



Article

Examining Consumers' Perceptions of and Attitudes toward Digital Fashion in General and Purchase Intention of Luxury Brands' Digital Fashion Specifically

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Abstract: Digital fashion may instill transformative power into the fashion industry as it can simultaneously deliver fashionability and sustainability. Renowned for their innovativeness and creativity, luxury brands embrace digital fashion and achieve market success, indicating the future of digital fashion. This research aims to empirically investigate consumers' general perceptions and evaluations of digital fashion and to specifically examine consumers' purchase intention of luxury brands' digital fashion. A total of 214 responses were collected from a U.S.-based research company's consumer panel. Data were analyzed by using structural equation modeling (SEM). The results revealed that the general attitude toward digital fashion is influenced by four factors: the two specific attitudes toward outfitting avatars and dressing real people's on-screen bodies in virtual spaces, the perceived social value of digital fashion, and consumer environmental involvement. Furthermore, the general attitude and perceived social value of digital fashion directly affect the purchase intention. This study attempts to extend established theories into the emerging digital fashion context and provides insights and suggestions for digital fashion marketers, particularly for luxury fashion brands.



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Keywords: digital fashion; sustainability; luxury brands; hierarchical multiple attitudes; consumer environmental involvement; customer value; perceived social value

1. Introduction

In the realm of textiles and apparel, the prevailing issues of overproduction and excessive consumption have substantively engendered environmental harm [1,2]. According to the Environmental Protection Agency's statistics report, in 2019, solid textile waste weighing approximately 15 million tons was sent to landfills in the United States, which is nearly nine times higher than the fashion waste generated in 1960. Undoubtedly, sustainability and digitalization stand as prominent overarching trends within the fashion industry. Scholars articulate two divergent perspectives regarding the interplay between these paramount trends [3]. Some argue for a conflictual relationship, positing that the extensive digitalization processes entail significant energy consumption, thereby contributing to unsustainable resource utilization [4]. In contrast, existing research underscores the transformative capacity of cutting-edge digital technologies, including 3D modeling, blockchain, Augmented Reality, and similar innovations, to significantly advance sustainability objectives [5,6]. For instance, it has been empirically proved that the utilization of 3D prototyping technology can offer an efficacious means of combatting unsustainable practices prevalent in the fashion sector [6]. It is worth noting that based on advanced technologies, digital fashion garments that people could use for dressing up their avatars or on-screen physical bodies in virtual environments might be an effective way to promote sustainability in the fashion industry due to the nature of dematerialization. Nonetheless,

there exists a research gap in understanding how consumers perceive digital fashion and whether their sustainability awareness impacts their perceptions, attitudes, and adoption of digital fashion.

In recent years, fashion influencers have posted photos and videos on social media platforms, showcasing their on-screen physical bodies dressed up in various digital fashion attires [7]. A growing array of fashion brands, particularly luxury brands, have commenced collaborations with popular three-dimensional (3D) gaming platforms, such as Roblox and Fortnite, to launch digital fashion collections for players to experience the brands virtually [8,9]. Digital fashion emerges as capable of embellishing not only avatars but also real people's on-screen physical bodies in virtual spaces.

Digital fashion bears the prospect of instilling potent and transformative vigor into the fashion sphere as it can simultaneously deliver both fashionability and sustainability. Compared to physical fashion items, digital fashion products have the potential to be more creative, liberating, and imaginative since they are not bound by physical limitations, such as material requirements, social norms, gender constraints, or cultural expectations [10]. Advanced technologies, such as Style 3D design software (V6) and AI-powered image generators, enable digital fashion to provide a vast range of fashion possibilities that can be swiftly generated with novelty, stylishness, creativity, and charmingly appealing visual effects [11,12]. On the other hand, due to its innate dematerialized essence, digital fashion that only exists in cyberspaces can mitigate the negative environmental impacts caused by physical fashion manufacturing and consumption [11,13]. Fashion companies can also utilize digital fashion samples to reduce manufacturing waste by cutting off sample making and promoting make-to-order production, hence promoting sustainability [11]. In light of the considerable potential presented by digital fashion, it is imperative to deeply comprehend consumers' perceptions and receptivity toward digital fashion products. However, an evident scarcity of empirical research has been observed regarding digital fashion products through the lens of consumer perspectives.

Luxury fashion brands hold a prominent position as trendsetters, renowned for their innovativeness and creativity [14]. The degree to which luxury brands employ a digital fashion strategy and achieve market success in this domain is indicative of the digital fashion industry's future. To stay at the forefront of the fashion industry and cater to the evolving needs of consumers, luxury brands are embracing digital fashion. For instance, in 2021, Gucci experienced remarkable success by unveiling its first digital sneakers known as the Gucci Virtual 25, which can be worn through Augmented Reality (AR) and/or Virtual Reality (VR) technologies [15]. Balenciaga partnered with the 3D gaming platform Fortnite to release exclusive digital fashion collections for players [15]. While there is a growing interest among consumers in digital fashion offerings by luxury brands, there is still much to be explored and understood regarding consumers' attitudes, preferences, and acceptance of these offerings. Notably, there is a salient research dearth concerning consumers' assessments of digital fashion offerings by luxury brands.

The extant literature related to digital fashion primarily includes research on 3D digital fashion design [16], digital fashion designers [11], historical clothing digitalization [17], virtual try-on technology [18], virtual fashion in 3D gaming worlds [19], and conceptual literature [8,20]. There is a notable research gap concerning the empirical examination of consumers' perceptions and assessments of digital fashion products. The digital fashion industry lacks comprehensive and evidence-based guidance for its practices. To fill the gap, this study aims to examine consumers' perceptions of and attitudes toward digital fashion products in general and investigate consumers' purchase intention of luxury brands' digital fashion offerings in specific.

Theories including attitude theories, customer value theory, and consumer involvement theory have been widely utilized in scholarly research to gain insight into consumers' acceptance of innovation (e.g., Kobia and Liu [21], Sweeney and Soutar [22], and Kim, Gupta [23]). By reviewing and synthesizing these theories, we identified the essential influencing factors, constructed a theoretical framework, and proposed corresponding

hypotheses to guide the empirical testing. This current research makes a noteworthy contribution to applying existing theories to the emerging digital fashion context. It also provides valuable marketing and management recommendations for digital fashion marketers, particularly for luxury fashion brands. Significantly, this study represents the pioneering endeavor to scrutinize the influence of consumers' sustainability awareness on their attitudes toward digital fashion.

2. Literature Review

2.1. Digital Fashion

The term "digital fashion" has been extensively employed by scholars; however, its definitions and manifestations vary due to different research focuses and scopes. For instance, Noris, Nobile [24] have presented a conceptual framework for digital fashion from a marketing and communication standpoint. Wearable smart clothing that can be achieved through the integration of electronic components into textile fabrics is occasionally denoted as digital fashion apparel [25]. Baek, Haines [20] employed a systematic literature review approach to identify six themes regarding digital fashion: design, consumer, virtual, body, printing, and supply. Based on the six themes, researchers proposed a unified working definition of digital fashion: "the virtual creation, production, and representation of one's identity via computer-generated design", involving three aspects of the value chain, fashion-design process, and consumer experiences [20]. In this current study, our focal point resides in digital fashion products through the lens of consumers' perspectives. Consequently, we operationalize the concept of digital fashion as a diverse array of computer-generated clothes and related accessories that serve consumers to dress up virtual selves (avatars) and real selves (physical bodies in cyberspaces).

Even though certain fashion brands and emerging digital fashion enterprises have commenced the offering of digital fashion garments to consumers within the past few years [8,11], it is noteworthy that the lineage of digital fashion possesses a comparatively long history. As early as 2003, game players were already able to dress their avatars with a variety of digital items including clothes, shoes, hats, and other accessories in *Second Life*, a 3D game that underwent remarkable exponential expansion [19,26]. Avatars refer to virtual manifestations of physical users within diverse virtual realms, serving as representations of their digital selves [27]. In recent years, the popularity of using digital clothing and accessories to dress up avatars in games such as *Animal Crossing*, *Overwatch*, and *Fortnite* has increased considerably, becoming a significant source of revenue for the gaming industry [7]. The virtual gaming industry has laid the foundation for the growth of digital fashion. With the advancement of 3D modeling and VR technologies, avatars have undergone continuous refinement, becoming increasingly lifelike and finding extensive applications in virtual try-on services and virtual fashion shows [9,28]. Nevertheless, it should be acknowledged that avatars cannot entirely represent real individuals and attain photorealistic effects, thereby rendering discernable distinctions between avatars and real people [29].

