contexts, where concerns about counterfeits and undisclosed defects are prevalent, transparency appears to function as a signal of platform integrity and accountability. Moreover, the positive association with perceived risk reduction indicates that transparency not only enhances cognitive evaluations of trustworthiness but also mitigates perceived risks. Further, the positive influence on

attitude suggests that transparency extends beyond risk management and shapes overall evaluative judgments of DPP-enabled fashion resale platforms and reinforces the strategic value of transparent digital infrastructures in second-hand luxury ecosystems.

In contrast, although traceability significantly enhances perceived trust in DPP-enabled fashion resale platforms, it does not influence perceived risk reduction or attitude. This suggests that consumers interpret traceability primarily as a trust-building system rather than a direct risk-reduction tool. Traceability, reflecting the ability to verify ownership history or track a product's lifecycle, may serve as a credible signal that reinforces perceptions of authenticity [61], thus fostering consumer trust. However, it may not be sufficient to address broader concerns about product condition, fit, and post-purchase satisfaction, which are central to perceived risks (e.g., performance risk, financial risk, etc.) in second-hand luxury fashion product purchases [21]. Nevertheless, the marginal significance level for the influence of traceability on risk reduction ( $p = 0.053$ ) indicates that traceability may still play an influential, but weaker, role. A possible explanation is that consumers may require clearer communication or greater familiarity with traceability features before translating them into reduced risk perceptions.

Not as expected, familiarity with DPPs does not significantly influence any of the three variables, perceived trust, perceived risk reduction, or attitude, which contrasts with the findings of Swazan and Youn [39]. This finding suggests that simple awareness or prior exposure to DPP concepts is insufficient to shape consumer perception of risk and trust on luxury fashion resale. Considering that DPPs are still emerging in the fashion resale context, familiarity levels may remain superficial. Consumers may not yet possess the depth of understanding necessary to translate familiarity into meaningful cognitive or affective outcomes. Another possible explanation is that functional perceptions (e.g., transparency and credibility) are more influential than experiential familiarity. Consumers appear to respond more strongly to perceived performance attributes of DPPs rather than to their general knowledge of this technology, which implies that practical perception and visible value may matter more than prior awareness in developing positive attitude and purchase intention on DPP-enabled fashion resale platforms.

Perceived credibility consistently demonstrates strong and significant positive effects on perceived trust, perceived risk reduction, and attitude. Notably, credibility has the strongest effect on attitude among all predictors, suggesting that consumers' overall evaluations of resale platforms are heavily influenced by the perceived reliability of DPP information. This result underscores that beyond transparency and traceability, the authenticity and trustworthiness of the data source are paramount. In the context of luxury fashion resale, where counterfeit risks are salient [21], credibility may function as a decisive factor shaping platform preference. Thus, it acts as a critical bridge between technological features and purchase intention.

Furthermore, the analysis reveals that attitudes play a strong direct effect on purchase intention, suggesting that overall evaluations of DPP-enabled fashion resale platforms are a highly influential factor of their behavioral intention. Once consumers develop positive perceptions and attitudes toward these platforms, they are more likely to purchase second-hand luxury fashion products through them. This finding is consistent with a previous study, which indicates favorable attitudes serve as immediate antecedents to intention [35]. Similarly, the significant effect of perceived trust confirms its critical role in facilitating purchase intention in the DPP-enabled luxury fashion resale platforms. Not as expected, perceived risk reduction does not significantly influence purchase intention. This suggests that although the transparency and credibility of DPPs may cognitively reduce perceived risks, risk mitigation alone is not sufficient to motivate behavioral intention. A possible explanation is that the risks involved in luxury fashion resale extend beyond concerns about

authenticity to security risks, transaction risks, and other uncertainties [28]; although DPPs may increase transparency and help to reduce the risks of buying counterfeit products, this might not be enough for consumers to make purchase decisions. That is, risk reduction may function as a background factor, which is necessary but not decisive. Instead of focusing solely on risk avoidance, consumers may place more focus on trust and their overall evaluations of the DPP-enabled platforms, which also reflect the finding from this study that perceived trust positively influences purchase intention. In other words, risk reduction may prevent rejection of the platform, but trust and positive attitude are what actively motivate purchase intention. When consumers perceive DPP-enabled platforms as trustworthy, they are more willing to engage in transactions despite inherent uncertainties.

