Smart mirror technology: Influence on luxury fashion retail consumers

Abstract

Purpose: This study investigates smart mirror technology's impact on luxury fashion retail consumers, namely its influence on consumer satisfaction and purchase intentions. By extending the Technology Acceptance Model (TAM) with aesthetic appeal and navigation, the research addresses gaps in understanding the in-store technologies' adoption in high-end retail environments.

Design/methodology/approach: The research uses a quantitative approach, via survey conducted among luxury fashion consumers. Partial least squares structural equation modeling (PLS-SEM) and cIPMA were employed to test the proposed relationships.

Findings: Results reveal that perceived usefulness and navigation influence consumer satisfaction with smart mirror experiences, which, in turn, drive purchase intention. Conversely, perceived ease of use and aesthetic appeal did not significantly affect satisfaction. Navigation emerged as the most critical experiential factor, underscoring the importance of seamless and intuitive interactions for luxury consumers.

Research limitations/implications: The reliance on video-based simulations instead of real-world interactions may limit validity. The focus on luxury fashion restricts generalizability to other retail segments. Future research should involve in-store experiments and consider other technologies or consumer segments.

Practical implications: Luxury retailers should prioritize the design of intuitive navigation and functional features in smart mirrors to enhance consumer satisfaction and encourage purchase behavior. Integrating digital elements should complement, rather than replace, personalized human service to maintain the high-touch experience expected in luxury contexts.

Originality/value: This research contributes to the literature by extending TAM in a luxury retail context, namely navigation and aesthetic appeal, the study contextualizes technology adoption within high-touch, hedonic retail environments.

Keywords: Smart mirror, luxury fashion retail, consumer experience, digital innovation, marketing.

Word count: 8942

1. Introduction

Digitalization has transformed retail, physical stores remain relevant, as even born-digital firms are opening brick-and-mortar locations and consumers continue to shop offline (Grewal et al., 2017; Hagberg et al., 2017; Breugelmans et al., 2023). This is particularly evident in luxury fashion, which long resisted e-commerce in favor of traditional channels (Aiolfi and Sabbadin, 2019; Pantano et al., 2022). Recently, however, luxury brands have begun integrating digital technologies to meet evolving consumer expectations and enrich in-store experiences (Alexander and Kent, 2022; Grewal et al., 2020; Nawres et al., 2024). At the core of this study lies a tension: luxury fashion retail has traditionally relied on sensory-rich, high-touch, and deeply personalized service, which reinforces brand exclusivity and emotional engagement (Hennigs et al., 2013; Kim and Kim, 2014). Yet, at the same time, physical stores are increasingly digitized, with brands introducing interactive technologies such as smart mirrors, augmented reality, and AI-enabled tools to enhance customer journeys (Grewal et al., 2020; Pantano et al., 2022).

In luxury retail, a smart mirror is an interactive digital display that merges reflection with augmented reality and data-driven personalization, designed to enrich high-touch, sensory shopping experiences while preserving the exclusivity and aesthetic sophistication expected from luxury brands. These innovations intersect with the unique logics of luxury consumption, where purchases are driven not only by functionality but also by hedonic value, exclusivity, and symbolic meaning (Hennigs et al., 2013; Aleem et al., 2022). As such, understanding how smart mirrors affect such motivations is critical, as luxury consumers may embrace or reject technologies depending on whether they enhance or dilute the prestige and intimacy of the shopping experience.

In luxury fashion, emotions play a pivotal role in driving consumer purchases, whether for clothing, accessories or jewelry (Kim *et al*., 2016). The emotional gratification derived from self-pleasure and indulgence remains one of the most significant motivators for luxury shoppers (Aleem *et al*., 2022). Considering the strong emphasis on value and exclusivity in luxury fashion (Hennigs *et al*., 2013; Wang *et al*., 2024) – providing unique, high-quality products and personalized experiences to consumers is critical (Husain *et al*., 2022). Technology can enable brands to create more immersive and appealing shopping experiences (Grewal *et al*., 2020). Particularly, the concept of phygital experiences becomes increasingly significant (Guzzetti *et al*., 2024; Hyun *et al*., 2024; Pangarkar *et al*., 2022). Phygital experiences refer to the introduction of technologies into physical settings, blending the participative and immersive components of the former with the servicescapes of the latter (Grewal *et al*., 2017; Lawry, 2023). The use of in-store interactive displays, smart mirrors, or augmented reality are some examples of this (Nawres *et al*., 2024; Pantano *et al*., 2018).

Whereas phygital experiences gained ground in the attention span of both researchers and managers (e.g. Guzzetti *et al*., 2024; Morgan, 2023), the investigation of their

effectiveness and facilitating conditions is still at its infancy, especially in the luxury setting (Gupta *et al*., 2022). Existent studies call for additional studies in this regard, and the examination of the role of different technologies (e.g. Guzzetti *et al*., 2024; Hipólito *et al*., 2025). Following that call, and building on the Technology Acceptance Model (TAM), this research aims to understand how smart mirrors influence consumers' overall experience and purchasing decisions.