Some fashion brands offering virtual try-on services have employed AR technology to overlay digital fashion garments onto the physical bodies of real individuals, such as virtual try-on mirrors within brick-and-mortar stores or dedicated AR try-on applications accessible on portable devices [7,30]. This enables consumers to share AR-enhanced virtual try-on photos or videos on social media platforms or with online friends, showcasing themselves adorned in digital fashion attire rather than physical fashion items [31]. Furthermore, AI-based image-generation systems have advanced to the degree of enabling the seamless mapping of digital fashion attire onto individuals' two-dimensional (2D) images [32]. To obtain heightened visual fidelity, some digital fashion companies like *DressX* provide a distinctive service of synthesizing consumers' purchased digital fashion apparel into their uploaded photographs [8]. Prior research has revealed that consumers, particularly the younger cohorts such as Generation Y (Gen Y) and Generation Z (Gen Z), exhibit a proclivity for regularly sharing fashion visual content, encompassing photographs or videos, wherein

they showcase themselves adorned in fashion-forward outfits [33–35]. Unsurprisingly, the trend of dressing up on-screen physical bodies of real people has emerged and garnered significant attention and engagement in several recent years [7,11].

Along with the development of digital fashion, its two fundamental functions could be highlighted: outfitting avatars and dressing up real people in virtual worlds. While the practice of embellishing avatars through the application of digital items lasts a relatively long time, the domain of digital fashion, capable of outfitting avatars and tangible individuals within virtual realms, remains in its early stages of development for most consumers. To offer visual references, we utilized an AI image generator, Midjourney, to generate a set of digital fashion images distinctively tailored for adorning avatars and real individuals, as visually depicted in Figures 1 and 2.

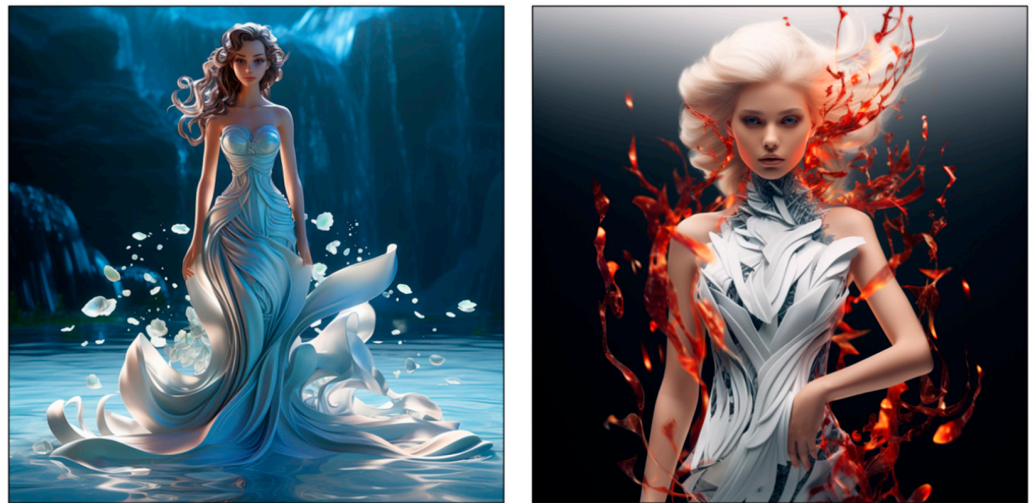


Figure 1. Examples of outfitting avatars.

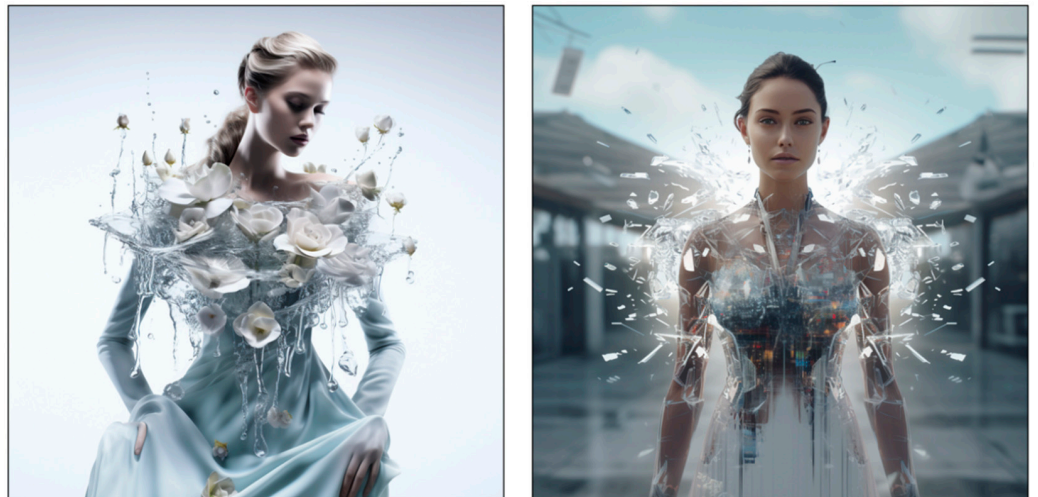


Figure 2. Examples of dressing real people in virtual spaces.

2.2. *Luxury Brands and Digital Fashion*

The adoption of digital fashion holds considerable advantages for luxury fashion brands. First and foremost, employing the digital fashion strategy could help luxury fashion brands uphold their leading positions as trendsetters and exhibit their creativity and innovativeness. Advanced technologies empower luxury fashion designers to craft digital collections with diverse effects, ranging from lifelike representations of physical clothing to fantastical visual outcomes unattainable through traditional means. For instance, garments can feature dynamic elements such as flowers blooming from pockets or boots seemingly

aflame. Furthermore, without physical prototyping and manufacturing, designing and creating digital fashion products can be highly efficient [10,11]. A noteworthy instance is a collaboration between digital fashion designer Amber Jae Slooten and a software developer, resulting in an AI-based GAN model [10]. This model utilizes Paris Fashion Week photo datasets as the input to generate countless optimized photorealistic fashion design patterns including shapes, colors, and styles. Therefore, the potential of digital fashion to offer exclusively fashionable products can enhance luxury brands' capacity to wield creativity and innovation, further solidifying their status as trendsetters in the fashion kingdom.

Moreover, digital fashion offers luxury brands an opportunity to showcase their core values such as rarity, prestige, authenticity, and exclusivity while providing unique experiences for their consumers and enhancing their degree of engagement. One way for luxury brands to fully embrace exclusivity and authenticity is by launching digital fashion Nonfungible Tokens (NFTs) [8]. NFTs refer to indivisible and exclusive digital assets with verifiable ownership [36]. Based on blockchain technology, digital fashion NFTs can trace the origin and transaction history of the entire chain, providing sufficient protection of ownership to both luxury fashion brands and consumers while preventing counterfeiting [8]. This exclusive advantage of NFTs has been legitimized and validated in contemporary digital artworks through auctions and transactions held by well-known institutions such as Sotheby's [37]. The resale of luxury brands' digital fashion NFTs, similar to the collection and trading of digital artworks, may be quite attractive to consumers since the potential for financial gain from digital fashion NFTs is intrinsically linked to the psychological aspect regarding the appeal of scarcity [38]. Despite initial concerns surrounding the energy wastage associated with blockchain and NFT technology, the Ethereum blockchain is transitioning from energy-intensive to energy-efficient modes, anticipating over a 90% reduction in the energy requirement [37]. Overall, developing digital fashion NFTs provides luxury brands with a new way to exhibit exclusive luxury value and engage with consumers on a deeper level.

As digitalization continues to expand globally, there is a notable increase in the considerable time that consumers spend online, particularly observed among the young demographic with a keen interest in gaming and social media [15]. Specifically, Gen Y and Gen Z consumers display a willingness to regularly share fashion-related content, including fashion selfies, on social media platforms [33,39]. The remarkable purchasing power of luxury fashion products has been revealed among Gen Z consumers [35,40]. In light of this context, digital fashion, capable of dressing up both avatars and real people in virtual spaces, has captured young consumers' attention and interests and might see a substantial rise in consumption soon. Compared to conventional physical products, digital fashion is not restricted by physical requirements, such as size and gender, and can be produced without using any physical materials [9,15,20], thereby offering greater sustainability and inclusivity and appealing to young consumers concerned about environmental and social issues. Consequently, the development of digital fashion products emerges as a promising approach for luxury brands to cater to the preferences and requirements of young consumers within the Metaverse era.