In addition to testing the proposed hypotheses, a multi-group chi-square difference test was conducted, which reveals that DPP usage experience significantly moderates the relationships between purchase intention and perceived trust and perceived risk reduction, but not attitude. This finding indicates that experienced consumers may have developed stronger cognitive knowledge rather than affective evaluations for authenticity and platform reliability, potentially strengthening trust to trigger purchase intention. Consumers who have previously interacted with DPPs become more capable of evaluating the credibility, transparency, and reliability of the information provided. Consequently, trust becomes a stronger determinant of behavioral intention because experienced users are better able to recognize the authenticity and value of product information embedded within DPPs. Likewise, prior experience enables consumers to understand how DPPs reduce uncertainties regarding product origin, authenticity, sustainability, and quality, thereby amplifying the positive influence of perceived risk reduction on intention. In contrast, the non-significant moderating effect on the attitude–intention relationship suggests that attitude functions as a relatively stable predictor of behavioral intention regardless of consumers' level of DPP experience. Whether consumers are novice or experienced users, a favorable overall evaluation of DPPs consistently translates into stronger intentions to adopt them.

The study provides both theoretical and practical implications. From a theoretical perspective, this study makes a meaningful contribution to signaling theory by empirically taking perceived transparency, traceability, familiarity, and credibility into the conceptual model as the signals in the digital fashion resale market. The study demonstrates that these factors are not interchangeable and exert varying levels of influence on attitude, perception of trust, and risk reduction. The findings extend trust-based and perceived risk frameworks to the context of DPP-enabled resale platforms; this is the first attempt to employ signaling theory in the study of DPPs in the luxury fashion resale market. Transparency and credibility emerge as central antecedents in reducing perceived risk and fostering favorable attitudes in circular consumption settings. The non-significant role of DPPs' familiarity challenges assumptions derived from traditional technology acceptance models, which indicates that in sustainability-driven markets, perceived functional integrity may outweigh familiarity or ease of use. Moreover, the study extends behavioral intention frameworks in the context of circular luxury consumption and highlights trust and attitude emerging as primary drivers of purchase intention, reinforcing the view that digital transparency tools influence behavior indirectly through psychological mechanisms. The non-significant effect of perceived risk reduction suggests that reducing risks may operate as a necessary but insufficient condition, highlighting the importance of positive motivational factors such as trust and attitude. The findings also advance the understanding of the moderating effect of DPP usage experience, demonstrating that consumer expertise shapes technology-enabled sustainability adoption, which contributes to the circular fashion literature by identifying experiential familiarity as a key contextual factor influencing DPP effectiveness.

From a practical perspective, the study suggests that fashion resale platforms should prioritize strategies that strengthen favorable attitudes and improve trust. For the platforms, providing transparent and verified authentication processes and instructions and making the authentication cues visible and easy to understand will increase consumers' trust and engagement. For the sellers, third-party certifications may serve as a signal that helps to enhance trust. In addition, communications should go beyond simply reducing risk to emphasize the reliability and credibility of the platform and products by the improvement of transparency. However, traceability features should not be neglected; their value may be maximized when clearly linked to tangible consumer benefits, such as authentication guarantees or return policies, which will improve purchase intention and consumer satisfaction. Although familiarity alone does not significantly impact perceptions, the moderating effect of DPP usage experience is confirmed, which suggests that platforms may benefit from interactive demonstrations; for example, tutorials that illustrate the practical value of DPPs will help consumers better understand the functions of DPPs, which will amplify the positive effects of transparency and credibility and stimulate purchase intention.