Traditional applications of TAM in retail and technology adoption have primarily focused on mass-market settings and e-commerce platforms (Davis, 1989; Marangunic and Granic, 2015). However, luxury fashion retail presents unique challenges due to its emphasis on exclusivity, sensory experiences, and emotional engagement (Aleem *et al*., 2022; Cabigiosu, 2020). This study refines the model to account for the experiential and hedonic dimensions that are critical in the luxury retail environment through the integration of constructs such as navigation and aesthetic appeal into TAM. Furthermore, while previous research has examined AR and virtual fitting rooms (Beck and Crié, 2018; Xue *et al*., 2022), the role of interactive smart mirrors as an in-store engagement tool within luxury fashion remains underexplored. Moreover, prior applications of TAM have largely focused on mass-market or online retail, emphasizing utilitarian aspects such as ease of use and usefulness (Davis, 1989; Marangunic & Granic, 2015). This creates a gap in understanding how technology acceptance unfolds in luxury settings, where hedonic, symbolic, and experiential dimensions are paramount (Aleem et al., 2022; Kim & Kim, 2014). By extending TAM with navigation and aesthetic appeal, our study adapts an established model to the luxury retail context and demonstrates that navigation functions as a core experiential driver of satisfaction.

2. Literature review

2.1. Luxury brands

Luxury definition evolved with time, given its influence by social, economic, and cultural context (Cabigiosu, 2020). Still, it can be related to indulgence, extravagance, eccentricity, and lustfulness (Castelli, 2013). Luxury brand, on its hand, is a brand which products or services are perceived as having superior quality while offering value through functional and emotional benefits (Ko *et al*., 2019). Its ubiquitous scarcity, allure and culture adds appeal and creates experiences with emotional, physical, cultural and intellectual ramifications (Fionda and Moore, 2009; Serdari, 2020). Luxury brands must have a prestigious and distinguished resemblance among the consumers, usually by showcasing characteristics such as craftsmanship or time of manufacture (Aleem *et al*., 2022; Fionda and Moore, 2009). By doing so, brands reinforce their value and luxury consumers are more prone to pay a bigger amount for a product which they perceive to indicate status (Aleem *et al*., 2022).

Chanel, Dior, Fendi, Cartier, Loewe, Prada, Schiaparelli, or Bottega Veneta are some examples of established luxury brands in fashion, having in common features as high prices, rarity, and a sense of indulgence (Fionda and Moore, 2009; Rovai, 2018). Their products are perceived to be fabricated with exceptional materials, a high level of artistry, technique and an arduous production process (Aleem *et al*., 2022; Dhaliwal *et al*., 2020; Lee *et al*., 2020). Additionally, luxury is associated with signaling, excellence, scarcity, allegorical meaning that represent high symbolic value and create emotional bonds with the consumer (Aiolfi and Sabbadin, 2019; Cabigiosu, 2020). Hence, not only luxury fashion refers to excellence in quality, high transaction price, scarcity, and skillfulness, but also to the fulfilment of psychological needs, more connected with hedonic consumption (Fionda and Moore, 2009).

2.2. Consumers and luxury fashion retail

Luxury consumers seek personal satisfaction and an emotional component when shopping, as their consumption has a hedonistic dimension which should be fulfilled (Cabigiosu, 2020), challenging luxury fashion brands to move beyond products and invest in creating experiences (e.g. Rovai, 2018). These experiences should be unique and memorable and connect the shopping experience to the product itself (Sachdeva and Suhsma, 2015). The experience can include the ambience and service provided by luxury brands in their physical stores (Fionda and Moore, 2009; Loeb, 2022). Hence, most luxury retailers strive to create an architectural space that conveys a sense of opulence, and work with sales assistants that guide consumers through shopping (Fionda and Moore, 2009).

From an experiential marketing perspective, smart mirrors contribute to creating multisensory, interactive, and emotionally engaging retail environments that go beyond transactional utility (Harba, 2019). These technologies allow consumers to immerse themselves in curated brand experiences (e.g. virtually trying on exclusive collections or accessing rich media content about craftsmanship) which enhances the emotional and symbolic value of the shopping experience. Furthermore, consumer-brand relationship theory posits that consumers form emotional bonds with brands through repeated, meaningful interactions (Fionda and Moore, 2009). In this context, smart mirrors act as a digital extension of the brand's identity, enabling personalized experiences that reinforce brand intimacy and loyalty.