A few studies and industry reports have shed light on the current implementation and accomplishments of digital fashion by luxury brands. For instance, in 2021, Dolce & Gabbana's digital fashion collection sold out for approximately USD 6 million, with "The Doge Crown", the most expensive item, fetching about USD 1.3 million [7,8]. Renowned luxury fashion retailer FARFETCH has also utilized digital samplings of physical garments to dress their brand ambassadors to promote new launches [31]. To commemorate its 200th anniversary, Louis Vuitton introduced a video game that incorporated NFTs [38]. Ralph Lauren collaborated with the South Korean social network app Zepeto, resulting in the development of a digital fashion collection that enables users to adorn their avatars with distinctive digital fashion merchandise [38]. Overall, these examples have highlighted the significant potential and opportunities for luxury brands to extend into the digital fashion market.

2.3. Theoretical Framework and Hypotheses Development

The theory of attitude has been employed to investigate the adoption of innovative technology across diverse disciplines [5,41]. Empirical evidence shows that the customer value theory has a valid theoretical guideline for investigating the individual consumption of both physical and digital products [22,23]. The concept of consumer involvement has been extensively applied in understanding sustainable consumption behaviors [42,43]. Therefore, we integrated these theories to develop a conceptual model for this current study. Based on a review of the relevant literature, we proposed research hypotheses. In the proposed conceptual framework (see Figure 3), three hierarchical attitudes (AA, AP, and GA), consumer environmental involvement (CEI), perceived social values (SV) of digital fashion, and the ultimate dependent variable of purchase intention (PI) were included. It should be noted that the variable of purchase intention in this study particularly refers to consumers' buying intention of digital fashion products launched by luxury brands. A more specific discussion is provided below.

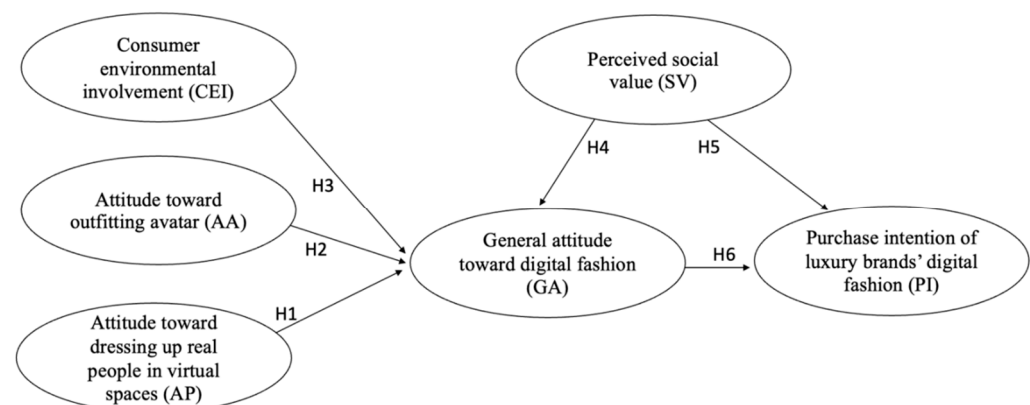


Figure 3. Proposed conceptual model.

2.3.1. Multiple Attitudes in a Hierarchical Order

An attitude can be described as an enduring overall appraisal directed toward an object [34,44]. Attitudes are not only important predictors but also significant mediators during consumers' purchase decision-making process [45,46]. Previous empirical research has demonstrated that in a given context, multiple attitudes toward distinctive targets may coexist in a hierarchical order [45,47,48]. Specifically, scholars illustrated the hierarchical structure of attitudes and demonstrated that in situations where individuals confront a multitude of attitudes, their mental activation of attitudes toward specific targets occurs before the activation of other attitudes, thereby establishing a prioritized order within the hierarchy [44]. For instance, Harben and Kim [48] found that consumers' attitudes toward fashion advertisements influenced their attitudes toward the products being advertised. In the service setting, an empirical study conducted by Curran, Meuter [47] verified a hierarchical framework of multiple attitudes; specifically, a higher-order overall attitude toward service technologies is impacted by a set of specific attitudes toward both the interpersonal and the technological aspects of using self-service technologies.

As aforementioned in the introduction section, digital fashion possesses a basic dual functionality: dressing up both avatars and real people's on-screen physical bodies in virtual environments. The practice of outfitting avatars has a long history in the evolution of virtual gaming worlds, and selling digital fashion items has become a significant source of revenue for game platforms in recent years [49]. The trend of attiring real individuals' on-screen physical bodies has gained intensive attention in several recent years, but it has the potential to go viral on social media [7,8]. Resembling the service setting, digital fashion producers can provide consumers with specialized services rooted in two discernible functional objectives. Accordingly, consumers may manifest varying attitudes toward the utilization of digital fashion for avatar dressing, outfitting real individuals in digital

apparel, and digital fashion in its entirety. Experienced 3D gaming enthusiasts among consumers may exhibit heightened interest in the utilization of digital fashion items to adorn their virtual avatars, while individuals who have observed the emerging trend of dressing real-world personas in digital fashion attire may display a stronger inclination toward outfitting their on-screen physical bodies within virtual realms. Nonetheless, it is noteworthy that both avatar dressing and outfitting real individuals in digital fashion clothing constitute integral facets of digital fashion.

In accordance with the foundational principles of consumer perception, individuals typically prioritize their focus on specific information conveyed by brands or firms before proceeding to formulate their interpretation and holistic evaluation [34]. In general, it is believed that consumers tend to associate digital fashion with specific manifestations, such as outfitting avatars and/or real individuals in digital fashion spaces, before forming a holistic impression of digital fashion. This tendency may hold true whether consumers consider the functional facets of digital fashion or the service offerings of digital fashion producers. Hence, based on the above review and discussion, we posit that the two specific attitudes toward outfitting avatars and toward dressing real individuals in virtual environments may serve as reliable predictors of consumers' general attitudes toward digital fashion. The corresponding two hypotheses are proposed:

Hypothesis 1 (H1): *Attitude toward dressing real people's on-screen bodies in virtual worlds (AP) positively impacts the general attitude toward digital fashion (GA).*

Hypothesis 2 (H2): *Attitude toward outfitting avatars (AA) positively influences the general attitude toward digital fashion (GA).*

2.3.2. Consumer Environmental Involvement

Consumer involvement is centered on individuals' perceived relevance toward a particular object, which serves as a critical indicator of their interest or concern [50]. Consumer environmental involvement refers to the varying degrees of commitment that individuals have toward environmental protection [42]. Previous research has demonstrated that consumers with a high level of environmental involvement are more likely to engage in greener consumption practices, and this involvement is a crucial determinant in the context of sustainable consumption [42,43].

Given the dematerialized nature of digital fashion products, negative impacts on the environment associated with physical production and consumption could be largely reduced via the consumption of digital fashion items [8,11]. Existing research has revealed that consumers with a higher proclivity toward social responsibility tend to prioritize environmental considerations when making purchase choices [5]. Accordingly, the environmental benefits of digital fashion might be a key factor in attracting consumers, especially young consumers who are more conscious of protecting the environment and more engaged with sustainable fashion consumption [39,51]. Consumers with high-level environmental involvement are more likely to possess a positive attitude toward digital fashion.

Digital fashion products serve as conspicuous embodiments of technological innovation and progress. The linkage between technological innovation and sustainable consumer behavior is discernible in existing research [3,5]. As an illustration, Joerß, Hoffmann [3] have introduced the novel concept of "technology-as-solution belief," which measures the degree to which consumers are generally receptive to employing technological innovations to address sustainability challenges. This study has also demonstrated that individuals with a strong technology-as-solution belief are inclined to engage in sustainable consumption practices [3]. Bang and Su [5] have revealed that consumers exhibiting a high degree of personal innovativeness in information technology are more likely to accept sustainable consumption behaviors that are closely linked to cutting-edge technologies. Therefore, it is assumed that an individual consumer's environmental involvement has a significant im-

pact on his or her overall attitude toward digital fashion. Hence, the following hypothesis is proposed:

Hypothesis 3 (H3): *Consumer environmental involvement (CEI) positively impacts the general attitude toward digital fashion (GA).*

2.3.3. Consumer Perceived Social Value

Customer perceived value typically refers to consumers' overall appraisal of a particular brand, product, or service, which includes multiple dimensions, such as price value, quality value, social value, and emotional value [22,23]. These consumer-perceived values have been considered crucial drivers of long-term commercial success [22,23]. Among these values, social value reflects the degree to which a specific product can convey symbolic meaning and enhance consumers' social images and status [22].