## 6. Conclusions and Limitations

The study points out that the future effectiveness of DPPs in fashion resale lies not in technological novelty, but in delivering transparent, credible, and consumer-centered information systems capable of reducing uncertainty in high-value circular transactions. Serving as signals, the study affirms the positive effect of perceived transparency and credibility of DPPs, highlighting the cognitive function of this technology. In addition, the results confirm that trust and attitude are decisive predictors of consumers' intention to purchase second-hand luxury fashion products from DPP-enabled platforms. Risk reduction alone does not directly drive intention, highlighting the distinction between eliminating uncertainty and fostering positive motivation. Furthermore, usage experience significantly moderates these relationships, emphasizing the importance of consumer segmentation and experiential learning. Overall, DPPs influence behavioral intention not merely by improving transparency but by cultivating trust and shaping favorable evaluations for advancing circular fashion adoption in high-value resale markets.

This study has several limitations that should be acknowledged. Given that DPPs are still emerging in fashion resale markets, participants' understanding may have been conceptual rather than experiential. This may partially explain the non-significant role of DPP familiarity. Future studies could employ experimental designs where participants directly interact with real or simulated DPP interfaces to capture more accurate perceptual responses. Second, the data were collected at a single point, limiting the ability to establish causal relationships. Although structural modeling provides evidence of directional associations, consumer perceptions of DPPs and resale platforms may evolve as DPPs systems become more widely implemented; therefore, longitudinal research may provide stronger evidence regarding how trust, attitude, and intention develop over time. The data of this study were primarily collected from U.S. consumers; the findings may not generalize across markets. Cultural differences in trust formation, luxury perception, and resale acceptance may influence how DPP attributes are evaluated. Thus, a broader and cross-cultural sampling would strengthen external validity.

**Author Contributions:** Conceptualization, A.E.S. and C.L.; methodology, C.L.; software, C.L.; validation, A.E.S. and C.L.; formal analysis, C.L.; writing—original draft preparation, A.E.S. and C.L.; writing—review and editing, C.L.; supervision, C.L.; funding acquisition, A.E.S. and C.L. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was funded by the College of Agriculture Undergraduate Research Grant, Louisiana State University, and The APC was funded by Informatics.

**Institutional Review Board Statement:** The study was approved by the Institutional Review Board of Louisiana State University (IRBAG-25-0076) on 14 August 2025.

**Data Availability Statement:** The data presented in this study are available on request from the corresponding author due to ethical restrictions.

**Acknowledgments:** During the preparation of this work the author(s) used ChatGPT (GPT-5.5) in order to improve language and the readability of the article. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