Luxury physical spaces are key to a company's reputation, leading brands to own stores and thus better control the consumer relationship and experience (Cabigiosu, 2020; Fionda and Moore, 2009). Sales assistants are also crucial, due to their role in building long-lasting relationships with consumers, and personalized approach (Kim and Kim,

2014; Loeb, 2022). Nevertheless, in the current paradigm, sales assistants' work can be complemented by technology, especially considering consumers' requirements for fast-paced, interactive and immersive experiences, ideally tailored to their preferences (Harba, 2019). In this regard, brands can invest in experiential retail and use technology as an assistant to deliver a flawless and tailored experience throughout the brand's channels – online and offline (Aleem *et al*., 2022). By integrating offline and online retailers maximize the physical space potential while providing a more intricate and dazzling shopping experience.

While existing studies on retail digitalization and self-service technologies (Grewal *et al*., 2020; Hagberg *et al*., 2017; Araújo *et al*., 2021) provide valuable insights into technology adoption, their applicability to luxury fashion retail requires careful consideration. Mass-market retail consumers often prioritize convenience, efficiency, and price sensitivity (Guzzetti *et al*., 2024), which makes models like TAM highly relevant in assessing adoption behaviors. However, luxury consumers differ significantly in their motivations and expectations, as they seek exclusivity, personalized service, and immersive brand experiences (Aiolfi and Sabbadin, 2019; Cabigiosu, 2020). Unlike mainstream shoppers who value transactional efficiency, luxury consumers may be more hesitant to embrace digital interfaces if they perceive them as diminishing the intimate and high-touch service experience traditionally associated with luxury retail (Kim and Kim, 2014). Moreover, while digital convenience enhances the shopping journey in mass retail, in luxury settings, technology must be seamlessly integrated to elevate the brand's narrative and sensory appeal rather than merely optimizing processes (Harba, 2019). This highlights that the integration of digital tools in luxury retail cannot be evaluated solely in terms of efficiency or convenience, but must be understood through the lens of luxury consumption drivers. Luxury consumers engage with brands to signal status, indulge in self-oriented pleasure,

and experience uniqueness and storytelling (Aiolfi & Sabbadin, 2019; Aleem et al., 2022). Smart mirrors intersect with these motives by offering immersive experiences that reinforce the brand's narrative, facilitate personalized styling, and strengthen consumer confidence in exclusive purchases. However, if poorly integrated, such technologies risk undermining the very high-touch service and aesthetic sophistication that define luxury retail.

While TAM provides a foundational understanding of how consumers adopt digital innovations, most prior studies have applied it in mass-market or online retail contexts, focusing on efficiency, convenience, and utilitarian benefits (Marangunic & Granic, 2015; Grewal et al., 2020). These contexts differ substantially from luxury fashion retail, which emphasizes sensory engagement, exclusivity, and personalized service (Aiolfi & Sabbadin, 2019; Kim & Kim, 2014). As such, the traditional TAM constructs of ease of use and usefulness only partially explain luxury consumers' adoption of in-store technologies. To address this limitation, our study extends TAM by integrating *aesthetic appeal* and *navigation*, constructs that capture the hedonic and experiential qualities central to luxury retail (Castillo & Bigné, 2021; Park et al., 2021).

2.3. Technology in luxury fashion retail

Technologies give brands the opportunity to better present their products, and tailor experiences for each consumer (Aiolfi and Sabbadin, 2019). The ones based on artificial intelligence are among the most used to redesigning the retail atmosphere and how consumers interact with the store and the brand (Aleem *et al*., 2022). Virtual reality (VR) and augmented reality (AR) allow an unlimited number of unique experiences, namely creating stories and letting consumers immerse and become a part of narratives (Harba, 2019). Smart mirror, also known as virtual fitting room (Beck and Crié, 2018; Werdayani

and Widiaty, 2021), magic mirror (Xue *et al*., 2022; Ahmed *et al*., 2023), smart mirror fashion technology (Dongare *et al*., 2020; Wang *et al*., 2023), or interactive mirror (Ogunjimi *et al*., 2021) is one of the available tools. It allows product information display but can include features such as browsing or even try clothes without having to wear them, with the help of hidden cameras behind the screen (Prakash *et al*., 2020; Wang *et al*., 2023). These possibilities contribute to generating meaningful experiences and help consumers to be more confident in their decisions (Ogunjimi *et al*., 2021).

In-store technologies such as artificial intelligence (AI), augmented and virtual reality (AR/VR), and interactive displays, including smart mirrors, represent different but complementary dimensions of phygital retail innovation. AI enables real-time personalization and product recommendations, while AR/VR provides immersive narratives that transport consumers into virtual brand universes (Harba, 2019; Aleem et al., 2022). Smart mirrors, by contrast, act as hybrid interfaces that embed digital interaction directly into the physical store environment, allowing consumers to virtually try on products while remaining immersed in the luxury servicescape (Ogunjimi et al., 2021; Wang et al., 2023). Together, these technologies extend the experiential possibilities of luxury shopping by creating multisensory, interactive, and emotionally engaging encounters. Importantly, their adoption in luxury retail must align with core sector imperatives: *aesthetics*, by ensuring visually sophisticated and brand-consistent design; *exclusivity*, by offering unique and personalized experiences that reinforce brand prestige; and *service*, by complementing rather than replacing the human touch central to luxury retail (Hennigs et al., 2013; Kim & Kim, 2014; Grewal et al., 2020).