In the context of digital fashion, a flexible pricing strategy could be employed by fashion companies due to the empowerment of advanced digital technologies. For instance, luxury houses could debut exclusive digital fashion NFTs by using a premium pricing policy or launch limited editions at a relatively lower price. Consequently, consumers may encounter challenges in establishing a distinct price range and forming a concrete perception of the cost associated with digital fashion items at this juncture. Since digital fashion products do not implicate physical manufacturing, the perceived quality value of digital fashion items may overlap with perceived social and emotional values. To date, digital fashion still stays in a nascent stage for a majority of people. Without a deeper involvement like dressing up avatars or on-screen physical bodies, consumers might not be able to garner an enjoyable attachment to digital fashion. However, consumers' perceived social value of digital fashion is different from other perceived values as digital fashion can convey and deliver symbolic meaning for both wearers and viewers. When individuals view digital fashion products on social media or in 3D games, they can easily interpret the embedded symbolic meaning and develop their evaluations of the corresponding digital fashion pieces and the wearers' identities. For example, in gaming environments, a player can deduce a soldier's identity and social status by examining their digital armor and weapons. Furthermore, consumers may engage in the acquisition or resale of digital fashion NFTs as a form of investment, drawn to the allure of scarcity, akin to the collection of digital art pieces. This practice can also convey symbolic significance, serving as a means to express their social identities [38]. As such, based on the literature review, this current study only focuses on the consumers' perceived social value of digital fashion.

In line with the study conducted by Sweeney and Soutar [22], we define perceived social value (PSV) in the context of digital fashion as the extent to which consumers evaluate that digital fashion products can express their self-concepts and enhance their social images and status. Previous studies have shown that perceived social value influences consumers' choices in either physical or digital products [23,52]. The influence of consumers' perceived social value may occur at various stages of the consumption process [22]. Furthermore, in the background of luxury fashion consumption, consumers' purchase intention is significantly driven by the desire to pursue social benefits and status [14,53,54]. Therefore, drawing on the literature review, we hypothesize that perceived social value positively affects the general attitude toward digital fashion and the purchase intention of digital fashion products launched by luxury brands. Therefore, the following hypotheses are proposed:

Hypothesis 4 (H4): *Perceived social value (SV) has a positive effect on the general attitude toward digital fashion (GA).*

Hypothesis 5 (H5): *Perceived social value (SV) has a positive effect on the purchase intention of luxury brands' digital fashion (PI).*

2.3.4. Attitude–Behavioral Intention Relationship

Purchase intention can be classified as a type of customer behavioral intention and commonly represents consumers' propensity to consciously put effort into implementing a certain buying action [45]. The positive relationship between consumer attitude and purchase intention has been validated by numerous studies across various domains (e.g., Garay, Font [55] and Spears and Singh [45]). Within the luxury brand context, attitude is also positively associated with purchase intention [53,56]. In the situation of the concurrent coexistence of multiple attitudes, previous research has shown that multiple attitudes can operate simultaneously, and a higher-order general attitude can substantially influence consumers' specific behavioral intentions [47]. Accordingly, an attitude–behavioral intention relationship is likely to be discerned within the domain of digital fashion consumption.

In this present study, purchase intention refers to consumers' buying intention of digital fashion collections produced and launched by luxury brands. As digital fashion is a relatively new concept, the majority of consumers have limited experience in wearing digital fashion clothing. Given the well-known prestige of luxury brands, consumers who are interested in digital fashion may be more inclined to purchase digital fashion pieces produced by these brands. Hence, we hypothesize that consumers' general attitude toward digital fashion positively influences their purchase intention of digital fashion items produced by luxury brands. The hypothesis is proposed as the following:

Hypothesis 6 (H6): *General attitude toward digital fashion (GA) positively influences the purchase intention of luxury brands' digital fashion (PI).*

3. Method

3.1. Research Instrument Development

An online self-directed questionnaire was developed by using Qualtrics, consisting of four major parts. The survey commenced with a brief introduction of the research and the IRB exemption code, followed by a set of visual scenarios and working definitions concerning digital fashion and a series of multi-item scales measuring all constructs, along with the demographic information section. Illustrated in Figures 1 and 2, the participants were provided with an array of digital fashion images in the survey, showcasing two distinct functionalities of digital fashion: embellishing avatars and dressing up the on-screen physical bodies of real individuals. We expanded the array of digital fashion images beyond those depicted in Figures 1 and 2, diligently ensuring the representation of both female and male characters. Furthermore, we deliberately incorporated avatar models designed to mitigate gender-related biases.

All of the six research constructs were assessed by multi-item scales. In total, 31 items were included. All the measures were either adopted or adapted from prior studies. The seven-item scale assessing the construct of consumer-perceived social value (SV) was adapted from research conducted by Sweeney and Soutar [22] and Kim, Gupta [23]. The three constructs of the attitude toward outfitting avatars (AA), the attitude toward dressing real people's on-screen physical bodies (AP), and the general attitude toward digital fashion (GA) were adapted from the research conducted by Spears and Singh [45], with each measure consisting of five items. Four items measuring purchase intention (PI) were also adapted from the study conducted by Spears and Singh [45]. The five-item scale assessing consumer environmental involvement (CEI) was adapted from Zaichkowsky's research [50]. All the items were assessed by using a 7-point Likert scale with 1 indicating strongly disagree and 7 indicating strongly agree, or a 7-point semantic scale. Table 1 lists all the construct measures and items.

Table 1. Research constructs and measure scales.

Construct	Items	Coding	References
Perceived social value (SV)	Using digital fashion items helps me maintain my social relationships with others.	SV1	Kim, Gupta [23] Sweeney and Soutar [22]
	Using digital fashion items better enables me to form interpersonal bonds with others.	SV2	
	Using digital fashion items helps me make new friends.	SV3	
	Using digital fashion items could enhance my self-image before others.	SV4	
	Using digital fashion items enhances my social relationships with others.	SV5	
	Using digital fashion items improves the way I am perceived.	SV6	
	Using digital fashion items makes a good impression on other people.	SV7	
Attitude toward outfitting avatar (AA)	Unappealing. Appealing	AA1	Spears and Singh [45]
	Unlikable. Likable	AA2	
	Bad. Good	AA3	
	Unpleasant. Pleasant	AA4	
	Unfavorable. Favorable	AA5	
Attitude toward dressing real people's on-screen physical body (AP)	Unappealing. Appealing	AP1	Spears and Singh [45]
	Unlikable. Likable	AP2	
	Bad. Good	AP3	
	Unpleasant. Pleasant	AP4	
	Unfavorable. Favorable	AP5	
General attitude toward digital fashion (GA)	Unappealing. Appealing	GA1	Spears and Singh [45]
	Unlikable. Likable	GA2	
	Bad. Good	GA3	
	Unpleasant. Pleasant	GA4	
	Unfavorable. Favorable	GA5	
Purchase intention (PI)	Definitely not buy it. Definitely buy it	PI1	Spears and Singh [45]
	Very low. High purchase interest	PI2	
	Probably not. Probably buy it	PI3	
	Definitely do not intend to buy. Definitely intend to buy	PI4	
Consumer environmental involvement (CEI)	matters to me. does not matter to me	CEI1	Zaichkowsky [50]
	irrelevant. relevant	CEI2	
	vital. superfluous	CEI3	
	uninterested. interested	CEI4	
	of no concern. of concern to me	CEI5	

3.2. Sample and Data Collection

In this study, we collected data by using a nonprobability sampling strategy in which the population size and the members of the population are unknown [57]. All the participants were recruited from a U.S.-based research company's consumer panel. The participants were invited to take part in the survey via email, which included a link to the online questionnaire. The survey was entirely completed by a total of 214 participants. Table 2 presents a summary of participants' demographic characteristics, including age, gender, ethnicity, education, annual spending on fashion consumption, and yearly household income.

Table 2. Demographic characteristics of participants.

Items	n	%	Items	n	%
Ethnicity			Annual spending on fashion consumption		
Caucasian/White	141	65.9	Less than USD 200	20	9.3
African American	28	13.1	USD 200–USD 500	55	25.7
Hispanic	16	7.5	USD 500–USD 1000	46	21.5
Asian/Pacific Islander	22	10.3	USD 1000–USD 1500	21	9.8
American Indian/Aleut	1	0.5	USD 1500–USD 2000	28	13.1
Other	6	2.8	USD 2000–USD 3000	19	8.9
Gender			USD 3000–USD 5000	13	6.1
Male	44	20.6	USD 5000–USD 10,000	8	3.7
Female	168	78.5	More than USD 10,000	4	1.9
Other	2	0.9			
Age			Annual household income		
18–25	163	76.2	Less than USD 25,000	55	25.7
26–34	12	5.6	USD 25,000–USD 49,999	24	11.2
35–54	39	18.2	USD 50,000–USD 74,999	19	8.9
Education			USD 75,000–USD 99,999	17	7.9
Some high school or less	2	0.9	USD 100,000–USD 149,999	24	11.2
High school diploma or GED	33	15.4	USD 150,000 or more	25	11.7
Some college, but no degree	127	59.3	Prefer not to say	50	23.4
Associate or technical degree	14	6.5			
Bachelor's degree	24	11.2			
Graduate or professional degree	13	6.1			
Prefer not to say	1	0.5			
Total	214	100	Total	214	100

A substantial proportion of the participants in this study were female, comprising 78.5% (n = 168) of the total sample, while the remaining 20.6% (n = 44) were male. The majority of the participants fell within the age range of 18–25 years (n = 163, 76.2%), followed by the age groups of 35–54 (18.2%, n = 39) and 26–34 (5.6%, n = 12). Regarding ethnicity, Caucasian/White participants (n = 141) made up the largest group, accounting for 65.9% of the sample. Other ethnicities represented in this study include African American (13.1%, n = 28), Hispanic (7.5%, n = 16), Asian/Pacific Islander (10.3%, n = 22), American Indian (0.5%, n = 1), and other (2.8%, n = 6).