**Conflicts of Interest:** The authors declare no conflicts of interest.

## References

1. Worldmetrics.org. Sustainability in the Retail Industry Statistics. 2026. Available online: <https://worldmetrics.org/sustainability-in-the-retail-industry-statistics/> (accessed on 15 March 2026).
2. Vick, J.K.; Cho, E. Collaborative and sustainable consumption in the global luxury resale industry. In *IFFTI Annual Proceedings*; 2024. Available online: <https://iffti.org/downloads/iffti-publication/annual-proceedings/proceedings-2024/PDF-295-305.pdf> (accessed on 13 January 2026).
3. Wiedemann, S. The Rise of the Luxury Secondary Market and Its Impact on the Retail Landscape. Bachelor's Thesis, Modul University Vienna, Vienna, Austria, 2019.
4. Wei, B. Review of the literature: Exploring the economics behind fashion resale markets. *Int. J. Soc. Sci. Econ. Res.* **2025**, *10*, 3826–3838. [CrossRef]
5. Tangri, K.; Yu, H. Why buy used? Motivators and barriers for re-commerce luxury fashion. *Int. J. Retail. Distrib. Manag.* **2023**, *51*, 1095–1114. [CrossRef]
6. Becker-Leifhold, C.; Iran, S. Collaborative fashion consumption—Drivers, barriers and future pathways. *J. Fash. Mark. Manag.* **2018**, *22*, 189–208. [CrossRef]
7. Wetzberger, G. The rise of recommerce: Resale and authenticity. *Landslide* **2022**, *14*, 34–39.
8. Zulkarnain, D.Y. Secondhand Fashion & Luxury Goods—Luxury Resale Market Statistics. 2026. Available online: <https://awisee.com/blog/luxury-resale-market-statistics/> (accessed on 3 April 2026).
9. Calvano, E.; Polo, M. Market power, competition and innovation in digital markets: A survey. *Inf. Econ. Policy* **2021**, *54*, 100853. [CrossRef]
10. Wang, X.; Liang, H.; Wang, Z. The emerging fashion market: A study of influencing factors of Shanghai's second-hand luxury consumers' purchasing behavior with grounded theory. *Sustainability* **2024**, *16*, 10201. [CrossRef]
11. Jensen, S.F.; Kristensen, J.H.; Adamsen, S.; Christensen, A.; Vaehrens, B.V. Digital product passports for a circular economy: Data needs for product life cycle decision-making. *Sustain. Prod. Consum.* **2023**, *37*, 242–255. [CrossRef]
12. Walden, J.; Steinbrecher, A.; Marinkovic, M. Digital product passports as enabler of the circular economy. *Chem. Ing. Tech.* **2021**, *90*, 1717–1727. [CrossRef]
13. Jang, J.; Kang, J. Positive technology for consumer well-being: The role of blockchain-based digital product passports in mitigating consumer stress. *J. Consum. Aff.* **2026**, *60*, e70057. [CrossRef]
14. Psarommatis, F.; May, G. A comprehensive review of digital product passports in sustainable manufacturing: Current state, challenges, and future directions. *Circ. Econ. Sustain.* **2026**, *6*, 207. [CrossRef]
15. Slaton, K.; Pookulangara, S. Exploring consumer use of digital product passports for secondary luxury consumption: A conceptual study. *Adv. Consum. Res.* **2025**, *2*, 279–292.
16. Ki, C.; Park, S.; Ha-Brookshire, J.E. Toward a circular economy: Understanding consumers' moral stance on corporations' and individuals' responsibilities in creating a circular fashion economy. *Bus. Strategy Environ.* **2020**, *30*, 1121–1135. [CrossRef]
17. Papamichael, I.; Voukaki, I.; Economou, F.; Liscio, M.C.; Sospino, P.; Naddeo, V.; Zorpas, A.A. Investigation of customer behavior regarding circular fashion. *Sustain. Chem. Pharm.* **2024**, *41*, 101675. [CrossRef]
18. Dissanayake, D.; Weerasinghe, D. Towards circular economy in fashion: Review of strategies, barriers and enablers. *Circ. Econ. Sustain.* **2022**, *2*, 25–45.
19. Persson, O.; Hinton, J.B. Second-hand clothing markets and a just circular economy? Exploring the role of business forms and profit. *J. Clean. Prod.* **2023**, *390*, 136139. [CrossRef]
20. Rutter, C. Luxury zeitgeist: An investigation into the acceleration of the luxury fashion re-commerce and resale market. In *New Horizons in Fashion and Marketing*; Armstrong, K., Ed.; Palgrave Macmillan: Cham, Switzerland, 2025. [CrossRef]