While smart mirrors and other interactive retail technologies have been studied in various retail contexts (Beck and Crié, 2018; Xue et al., 2022), their specific role in luxury fashion retail remains underexplored. Most prior research has focused on virtual fitting rooms and

AR-enhanced online shopping experiences, with limited empirical analysis of how in-store smart mirrors influence consumer behavior in high-end physical retail spaces (Wang *et al*., 2023). Additionally, existing literature does not fully address how navigation impacts luxury consumers' satisfaction, despite evidence suggesting that seamless and intuitive technological interactions are critical in high-end retail environments (Loureiro, 2023). Another gap concerns the balance between digital immersion and human engagement—luxury retail is highly dependent on personal interactions, and yet little research has examined whether smart mirrors enhance or disrupt this dynamic (Kim and Kim, 2014). Finally, while TAM has been widely applied in technology adoption research, its core constructs (perceived ease of use and perceived usefulness) may not fully capture the luxury consumer's perspective, where aesthetic sophistication, emotional engagement, and brand storytelling play a crucial role (Aleem et al., 2022).

Moreover, as luxury consumers become more digitally fluent, their expectations for seamless, intuitive, and aesthetically integrated technologies increase (Aiolfi and Sabbadin, 2019; Kim and Kim, 2014). Digital fluency moderates technology acceptance by diminishing concerns around usability while heightening the importance of narrative immersion and experiential coherence. This suggests that luxury shoppers no longer evaluate retail technologies purely on ease of use, but rather on how these tools align with brand storytelling and enhance symbolic consumption experiences (Aleem *et al*., 2022). Therefore, digital familiarity acts as a critical contextual factor that reshapes how consumers perceive and engage with in-store technologies like smart mirrors.

3. Conceptual model

Building on the Technology Acceptance Model, this research investigates the influence of smart mirrors on consumer satisfaction and purchasing behavior in a luxury fashion

retail setting. TAM helps explain technology acceptance or rejection among users. According to TAM, users more willingly accept technology if they perceive its benefits (Davis, 1989). Technology that is seen as useful or easy to use is more likely to get accepted (Marangunic and Granic, 2015). While TAM provides the foundational logic for understanding technology acceptance, this study adapts its core constructs to the luxury retail context, where consumers' expectations of aesthetics, exclusivity, and high-touch service fundamentally reshape how ease of use, usefulness, and experiential features such as navigation and design influence satisfaction. Figure 1 presents the proposed model.

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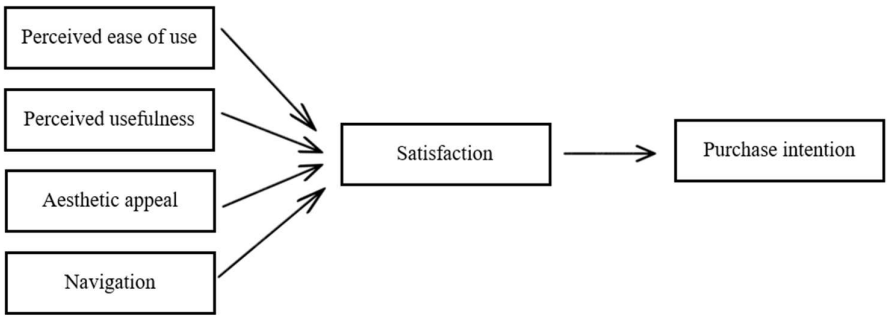

Figure 1. Conceptual model

Perceived ease of use and perceived usefulness are acknowledged key factors influencing the acceptance or rejection of technology by consumers (Marangunic and Granic, 2015). The first refers to the degree to which a consumer believes using a technology would be free of effort while the latter reflects consumers' belief that using a technology would improve performance (Davis, 1989). In luxury retail, however, these constructs operate differently from mass-market settings. Ease of use is increasingly perceived as a baseline expectation, given luxury consumers' digital fluency and their demand for seamless, intuitive service interactions (Kim & Kim, 2014; Aleem et al., 2022). As a result, ease of use may not act as a source of enhanced satisfaction but rather as an assumed prerequisite

of the luxury experience. By contrast, perceived usefulness in luxury fashion extends beyond efficiency to include support for storytelling, personalization, and confidence in product choice, thereby reinforcing exclusivity and brand intimacy (Grewal et al., 2020; Husain et al., 2022). When smart mirrors display curated product information, styling recommendations, or craftsmanship details, they contribute to the symbolic and experiential value that drives satisfaction in luxury contexts. Such elements can contribute to consumer satisfaction with the smart mirror-assisted shopping experience.

$H_{1:}$ *Smart mirror perceived ease of use positively influences consumers' satisfaction with the experience*.