The participants in this current study exhibited significant variance in both their annual household income and yearly fashion-related expenditures. Of the respondents, 25.7% (n = 55) reported an annual household income of less than USD 25,000, while 23.4% (n = 50) chose not to disclose their income. In terms of spending on fashion consumption, the majority of participants reported spending between USD 200 and USD 5000 over the past 12 months.

4. Results

4.1. Results of Measurement Reliability and Validity Testing

A correlational research strategy was employed in this study. Data analysis was conducted by using the Statistical Package for the Social Sciences (SPSS 29) and Analysis of Moment Structures (Amos 26) software. Specifically, we used SPSS for data purification, evaluating reliability, performing an exploratory factor analysis (EFA), and conducting Harman's Single Factor Test to check the common method bias (CMB) while employing Amos to execute a confirmatory factor analysis (CFA) and structural equation modeling (SEM). To assess the reliability and validity of all the constructs and initial items, we

conducted a series of factor analyses including an exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFAs were first conducted to construct reliable and useful factor scales and investigate the underlying structure of the research instruments. A total of six constructs and 31 items were identified, which explained around 86.33% of the total variation. The communalities extraction loading was found to range from 0.63 to 0.95, and the Kaiser–Meyer–Olkin measure of sampling adequacy was calculated at 0.95, indicating a robust sampling. Furthermore, EFA loadings for all items were found to range between 0.66 and 0.92, indicating that all the constructs were reliable. The key properties of the final measurement are presented in Table 3.

Table 3. Key properties of the final measurement.

Constructs	Items	M	SD	Communities	EFA	CFA
				Loading	Loading	Loading
Perceived social value (SV)	SV1	3.87	1.82	0.78	0.84	0.89
	SV2	3.95	1.70	0.68	0.82	0.85
	SV3	3.48	1.70	0.79	0.80	0.87
	SV4	3.39	1.67	0.79	0.79	0.86
	SV5	3.19	1.70	0.82	0.79	0.85
	SV6	3.21	1.65	0.77	0.78	0.79
	SV7	3.31	1.77	0.81	0.69	0.82
Attitude toward outfitting avatar (AA)	AA1	4.92	1.97	0.93	0.92	0.96
	AA2	4.98	1.94	0.92	0.91	0.95
	AA3	4.97	1.91	0.93	0.91	0.95
	AA4	4.77	1.99	0.92	0.90	0.96
	AA5	4.93	1.98	0.92	0.90	0.94
Attitude toward dressing on-screen physical body (AP)	AP1	4.52	2.01	0.92	0.88	0.95
	AP2	4.62	1.89	0.89	0.88	0.95
	AP3	4.57	1.98	0.94	0.87	0.96
	AP4	4.49	1.89	0.92	0.87	0.92
	AP5	4.60	1.99	0.93	0.84	0.95
General attitude toward digital fashion (GA)	GA1	4.84	1.84	0.86	0.72	0.93
	GA2	4.85	1.76	0.88	0.72	0.91
	GA3	4.85	1.75	0.87	0.71	0.92
	GA4	4.49	1.83	0.89	0.70	0.91
	GA5	4.87	1.79	0.89	0.69	0.93
Purchase intention (PI)	PI1	3.57	2.27	0.93	0.82	0.96
	PI2	3.53	2.09	0.94	0.81	0.96
	PI3	3.45	2.18	0.95	0.79	0.97
	PI4	3.51	2.11	0.94	0.79	0.94
Consumer involvement (CEI)	CEI1	4.40	2.11	0.84	0.91	0.93
	CEI2	3.98	1.99	0.89	0.90	0.76
	CEI3	4.40	2.14	0.63	0.87	0.70
	CEI4	3.81	1.92	0.73	0.84	0.96
	CEI5	4.10	2.08	0.86	0.66	0.87

Notes: CFA, confirmatory factor analysis; EFA, exploratory factor analysis; M, mean; SE, standard error.

After conducting Harman’s Single-Factor Test, there is no concern with the common method bias in the data since the total variance extracted by one factor is 48.7%, which is less than the recommended threshold of 50% [58,59]. The reliability of all the measurements was supported by Cronbach’s alpha values, which ranged from 0.92 to 0.98, far exceeding the suggested threshold of 0.70 [60]. To evaluate the convergent and discriminant validity of the constructs and further confirm the reliability of the measurements, a confirmatory factor analysis (CFA) was conducted. The results of the CFA testing demonstrated that the measurement model exhibited an exceptional fit (comparative fit index (CFI) = 0.97; Tucker–Lewis Index (TLI) = 0.97; χ^2 (417) = 678.85; χ^2 / df = 1.63; root mean square error

of approximation (RMSEA) = 0.05). All the CFA loadings ranged from 0.7 to 0.97, indicating that each construct was well represented by its corresponding items. Moreover, the construct reliability (CR) for each construct was calculated based on standardized factor loadings, ranging from 0.93 to 0.98, exceeding the recommended threshold of 0.7 and further affirming the reliability of all the constructs [61]. Additionally, all the average variance-extracted estimates (AVEs) were found to range between 0.55 and 0.92, surpassing the suggested threshold of 0.50 [60,62] and providing evidence for the convergent validity of all the constructs. Although the reliability and validity of all the constructs were strongly supported by a set of tests including correlation testing, CR testing, Cronbach's alpha values testing, and AVEs testing, we further examined the multicollinearity of the constructs by using multiple regression testing in SPSS. Regarding the Variance Inflation Factor (VIF), all the values are between 1 and 2, which are much lower than the threshold of 10, indicating that no multicollinearity issues exist [63]. Meanwhile, all the values of Tolerance are between 0.5 and 0.8, which further proves no concerns about multicollinearity [63]. The key properties of the construct reliability and convergent validity are summarized and presented in Table 4.

Table 4. Construct reliability and convergent validity.

Constructs	AVE	CR	Alpha	M	SD
AA	0.9	0.98	0.98	4.91	1.88
AP	0.9	0.98	0.98	4.56	1.87
CEI	0.55	0.93	0.92	4.14	1.79
SV	0.6	0.93	0.93	3.49	1.49
GA	0.85	0.97	0.97	4.78	1.68
PI	0.92	0.98	0.98	3.52	2.1

Notes: AVE, average variance-extracted estimate; CR, construct reliability; Alpha, the Cronbach's alpha; M, mean; SD, standard error.

To evaluate the discriminant validity of the constructs, we employed a matrix to compare the square root of each construct's average variance-extracted estimate (AVE) with the interconstruct correlations [60,64]. The results of this analysis, presented in Table 5, reveal that all the square roots of the AVEs exceeded the interconstruct correlations. It provides evidence for discriminant validity and indicates that all the final constructs are statistically distinct from each other [60,62].

Table 5. Construct correlations and discriminant validity.

	PI	AP	GA	SV	AA	CEI
PI	0.96					
AP	0.51 **	0.95				
GA	0.69 **	0.67 **	0.92			
SV	0.72 **	0.5 **	0.67 **	0.78		
AA	0.35 **	0.53 **	0.59 **	0.33 **	0.95	
CEI	0.3 **	0.29 **	0.47 **	0.44 **	0.20 *	0.74

Notes: bold, square root of variance-extracted estimates; other estimates are interfactor correlations; **, $p < 0.001$; *, $p < 0.05$.