21. Liu, S.; Lang, C.; Liu, C. A systematic review and meta-analysis of Chinese online fashion resale: Toward recipes to stimulate circular fashion. *Sustain. Prod. Consum.* **2023**, *41*, 334–347. [CrossRef]
22. ThredUp. 2026 Fashion Resale Market and Trend Report. 2026. Available online: <http://www.thredup.com/resale/> (accessed on 16 April 2026).
23. Turunen, L.L.M.; Pöyry, E. Shopping second-hand: Consumers' perceptions of value in pre-owned luxury. *J. Retail. Consum. Serv.* **2019**, *51*, 259–268.
24. Fares, N.; Islam Md, S.; Jauhar, S.K.; Kucukaltan, B. Towards an international digital product passport: The new paradigm of a worldwide circular economy. *Circ. Econ. Sustain.* **2025**, *5*, 5475–5495. [CrossRef]
25. Carvalho, C.; Silva, C.J.; Abreu, M.J. Circular economy: Literature review on the implementation of the digital product passport (DPP) in the textile industry. *Sustainability* **2025**, *17*, 1802. [CrossRef]
26. Rahman, M.; Hassan, N. Ownership Transfer and Lifecycle Management Using Digital Product Passports. 2025. Available online: <https://www.diva-portal.org/smash/get/diva2:1979843/FULLTEXT01.pdf> (accessed on 2 February 2026).
27. Mavlanova, T.; Benbunan-Fich, R.; Koufaris, M. Signaling theory and information asymmetry in online commerce. *Inf. Manag.* **2012**, *49*, 240–247. [CrossRef]
28. Bafera, J.; Kleinert, S. Signaling theory in entrepreneurship research: A systematic review and research agenda. *Entrep. Theory Pract.* **2022**, *47*, 2419–2464. [CrossRef]
29. Sun, S.; Johanis, M.; Rychtář, J. Costly signalling theory and dishonest signalling. *Theor. Ecol.* **2020**, *13*, 85–92.
30. Herédia-Colaço, V.; da Silva, L. Digital transparency in fast fashion retail: The impact of digital product passports on consumers' buying decisions. *Proc. Eur. Mark. Acad.* **2025**, *54*, 125943.
31. Metelli, F. The perception of transparency. *Sci. Am.* **1974**, *230*, 90–99. [CrossRef] [PubMed]
32. Beigi, H.; Franconi, A. Design for traceability (DfT): How to enhance transparency and accountability by designing products and materials with features that allow their entire lifecycle to be tracked and documented? In Proceedings of the 6th Product Lifetimes and the Environment Conference (PLATE2025), Aalborg, Denmark, 2–4 July 2025.
33. Huynh, H.; Wojdyla, W.; Van Dyk, C.; Yang, Z.; Chi, T. Transparent threads: Understanding how U.S. consumers respond to traceable information in fashion. *Sustainability* **2024**, *16*, 5010. [CrossRef]
34. Souali, K.; Rahmaoui, O.; Ouzzif, M. An overview of traceability: Definitions and techniques. In Proceedings of the 2016 4th IEEE International Colloquium on Information Science and Technology (CiSt), Tangier, Morocco, 24–26 October 2016; pp. 789–793.
35. Zhao, R.; Liu, C. Consumer acceptance of digital product passports: The roles of technological awareness and value orientations. *Sustainability* **2025**, *17*, 10878. [CrossRef]
36. Gösen, C. Fashioning authenticity: How digital product passports could shape the future of trade mark law. *J. Intellect. Prop. Law Pract.* **2025**, *20*, 105–118. [CrossRef]
37. Wan, P.K.F.; Jiang, S. Enabling a dynamic information flow in digital product passports during product use phase: A literature review and proposed framework. *Sustain. Prod. Consum.* **2025**, *54*, 362–374. [CrossRef]
38. Zavolokina, L.; Zani, N.; Schwabe, G. Designing for trust in blockchain platforms. *IEEE Trans. Eng. Manag.* **2020**, *70*, 849–863. [CrossRef]
39. Swazan, I.S.; Youn, S. Blockchain in luxury resale: The impact of blockchain technology through regulatory focus and uncertainty reduction theories. *J. Consum. Behav.* **2024**, *24*, 512–526. [CrossRef]
40. Verhellen, Y.; Dens, N.; De Pelsmacker, P. Do I know you? How brand familiarity and perceived fit affect consumers' attitudes towards brands placed in movies. *Mark. Lett.* **2016**, *27*, 461–471.
41. Hobbs, J.E.; Goddard, E. Consumers and trust. *Food Policy* **2015**, *52*, 71–74. [CrossRef]
42. Slaton, K. Company-controlled vs. seller-controlled resale platforms: Consumer trust, risk, and purchase intention in circular fashion. *Sustainability* **2025**, *17*, 9847. [CrossRef]
43. Lazaroiu, G.; Negurita, C.; Grecu, I.; Grecu, G.; Mitran, P.C. Consumers' decision-making process on social commerce platforms: Online trust, perceived risk, and purchase intentions. *Front. Psychol.* **2020**, *11*, 890. [CrossRef] [PubMed]
44. Balli, A. The impact of consumer trust on purchase, satisfaction and loyalty in online shopping. *J. Comput. Res. Dev.* **2025**, *25*, 514–526.
45. Petrik, D.; Strobel, G.; Schoormann, T.; Moller, F.; Hoppe-Ludwig, C.; Springer, V. Digital product passports. *Electron. Mark.* **2026**, *36*, 25. [CrossRef]
46. Hogg, M.; Vaughan, G. *Social Psychology*, 4th ed.; Prentice-Hall: London, UK, 2005.
47. Stolz, K. Why (don't) we buy second-hand luxury products? *Sustainability* **2022**, *14*, 8656. [CrossRef]
48. Lang, C.; Joyner Armstrong, C.M. Fashion leadership and intention toward clothing product-service retail models. *J. Fash. Mark. Manag.* **2018**, *22*, 571–587. [CrossRef]
49. Simoes, J.; Neves, C.; Oliveira, T.; Azadi, H.; Goli, I. Toward circular economy: Investigating citizens' willingness to use digital product passports. *Green Technol. Sustain.* **2026**, *4*, 100393. [CrossRef]