$H_{2:}$ *Smart mirror perceived usefulness positively influences consumers' satisfaction with the experience*.

In luxury retail, aesthetics is crucial, as visually sophisticated environments can increase consumer engagement and improve their experience. Aesthetic appeal refers to the degree to which consumers find smart mirrors in stores visually attractive (Park *et al*., 2021). Digital visually appealing technologies have shown to improve the consumer's experience, brand engagement, and purchase intention (Aleem *et al*., 2022; Schweiger *et al*., 2020). Considering the strong focus on visual sophistication in luxury fashion settings, this appeal is important. Smart mirrors is a visually appealing user interface that allow brands to diversify sensory experiences in the retail store (Castillo and Bigne, 2021; Park *et al*., 2021). Such experience enrichment can increase consumer satisfaction with the innovative retail experience.

$H_{3:}$ *Smart mirror aesthetic appeal positively influences consumers' satisfaction with the experience*.

In luxury fashion retail, navigation takes on an experiential role: consumers expect seamless, intuitive interactions that mirror the fluidity of high-touch human service (Aleem et al., 2022). Smooth navigation enhances perceptions of exclusivity and personalization by allowing consumers to explore products effortlessly, while poorly designed systems risk disrupting the prestige and immersion of the shopping experience (Loureiro, 2023). Thus, navigation is not only a functional facilitator but a symbolic enabler of the luxury journey. Thus:

H_4: *Smart mirror navigation positively influences consumers' satisfaction with the experience*.

Luxury fashion involves a symbolic value and prestigious positioning (Cabigiosu, 2020). Development of enriching consumer experiences in retail shopping has been touted as essential (Aleem *et al*., 2022). The immersive and interactive nature of smart mirror technologies, with their possibility for consumers to engage with products in innovative ways, can bring value and satisfaction to the retail experience. More satisfied consumers are expected to be more willing to purchase (Carpenter, 2008; Hyun *et al*., 2024).

H_5: *Consumers' satisfaction with the experience positively influences purchase intention*.

Beyond extending TAM with aesthetic appeal and navigation, this study offers a conceptual advancement by emphasizing navigation as a central experiential dimension rather than merely a functional factor. Unlike previous works that have treated additional constructs as peripheral enhancers to TAM (Castillo and Bigné, 2021; Park et al., 2021), we argue that in the luxury retail context, navigation fundamentally reshapes the experiential pathway and symbolic value consumers associate with smart mirror

technologies. By conceptualizing navigation as an experiential enabler that aligns with luxury consumers' expectations for seamless, personalized, and immersive interactions, this framework refines TAM to better reflect the hedonic and narrative-driven motivations unique to luxury fashion. Thus, the study provides a theoretical refinement that bridges technology acceptance and experiential marketing literatures, responding to calls for context-sensitive extensions of TAM in high-engagement retail environments.

4. Materials and methods

4.1. Data collection

Data was collected via online survey to consumers of luxury clothing brands, namely Burberry, Fendi, Balenciaga, Dolce and Gabbana, Ralph Lauren, Valentino, Loewe, Armani, Coach, and Max Mara. Only respondents who complied with the inclusion criteria – whether had purchased a luxury item good or visited a luxury fashion store within the last 12 months – were considered. After expressing their consent, respondents were shown a 30-second video for a clear understanding of the technology in the retail context, and to simulate the real scenario. The 30-second length was selected to provide respondents with a concise yet comprehensive overview of the smart mirror's main features while minimizing fatigue in an online survey setting. The video simulated a luxury retail environment, showing a consumer virtually trying on items, browsing product information, and receiving styling recommendations. To ensure ecological validity, the video was developed with reference to prior demonstrations of smart mirrors in retail (Beck & Crié, 2018; Wang et al., 2023) and pre-tested with a small group of eight luxury consumers who confirmed its realism and representativeness of actual in-store experiences. This procedure aligns with established practices in technology adoption research, where video-based simulations are commonly used to replicate emerging in-

store technologies in controlled settings (Bigné, 2021; Xue et al., 2022). Then respondents answered a set of questions, considering the context of luxury fashion retail.

4.2. Sample characterization

The sample included 105 valid responses. Respondents were mostly female (54.29%), followed by male (44.76%) and non-binary/other (0.95%). In terms of age, the majority were between 25–34 years old (38.10%), with additional segments comprising 18–24 years old (21.90%), 35–44 (25.71%), 45–54 (10.48%), and 55 or older (3.81%). Regarding income, most respondents reported an annual income between €20,000 and €24,999 (30.48%), followed by €25,000–€34,999 (27.62%), €35,000–€49,999 (18.10%), and above €50,000 (15.24%). A smaller group earned less than €20,000 (8.57%). Most participants had at least a bachelor's degree (66.67%), with others holding a master's degree or higher (20.95%) or secondary education (12.38%). Geographically, respondents were primarily from urban areas (78.10%), with a smaller share from suburban (16.19%) and rural (5.71%) regions. All participants had either purchased a luxury fashion item or visited a luxury fashion store within the last 12 months, ensuring familiarity with the context of the study.