4.2. Results of Hypotheses Testing

Structural equation modeling (SEM) using Amos was conducted to test the proposed model and corresponding hypotheses, and the results indicated an excellent model fit (CFI = 0.97; TLI = 0.97; χ^2 (420) = 684.22; χ^2 /df = 1.63; RMSEA = 0.05). All six hypotheses were supported as presented in Figure 4, and the major results are summarized in Table 6. Specifically, four predictors including the attitude toward dressing real people's on-screen physical bodies in virtual spaces (H1: $\beta = 0.29$, $p < 0.001$), the attitude toward outfitting avatars (H2: $\beta = 0.29$, $p < 0.001$), consumer environmental involvement (H3: $\beta = 0.17$,

$p < 0.001$), and perceived social value (H4: $\beta = 0.35$, $p < 0.001$) significantly and positively impacted the general attitude toward digital fashion. Likewise, the purchase intention of luxury brands' digital fashion was positively and significantly influenced by perceived social value (H5: $\beta = 0.46$, $p < 0.001$) and the general attitude toward digital fashion (H6: $\beta = 0.39$, $p < 0.001$). Although the β coefficients of the two particular attitudes are identical, the t-value for the attitude toward outfitting avatars ($\beta = 5.68$) surpasses that of the attitude toward dressing on-screen physical bodies ($\beta = 5.15$). The relationship between the perceived social value and purchase intention exhibits the highest β value ($\beta = 0.46$) among all the proposed hypotheses.

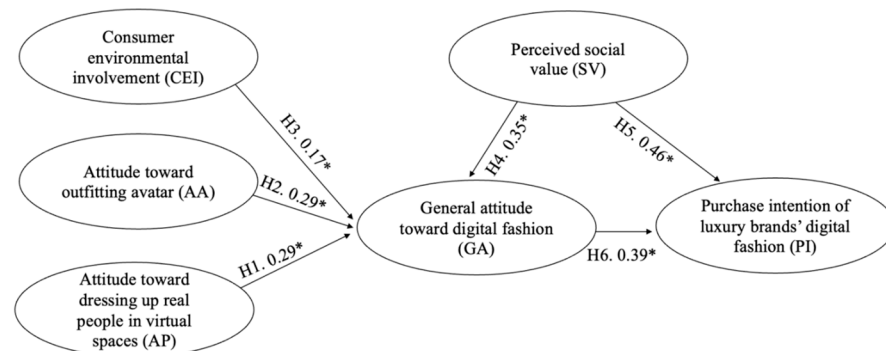


Figure 4. Results of hypotheses testing. Notes: *, $p < 0.001$; numbers, standardized coefficients.

Table 6. Summary of hypotheses testing results.

			Hypotheses	Standardized Path Coefficient	C.R. (t-Value)	p-Value	Results
GA	<---	AP	H1	0.29	5.15	<0.001	Supported
GA	<---	AA	H2	0.29	5.68	<0.001	Supported
GA	<---	CEI	H3	0.17	3.51	<0.001	Supported
GA	<---	SV	H4	0.35	6.32	<0.001	Supported
PI	<---	SV	H5	0.46	6.77	<0.001	Supported
PI	<---	GA	H6	0.39	5.96	<0.001	Supported

Notes: all path coefficient values are significant at the level of 0.001; C.R., critical ratio.

5. Discussion and Implications

5.1. Discussion

Attitudes toward outfitting avatars and dressing up real people's on-screen physical bodies directly predicted the general attitude toward digital fashion, subsequently influencing the purchase intention of luxury brands' digital fashion. This implies that dressing both avatars and on-screen physical bodies are crucial functional components of digital fashion for potential customers. This finding aligns with previous research that revealed multiple attitudes in a hierarchical manner and the association of attitude-behavioral intention [47,48]. Both specific attitudes contribute equally to the formation of consumers' positive general attitudes toward digital fashion.

Consumer environmental involvement directly and positively impacts the general attitude toward digital fashion, successively affecting the purchase intention of luxury brands' digital fashion products. This suggests that individuals who are highly committed to environmental protection exhibit a greater inclination and favorable attitude toward digital fashion. Such consumers are more likely to evaluate information about digital fashion rationally and systematically, and they are more conscious of the sustainability benefits of digital fashion. This finding is in line with previous research revealing the influence of consumer environmental involvement on sustainable consumption [42,43].

Perceived social value has a significant, positive, and direct impact on both the general attitude and the purchase intention. This indicates that resembling physical fashion

consumption, consumers view digital fashion items as a media of self-expression, self-presentation, and communication with others. The perception of social benefits may serve as a basis for consumers' cognitive processing of digital fashion. This finding demonstrates that consumers' perceived social value significantly influences their decision making at different stages of digital fashion consumption, which is consistent with existing research regarding customer values [22,23]. Furthermore, among the identified relationships, the strongest one observed was the positive association between perceived social value and the purchase intention of luxury brands' digital fashion offerings. This finding indicates that the social value of luxury brands plays an important role in individuals accepting and consuming digital fashion. The exclusive social benefits associated with luxury brands could be extended beyond the physical realm by promoting digital fashion. This finding aligns with prior research that has revealed the positive impact of the perceived social benefits on consumers' intentions to purchase luxury brands [14,53].

This study revealed that the general attitude toward digital fashion significantly impacts the purchase intention of luxury brands' digital fashion. This suggests that consumers' overall positive evaluations of digital fashion and the growth of the entire digital fashion industry are crucial and beneficial for luxury brands' digital fashion business. This finding supports the positive relationship between attitude and purchase intention that has been demonstrated by numerous previous studies (e.g., Spears and Singh [45] and Ajzen [46]). This attitude-behavioral intention relationship in the digital fashion context is also consistent with the existing literature that revealed this type of association in luxury fashion consumption and the settings of hierarchical multiple attitudes [47,53].

5.2. Implications

5.2.1. Theoretical Implications

This current study makes a contribution to enriching the theoretical knowledge body by pioneeringly applying existing theories to the emerging context of digital fashion and consumption in virtual spaces. Particularly, this research successfully validated a hierarchical framework concerning multiple attitudes in the digital fashion domain. The existence of an attitude-behavioral intention relationship is also confirmed in this study. These empirical verifications suggest the coexistence and hierarchical arrangement of diverse attitudes toward different targets, synergistically influencing consumer behavior in the realm of digital fashion.

By applying customer value theory to digital fashion consumption, this research uncovered the significant role of consumer-perceived social value in predicting both the overall attitude toward digital fashion and the purchase intention of luxury brands' digital fashion. This theoretical application highlights the extension of customer social value beyond the confines of physical fashion consumption, exerting a potent influence in the realm of digital fashion, especially concerning the luxury brands' digital fashion business. Moreover, this study extended the customer involvement theory into the digital fashion context, supporting the positive impact of customer environmental involvement on consumers' general attitudes toward digital fashion. This theoretical implication sheds light on the dematerialization essence of digital fashion and consumers' heightened environmental consciousness of digital fashion products. In summary, the aforementioned theoretical applications and implications have laid a foundational groundwork for advancing theoretical knowledge within the dynamic setting of digital fashion.

5.2.2. Practical Implications

To increase the acceptance of digital fashion, fashion brands, including luxury brands, can foster consumers' two distinct attitudes toward avatar adornment and using digital fashion to dress up real people in virtual spaces. For instance, digital fashion marketers could partner with 3D gaming platforms to launch digital fashion collections for gamers. They can also offer more advanced and convenient AR-based virtual try-on services to assist consumers in dressing up their on-screen physical bodies. Collaborating with virtual

spaces, such as the Zoom meeting platform, to develop digital fashion filters may be a viable approach to attract consumers to wear digital fashion garments.

Digital fashion marketers, especially luxury brands, should target consumers who are highly engaged in environmental protection. Collaborating with various stakeholders and using different media channels to promote the environmental benefits of digital fashion is crucial to increasing its adoption. Such efforts can appeal to a large consumer base and increase their familiarity with digital fashion. Earlier research indicated that young consumers, particularly Gen Z consumers, exhibit a heightened awareness of protecting the environment, and are concerned about the environmental and social issues in the fashion industry [39]. Furthermore, Gen Z consumers have already shown remarkable buying power when it comes to luxury fashion products [40,65]. Consequently, digital fashion practitioners, especially luxury brands, should concentrate their efforts on targeting younger consumers. Furthermore, to promote sustainability, fashion brands including the luxury sector can fully wield multiple uses of digital fashion, such as employing digital prototyping, providing virtual try-on services, launching digital fashion collections, and enhancing production transparency by revealing the design and/or manufacturing process to consumers by using 3D digital design software like Style 3D (V6) or CLO 3D (V7).

Digital fashion practitioners are supposed to offer more services or opportunities to satisfy consumers' social needs. As an illustration, fashion brands could establish either online or offline communities where members can showcase their digital fashion selfies and engage in communication with one another. Some top luxury fashion brands have already shown outstanding performance in this regard. Gucci, for example, created a virtual Gucci Garden on the Roblox gaming platform where players could gather and interact with each other [38]. To further enhance consumers' perceived social value of luxury brands' digital fashion, marketers can blur the line between the physical world and cyberspaces. One way to achieve this could be to invite current customers to attend virtual fashion shows, while social media followers could be invited to participate in offline fashion events. Employing a fantasy approach could attract consumers who tend to shape their ideal identities through digital fashion.