50. Patil, P.; Dwivedi, Y.K.; Rana, N.P. Digital payments adoption: An analysis of online convenience, flexibility and health belief model during the COVID-19 pandemic. *Int. J. Bank Mark.* **2020**, *38*, 1467–1488.
51. Hina, M.; Islam, N.; Dhir, A. Blockchain for sustainable consumption: An affordance and consumer value-based view. *Internet Res.* **2024**, *34*, 215–250. [[CrossRef](#)]
52. Casalo, L.; Flavian, C.; Guinaliu, M. The role of perceived usability, reputation, satisfaction and consumer familiarity on the website loyalty formation process. *Comput. Hum. Behav.* **2008**, *24*, 325–345. [[CrossRef](#)]
53. Yoo, K.-H.; Gretzel, U. The influence of perceived credibility on preferences for recommender systems as sources of advice. *Information Technol. Tour.* **2008**, *10*, 133–146. [[CrossRef](#)]
54. Lock, I.; Seele, P. Measuring credibility perceptions in CSR communication: A scale development to test readers' perceived credibility of CSR reports. *Manag. Commun. Q.* **2017**, *31*, 584–613. [[CrossRef](#)] [[PubMed](#)]
55. Corritore, C.L.; Marble, R.P.; Wiedenbeck, S.; Kracher, B.; Chandran, A. Measuring online trust of websites: Credibility, perceived ease of use, and risk. In Proceedings of the AMCIS 2005 Proceedings, Omaha, NE, USA, 11–14 August 2005; Volume 370. Available online: <https://aisel.aisnet.org/amcis2005/370> (accessed on 2 February 2026).
56. Lang, C. Perceived risks and enjoyment of access-based consumption: Identifying barriers and motivations to fashion renting. *Fash. Text.* **2018**, *5*, 23. [[CrossRef](#)]
57. Lou, X.; Chi, T.; Janke, J.; Desch, G. How do perceived value and risk affect purchase intention toward second-hand luxury goods? An empirical study of U.S. consumers. *Sustainability* **2022**, *14*, 11730. [[CrossRef](#)]
58. Kline, R.B. *Principles and Practice of Structural Equation Modeling*, 3rd ed.; The Guilford Press: New York, NY, USA, 2010.
59. Anderson, J.C.; Gerbing, D.W. Structural equation modeling in practice: A review and recommended two-step approach. *Psychol. Bull.* **1988**, *103*, 411–423. [[CrossRef](#)]
60. Cortina, J.M. What is coefficient alpha? An examination of theory and applications. *J. Appl. Psychol.* **1993**, *78*, 98–104. [[CrossRef](#)]
61. Corallo, A.; Latino, M.E.; Menegoli, M. A systematic literature review to explore traceability and lifecycle relationship International. *J. Prod. Res.* **2020**, *58*, 4789–4807. [[CrossRef](#)]

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.