4.3. Variables

Existing multi-items Likert scales were used to measure the study variables, namely perceived ease of use and perceived usefulness scales (Song and Jo, 2023; Tzou and Lu, 2009), aesthetic appeal (Park *et al*., 2021), navigation scale (Castillo and Bigne, 2021), satisfaction (Carpenter, 2008) and purchase intention (Riedel and Mulcahy, 2019). Table 1 presents the items. Satisfaction was measured with a three-item Likert scale adapted from Carpenter (2008) and validated in subsequent consumer behavior studies, capturing

respondents' overall evaluation of the smart mirror interaction. In this study, the construct specifically referred to satisfaction with the luxury smart mirror experience as presented in the video stimulus. While satisfaction is a generic outcome in TAM research, it has also been shown to be a reliable predictor of purchase intention in luxury settings (Hyun et al., 2024).

Insert Table 1 here.

5. Results

The model was tested with partial least squares structural equation modelling, a technique used by social sciences researchers and suitable for small samples (Ringle *et al*., 2024). It tests the model in two stages, measurement and structural models. The measurement model shows all constructs meet the thresholds for Cronbach's alpha, composite reliability (CR) and average variance extracted (AVE), confirming consistency reliability and convergent validity (Hair *et al*., 2019). Discriminant validity was evaluated using the Fornell and Larcker criterion (Fornell and Larcker, 1981) and HTMT. Further, variance inflation factor (VIF) values ranging from 1.00 to 1.90 indicates no collinearity issues (Hair *et al*., 2019). Table 2 shows measurement information.

Insert Table 2 here.

Following the literature, the predictive accuracy and relevance of the structural model was evaluated based on Stone-Geisser's Q^2 and R^2 values (Dias *et al*., 2023; Hair *et al*., 2019). The above-zero Q^2 values of the endogenous variables (satisfaction 0.52 and purchase intention 0.48) and R^2 values (satisfaction 59.6% and purchase intention 62.7%) suggest adequate predictive accuracy. Prior to this evaluation, collinearity was checked, with Variance Inflation Factor (VIF) values ranging from 1.00 to 1.90, which is below the critical threshold of 5, indicating no collinearity issues (Hair *et al*., 2017).

To enhance the statistical transparency and robustness of the analysis, model fit indices were also assessed. The Standardized Root Mean Square Residual (SRMR) value was 0.088, which falls within the acceptable threshold of <0.10, indicating a satisfactory model fit (Henseler et al., 2016). Additionally, the Normed Fit Index (NFI) was 0.758. While slightly below the ideal threshold of 0.90, this value is considered acceptable in exploratory research using PLS-SEM, especially with smaller sample sizes and complex models (Hair et al., 2019). Together, these indices support the overall adequacy of the model fit. Table 3 presents structural model hypotheses test.

Insert Table 3 here.

According to the results, perceived ease of use was not significant to consumer satisfaction with the experience, not confirming H1 (β=-0.03, n.s.). Smart mirror perceived usefulness positively influenced consumer satisfaction with the experience, supporting H2 (β=0.23, p<0.05). Smart mirror aesthetic appeal failed to significantly influence consumer satisfaction with the experience, not confirming H3 (β=0.12, n.s.). Smart mirror navigation significantly impacts consumer satisfaction with the experience (β=0.57, p<0.001), supporting H4. Data also suggests that the more satisfied a consumer is with the experience, the higher the purchase intention (β=0.77, p<0.001), meaning H_5 is supported.

The insignificant effect of perceived ease of use (β = -0.03, p = n.s.) may be attributed to consumers' increasing familiarity with interactive digital interfaces, which reduces the impact of ease of use on technology adoption decisions. Prior research suggests that frequent exposure to self-service technologies, such as touchscreen kiosks, augmented reality fitting rooms, and mobile shopping apps, diminishes the relevance of usability as a key determinant of acceptance (Castillo and Bigné, 2021; Xue *et al*., 2022). In the luxury retail setting, where consumers are accustomed to highly curated and intuitive service

experiences, usability concerns may be less critical compared to factors such as brand alignment, experiential value, and aesthetic integration (Aleem *et al*., 2022; Kim and Kim, 2014).

Applying the combined importance-performance map (cIPMA) (Hauff et al., 2014) for purchase intention we can see that satisfaction is the most significant factor affecting purchase intention (importance 0.77; performance 63.56), followed by navigation (importance 0.44; performance 60.46) and perceived usefulness (importance 0.18; performance 58.90).