Nurturing consumers' general attitudes toward digital fashion is critical for luxury brands to succeed in the digital fashion business. Marketing tactics similar to those used in the physical fashion industry, such as cooperating with celebrities and popular influencers, could be applied in the digital fashion context. Also, luxury brands must collaborate to promote the general benefits of digital fashion and the specific advantages of their digital fashion collections. Utilizing various channels, including traditional communication channels, can be an effective way to achieve this goal. For instance, luxury brands can sponsor or direct a movie that presents a compelling branded story featuring characters wearing digital fashion attire. Overall, cooperation is a key factor in facilitating the widespread adoption of digital fashion.

6. Conclusions, Limitation, and Future Research

To the best of our knowledge, this study is the first one to empirically examine how consumers perceive and evaluate digital fashion in general and the purchase intention of luxury brands' digital fashion in particular. The research findings suggest that consumers consider digital fashion as a means of self-expression, presentation, and communication. They are interested in both outfitting avatars and dressing up real people's on-screen physical bodies in virtual environments. Consumers who are highly engaged with environmental protection show a more favorable attitude toward digital fashion. Consumers' perceived social value impacts their general attitudes toward digital fashion and shapes their willingness to purchase luxury brands' digital fashion products. Consumers' overall positive evaluations of digital fashion benefit luxury brands' digital fashion creation and transaction. Overall, the present research makes a dual contribution, significantly enhancing theoretical knowledge within the burgeoning domain of digital fashion while also

furnishing invaluable managerial and marketing guidance for digital fashion practitioners, with a particular emphasis on luxury brands.

There are some limitations to this study, which enlighten the direction for future studies. First, we used a relatively small size sample that may not guarantee a high-level representation of the population, which might constrain the extent of research generalization. Future research could increase the sample size, use a probability sampling strategy, and explore different cultural contexts. Second, given that digital fashion still stays in the early developmental phase, we refrained from imposing specific gender and age quotas during the recruitment of survey participants. Consequently, the resulting sample comprised predominantly females, with a relatively diverse age range. This aspect may engender a certain limitation on the generalizability and precision of the research findings. Therefore, scholars in future research are advised to invest additional efforts in the recruitment process; for instance, they should strive to achieve an equitable proportion of male and female participants or concentrate on younger consumers, such as individuals from the Gen Z cohort. Third, although the proposed model had a good performance, there may be other factors that could better predict consumers' adoption of digital fashion. Future studies could examine other potential determinants. Fourth, this study utilized a correlational research approach to examine the hypotheses, which could not test the causal relationships between variables. Future research could employ an experimental research method to investigate key causal relationships. Also, scholars could utilize diverse research approaches to explore and inspect the digital fashion world, such as qualitative research approaches, big data analysis methods, or a mixed research strategy. In conclusion, future research needs to apply existing theories to the emerging digital fashion context.

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References

1. Ozdamar Ertekin, Z.; Atik, D. Sustainable markets: Motivating factors, barriers, and remedies for mobilization of slow fashion. *J. Macromark.* **2015**, *35*, 53–69. [CrossRef]
2. Henninger, C.E.; Alevizou, P.J.; Oates, C.J. What is sustainable fashion? *J. Fash. Mark. Manag. Int. J.* **2016**, *20*, 400–416. [CrossRef]
3. Joerß, T.; Hoffmann, S.; Mai, R.; Akbar, P. Digitalization as solution to environmental problems? When users rely on augmented reality-recommendation agents. *J. Bus. Res.* **2021**, *128*, 510–523. [CrossRef]
4. Krause, M.J.; Tolaymat, T. Quantification of energy and carbon costs for mining cryptocurrencies. *Nat. Sustain.* **2018**, *1*, 711–718. [CrossRef]
5. Bang, H.; Su, J. Who Uses Virtual Wardrobes? Investigating the Role of Consumer Traits in the Intention to Adopt Virtual Wardrobes. *Sustainability* **2022**, *14*, 1209. [CrossRef]
6. Papahristou, E.; Bilalis, N. Should the fashion industry confront the sustainability challenge with 3D prototyping technology. *Int. J. Sustain. Eng.* **2017**, *10*, 207–214. [CrossRef]
7. Palumbo, J. Digital Dress Codes: What Will We Wear in the Metaverse? Available online: <https://www.cnn.com/style/article/metaverse-digital-fashion/index.html> (accessed on 1 May 2022).

8. Joy, A.; Zhu, Y.; Peña, C.; Brouard, M. Digital future of luxury brands: Metaverse, digital fashion, and non-fungible tokens. *Strateg. Chang.* **2022**, *31*, 337–343. [CrossRef]
9. Park, H.; Lim, R.E. Fashion and the metaverse: Clarifying the domain and establishing a research agenda. *J. Retail. Consum. Serv.* **2023**, *74*, 103413. [CrossRef]
10. Särämäkari, N.; Vänskä, A. 'Just hit a button!'—fashion 4.0 designers as cyborgs, experimenting and designing with generative algorithms. *Int. J. Fash. Des. Technol. Educ.* **2022**, *15*, 211–220. [CrossRef]
11. Särämäkari, N. Digital 3D Fashion Designers: Cases of Atacac and The Fabricant. *Fash. Theory* **2023**, *27*, 85–114. [CrossRef]
12. Sayem, A.S.M. Digital fashion innovations for the real world and metaverse. *Int. J. Fash. Des. Technol. Educ.* **2022**, *15*, 139–141. [CrossRef]
13. Hoekstra, C. Digital fashion for sustainable change: A strategy for digital fashion at Tommy Hilfiger. Master's Thesis, Delft University of Technology, Delft, The Netherlands, 2021.
14. Lawry, C.A. Futurizing luxury: An activity-centric model of phygital luxury experiences. *J. Fash. Mark. Manag. Int. J.* **2022**, *27*, 397–417. [CrossRef]
15. Rolland, M.L. From NFTs to Body Doubles: Why Virtual Fashion is Becoming Big Business. Available online: <https://www.euromonitor.com/article/from-nfts-to-body-doubles-why-virtual-fashion-is-becoming-big-business> (accessed on 1 May 2023).
16. Volino, P.; Cordier, F.; Magnenat-Thalmann, N. From early virtual garment simulation to interactive fashion design. *Comput.-Aided Des.* **2005**, *37*, 593–608. [CrossRef]
17. Meier, C.; Berriel, I.S.; Nava, F.P. Creation of a Virtual Museum for the Dissemination of 3D Models of Historical Clothing. *Sustainability* **2021**, *13*, 12581. [CrossRef]
18. Lee, H.; Xu, Y. Classification of virtual fitting room technologies in the fashion industry: From the perspective of consumer experience. *Int. J. Fash. Des. Technol. Educ.* **2020**, *13*, 1–10. [CrossRef]
19. Liao, C. Virtual fashion play as embodied identity re/assembling: Second Life fashion bloggers and their avatar bodies. In *Reinventing Ourselves: Contemporary Concepts of Identity in Virtual Worlds*; Peachey, A., Childs, M., Eds.; Springer: London, UK, 2011; pp. 101–127.
20. Baek, E.; Haines, S.; Fares, O.H.; Huang, Z.; Hong, Y.; Lee, S.H.M. Defining digital fashion: Reshaping the field via a systematic review. *Comput. Hum. Behav.* **2022**, 107407. [CrossRef]
21. Kobia, C.; Liu, C. Teen girls' adoption of a virtual fashion world. *Young Consum.* **2016**, *17*, 419–432. [CrossRef]
22. Sweeney, J.C.; Soutar, G.N. Consumer perceived value: The development of a multiple item scale. *J. Retail.* **2001**, *77*, 203–220. [CrossRef]
23. Kim, H.-W.; Gupta, S.; Koh, J. Investigating the intention to purchase digital items in social networking communities: A customer value perspective. *Inf. Manag.* **2011**, *48*, 228–234. [CrossRef]
24. Noris, A.; Nobile, T.H.; Kalbaska, N.; Cantoni, L. Digital fashion: A systematic literature review. A perspective on marketing and communication. *J. Glob. Fash. Mark.* **2021**, *12*, 32–46. [CrossRef]
25. Koo, S.; Chae, Y. Wearable Technology in Fashion. In *Leading Edge Technologies in Fashion Innovation. Palgrave Studies in Practice: Global Fashion Brand Management*; Lee, Y.A., Ed.; Palgrave Macmillan: Cham, Switzerland, 2022; pp. 35–57.
26. Koles, B.; Nagy, P. Virtual customers behind avatars: The relationship between virtual identity and virtual consumption in second life. *J. Theor. Appl. Electron. Commer. Res.* **2012**, *7*, 87–105. [CrossRef]
27. Barrera, K.G.; Shah, D. Marketing in the Metaverse: Conceptual understanding, framework, and research agenda. *J. Bus. Res.* **2023**, *155*, 113420. [CrossRef]
28. Liu, K.; Wang, J.; Zhu, C.; Kamalha, E.; Hong, Y.; Zhang, J.; Dong, M. A mixed human body modeling method based on 3D body scanning for clothing industry. *Int. J. Cloth. Sci. Technol.* **2017**, *29*, 673–685. [CrossRef]
29. Silva, E.S.; Bonetti, F. Digital humans in fashion: Will consumers interact? *J. Retail. Consum. Serv.* **2021**, *60*, 102430. [CrossRef]
30. Hsu, S.H.-Y.; Tsou, H.-T.; Chen, J.-S. "Yes, we do. Why not use augmented reality?" customer responses to experiential presentations of AR-based applications. *J. Retail. Consum. Serv.* **2021**, *62*, 102649. [CrossRef]
31. McDowell, M. Influencers are Wearing Digital Versions of Physical Clothes Now. Available online: <https://www.voguebusiness.com/technology/influencers-are-wearing-digital-versions-of-physical-clothes-now> (accessed on 3 May 2022).
32. Luce, L. *Artificial Intelligence for Fashion: How AI Is Revolutionizing the Fashion Industry*; Apress: Berkeley, CA, USA, 2019; pp. 127–128.
33. Reilly, A.; Hawley, J. Attention deficit fashion. *Fash. Style Pop. Cult.* **2019**, *6*, 85–98. [CrossRef] [PubMed]
34. Solomon, M.R. *Consumer Behavior: Buying, Having, and Being*; Pearson: Boston, MA, USA, 2018; pp. 186–187.
35. Mondalek, A. The Complete Guide to Influencer Marketing. Available online: <https://www.businessoffashion.com/case-studies/marketing-pr/fashion-beauty-brand-influencer-marketing-strategy-guide/> (accessed on 11 November 2022).
36. Banerjee, A.; Byrne, R.; Bode, I.D.; Higginson, M. Web3 beyond the Hype. Available online: <https://www.mckinsey.com/industries/financial-services/our-insights/web3-beyond-the-hype> (accessed on 12 November 2022).
37. Treiblmaier, H. Beyond blockchain: How tokens trigger the internet of value and what marketing researchers need to know about them. *J. Mark. Commun.* **2023**, *29*, 238–250. [CrossRef]
38. Balchandani, A.; Berg, A.; Hedrich, S.; Jensen, J.E.; Merle, L.L.; Rölkens, F. How the Fashion Industry Can Get into a Metaverse Mindset. Available online: <https://www.mckinsey.com/industries/retail/our-insights/how-the-fashion-industry-can-get-into-a-metaverse-mindset> (accessed on 3 March 2023).