Aesthetic Appeal and Navigation were considered necessary conditions for purchase intention, but the results also reveal that only 53% of both constructs reach the minimum level for 85% of purchase intention, revealing areas for managerial and marketing priorities. The strong impact of navigation on consumer satisfaction highlights the need for luxury retailers to prioritize seamless and intuitive smart mirror interfaces. To optimize navigation, brands should incorporate user experience design principles, ensuring clear menu structures, responsive touch controls, and personalized content recommendations that align with the luxury shopping experience (Loureiro, 2023). Additionally, offering customizable interface settings, voice command integration, and AI-driven style recommendations can further enhance usability without compromising the exclusivity of the in-store experience.

Specifying the most significant indicators (table 5), Satisfaction4 stands out (importance 0.22; performance 67.14), followed by the remaining satisfaction items. Consistent with the variables IPMA analysis, the indicators with less significance are the ones of perceived usefulness and aesthetic appeal (Table 4).

Insert Table 4 here.

6. Discussion

In-store experience is relevant in luxury fashion retail, as luxury consumers look for experiences that surpass functional benefits (Cabigiosu, 2020). By investing in creating immersive, emotionally engaging experiences, both in-store and online, luxury fashion brands can boost this process (Dhaliwal *et al*., 2020).

Findings align with previous research on what concerns the impact of perceived usefulness in shaping consumers' retail experiences (e.g. Castillo and Bigne, 2021). Perceived ease of use, however, was not significant, as in Tzou and Lu (2009). One possible explanation may be related to the respondents' familiarity with digital technologies. As consumers are used to deal with digital technologies, they do not perceive the ease of use of this technology as contributing to the experience.

Contrary to expectations, smart mirror aesthetics were not significant. While this result contrasts to the one found by Tzou and Lu (2009), that study was applied in fashion setting rather than in the luxury fashion setting. This may be pivotal in interpreting the results. It may be that luxury fashion consumers expect aesthetics, considering it a must have feature rather than a differentiating one. This unexpected non-significance may reflect a distinctive characteristic of luxury consumers: a baseline expectation of superior aesthetic standards as a given rather than an added value. In luxury contexts, aesthetic sophistication is often deeply ingrained in the brand promise and the retail environment (Aiolfi and Sabbadin, 2019; Aleem *et al*., 2022). Consequently, consumers may perceive aesthetic appeal as a default feature rather than an exceptional differentiator that drives satisfaction. This aligns with experiential marketing theory, suggesting that when certain features become normative, they no longer serve as sources of enhanced satisfaction but as prerequisites for engagement. The non-significance of aesthetics suggests that in

luxury consumption, visual sophistication is not perceived as an added benefit but as a normative requirement, already embedded in the brand promise.

The competence-based IPMA results reveal that Aesthetic Appeal and Navigation emerge as necessary conditions for enhancing satisfaction with smart mirrors in luxury retail. This finding underscores that beyond functional ease of use and perceived usefulness, luxury consumers place particular emphasis on the visual and experiential dimensions of technology. Aesthetic appeal operates as a critical baseline expectation in luxury settings, reflecting the sector's reliance on design sophistication, sensory engagement, and brand-consistent atmospherics (Aiolfi & Sabbadin, 2019; Kim & Kim, 2014). Navigation, in turn, functions as an experiential enabler, ensuring that the interaction remains seamless and effortless, thereby mirroring the high-touch service traditionally provided by sales associates. These results reinforce the notion that digital innovations in luxury cannot be reduced to utilitarian efficiency, but must integrate symbolic and experiential cues that align with consumers' desire for exclusivity, storytelling, and hedonic value.

This finding supports our theoretical expectation that ease of use operates as a baseline condition rather than a differentiating driver of satisfaction in luxury retail. The non-significant effect of perceived ease of use on consumer satisfaction warrants further theoretical reflection. In the context of luxury fashion retail, where consumers are typically experienced, digitally literate, and highly service-oriented, ease of use may no longer function as a decisive factor in shaping satisfaction. As supported by experiential marketing theory, luxury shoppers prioritize emotional, aesthetic, and symbolic attributes over functional simplicity (Harba, 2019). Moreover, the expectations of seamlessness are often so embedded in the luxury retail experience that ease of use becomes an assumed baseline rather than a source of satisfaction or differentiation. Similarly, consumer-brand relationship theory suggests that consumers may value technological features primarily

when they enhance relational and experiential engagement, rather than when they merely reduce friction. This confirms that in luxury contexts, ease of use is not a differentiator but a baseline expectation, reflecting consumers' assumption that technologies will be seamlessly intuitive, much like the effortless service they receive from human sales associates.

Findings regarding smart mirror navigation were in line with predicted, as with the studies of, for instance, Loureiro *et al*. (2018). It suggests that luxury fashion brands should invest in smooth navigating systems in their retail spaces so that their consumers can interact with the technology in a seamless manner. It appears to comply with the luxury fashion brand high-end positioning and premium experience expected by consumers. Navigation emerges as a critical experiential enabler, as smooth and intuitive interactions replicate the seamlessness of high-touch service and reinforce the exclusivity expected in luxury consumption.