39. Zhang, Y.; Liu, C.; Lyu, Y. Profiling Consumers: Examination of Chinese Gen Z Consumers' Sustainable Fashion Consumption. *Sustainability* **2023**, *15*, 8447. [CrossRef]
40. Sun, Y.; Wang, R.; Cao, D.; Lee, R. Who are social media influencers for luxury fashion consumption of the Chinese Gen Z? Categorisation and empirical examination. *J. Fash. Mark. Manag. Int. J.* **2022**, *26*, 603–621. [CrossRef]
41. Ajzen, I. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* **1991**, *50*, 179–211. [CrossRef]
42. Cheng, Z.-H.; Chang, C.-T.; Lee, Y.-K. Linking hedonic and utilitarian shopping values to consumer skepticism and green consumption: The roles of environmental involvement and locus of control. *Rev. Manag. Sci.* **2020**, *14*, 61–85. [CrossRef]
43. Gregory, G.D.; Leo, M.D. Repeated behavior and environmental psychology: The role of personal involvement and habit formation in explaining water consumption. *J. Appl. Soc. Psychol.* **2003**, *33*, 1261–1296. [CrossRef]
44. Eagly, A.H.; Chaiken, S. *The Psychology of Attitudes*; Harcourt Brace Jovanovich College Publishers: San Diego, CA, USA, 1993; pp. 1–3.
45. Spears, N.; Singh, S.N. Measuring attitude toward the brand and purchase intentions. *J. Curr. Issues Res. Advert.* **2004**, *26*, 53–66. [CrossRef]
46. Ajzen, I. Consumer attitudes and behavior. In *Handbook of Consumer Psychology*; Haugtvedt, C.P., Herr, P.M., Cardes, F.R., Eds.; Lawrence Erlbaum Associates: New York, NY, USA, 2008; pp. 525–548.
47. Curran, J.M.; Meuter, M.L.; Surprenant, C.F. Intentions to use self-service technologies: A confluence of multiple attitudes. *J. Serv. Res.* **2003**, *5*, 209–224. [CrossRef]
48. Harben, B.; Kim, S. Attitude towards fashion advertisements with political content: Impacts of opinion leadership and perception of advertisement message. *Int. J. Consum. Stud.* **2008**, *32*, 88–98. [CrossRef]
49. Kansara, V.A. Benoit Pagotto: The Nike-Backed Gamer Building the Supreme of the Metaverse. Available online: <https://www.businessoffashion.com/articles/entrepreneurship/benoit-pagotto-launch-bof-500-class-of-2022-fashion-industry-entrepreneur/> (accessed on 10 March 2022).
50. Zaichkowsky, J.L. Measuring the involvement construct. *J. Consum. Res.* **1985**, *12*, 341–352. [CrossRef]
51. Su, J.; Watchravesringkan, K.; Zhou, J.; Gil, M. Sustainable clothing: Perspectives from US and Chinese young Millennials. *Int. J. Retail Distrib. Manag.* **2019**, *47*, 1141–1162. [CrossRef]
52. Jung, S.; Jin, B. Sustainable development of slow fashion businesses: Customer value approach. *Sustainability* **2016**, *8*, 540. [CrossRef]
53. Bian, Q.; Forsythe, S. Purchase intention for luxury brands: A cross cultural comparison. *J. Bus. Res.* **2012**, *65*, 1443–1451. [CrossRef]
54. Chen, M.; Xie, Z.; Zhang, J.; Li, Y. Internet celebrities' impact on luxury fashion impulse buying. *J. Theor. Appl. Electron. Commer. Res.* **2021**, *16*, 2470–2489. [CrossRef]
55. Garay, L.; Font, X.; Corrons, A. Sustainability-oriented innovation in tourism: An analysis based on the decomposed theory of planned behavior. *J. Travel Res.* **2019**, *58*, 622–636. [CrossRef]
56. Hung, K.P.; Chen, A.H.; Peng, N.; Hackley, C.; Tiwaskul, R.A.; Chou, C. Antecedents of luxury brand purchase intention. *J. Prod. Brand Manag.* **2011**, *20*, 457–467. [CrossRef]
57. Gravetter, F.J.; Forzano, L.-A.B. *Research Methods for the Behavioral Sciences*, 6th ed.; Cengage Learning: Boston, MA, USA, 2018; p. 155.
58. Aguirre-Urreta, M.I.; Hu, J. Detecting common method bias: Performance of the Harman's single-factor test. *ACM SIGMIS Database Database Adv. Inf. Syst.* **2019**, *50*, 45–70. [CrossRef]
59. Kock, N. Harman's single factor test in PLS-SEM: Checking for common method bias. *Data Anal. Perspect. J.* **2020**, *2*, 1–6.
60. Fornell, C.; Larcker, D.F. Structural equation models with unobservable variables and measurement error: Algebra and statistics. *J. Mark. Res.* **1981**, *18*, 382–388. [CrossRef]
61. Gefen, D.; Straub, D.; Boudreau, M.-C. Structural equation modeling and regression: Guidelines for research practice. *Commun. Assoc. Inf. Syst.* **2000**, *4*, 7. [CrossRef]
62. Fornell, C.; Larcker, D.F. Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* **1981**, *18*, 39–50. [CrossRef]
63. Lomax, R.G.; Hahs-Vaughn, D.L. *An Introduction to Statistical Concepts*, 3rd ed.; Routledge: London, UK, 2013; p. 988.
64. Williams, L.J.; Hartman, N.; Cavazotte, F. Method variance and marker variables: A review and comprehensive CFA marker technique. *Organ. Res. Methods* **2010**, *13*, 477–514. [CrossRef]
65. Nanda, M. Gen-Z Shopping: Separating Myth from Reality. Available online: <https://www.businessoffashion.com/case-studies/marketing-pr/case-study-gen-z-shopping-fashion-beauty-consumer-behaviour/> (accessed on 19 May 2022).

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