Lastly, according to the findings, satisfaction has the most significant influence on consumers' purchase. This supports previous research that suggested that satisfaction can explain purchase intention (Hyun *et al*., 2024). Luxury fashion retail often prioritizes creating a premium and personalized shopping experience, where customer satisfaction is closely linked to the brand's value proposition. The same may not occur when dealing with other retail sectors, such as the discount one (Carpenter, 2008).

In managerial terms, the study brings several useful insights to both fashion luxury brand managers and retailers. Particularly brand managers can design their consumer-brand experience strategy considering phygital elements and making them part of the consumer journey. The inclusion of technologies such as smart mirrors in retail stores appears to benefit consumers' experience and motivate purchases. Further, retailers should prioritize new technology features that offer practical benefits, such as virtual try-ons with more

visual accuracy, the possibility to connect with other sales assistants or personal shoppers for advice, translation services, or even showcasing content related to the process and craftsmanship behind some pieces selected by the consumer. Merging digital interactions with the traditional support from sales assistants helps preserve the personal touch that is quintessential to luxury retail while taking advantage of the benefits of technology to enhance the customer retail experience. However, managers and retailers must ensure that the used technologies are user-friendly and intuitive, to add-on to the experience, rather than making it a frustrating one.

Beyond operational benefits, the adoption of smart mirror technology in luxury retail carries broader economic and societal implications. One key consideration is the evolving role of sales staff, as smart mirrors may complement or, in some cases, reduce reliance on human interactions. While this technology enhances self-service capabilities, luxury brands must ensure that it augments rather than replaces the personalized service that defines high-end retail (Kim and Kim, 2014). Additionally, consumer-brand relationships may shift, as increased digital engagement could alter traditional human-driven loyalty dynamics, requiring brands to carefully balance high-touch service with technological convenience. Furthermore, the integration of AI and data-driven personalization raises ethical concerns about consumer privacy, necessitating transparent data policies and secure handling of customer interactions to maintain trust.

The introduction of smart mirrors in luxury retail also redefines the role of sales associates. Rather than replacing staff, these technologies shift their responsibilities toward more relational and consultative functions. Sales associates may become experience facilitators who guide consumers through digital features, provide styling advice that complements the mirror's suggestions, and curate personalized interactions that reinforce brand storytelling. This evolution aligns with the luxury sector's emphasis

on high-touch service while leveraging technology to enhance efficiency and personalization. To maintain the human essence of luxury retail, brands should train staff not only in product knowledge but also in digital fluency and emotional intelligence.

These findings also demonstrate how extending TAM with navigation and aesthetic appeal adapts the model's utilitarian roots to the luxury retail context. While ease of use and usefulness capture functional aspects of adoption, navigation and aesthetics represent luxury-relevant experiential dimensions that resonate with consumers' expectations for seamless service, visual sophistication, and symbolic engagement (Aleem et al., 2022; Kim & Kim, 2014). This integration shows that TAM can serve as a foundation for studying digital innovation in luxury settings when contextualized with constructs that reflect exclusivity, storytelling, and hedonic value.

This study highlights how smart mirrors contribute to brand storytelling and consumer interaction in luxury fashion. Beyond their utilitarian features, smart mirrors act as digital brand ambassadors that immerse consumers in curated narratives. Through personalized content, interactive visuals, and the ability to access information on craftsmanship or styling suggestions, smart mirrors reinforce brand identity and elevate emotional engagement. They transform passive browsing into a co-creative experience, allowing consumers to visualize themselves as part of the brand's universe.

7. Conclusion

7.1. Theoretical implications

The present research investigated *the* influence of smart mirror technology on luxury fashion. It adds to the existing literature on luxury retail and its digitalization. Building on TAM, it tests perceived ease of use and usefulness in a new and relevant setting, and it incorporates aesthetic appeal and navigation as additional influencing factors. By

extending TAM to incorporate navigation and aesthetic appeal in the luxury retail context, this study addresses the gap in existing research that has largely applied TAM to mass-market or online settings, thereby advancing knowledge on how experiential dimensions shape technology acceptance in high-touch, hedonic environments. Not only did the research extend the test of perceived ease of use and usefulness to the luxury fashion setting, as one of such additional factors was found to be significant in contributing to consumers' satisfaction with the experience. This emphasizes that luxury consumers value seamless interactions with technology and reveals a research path where navigation can be as a core component of technology acceptance, especially when studying consumers who expect a hedonic experience.

The study's findings provide insights into how luxury consumers obtain satisfaction from not just products, but also the retail experience itself, including the technologies they interact with. As such, it contributed not only to the retail literature, but also to the fashion and luxury literatures. Further, the research shows that the use of technologies that allow integrating physical and digital into the experience is complex and influenced by multiple factors.

7.2. Practical implications

While immersive smart mirror experiences can enhance luxury retail environments, their cost implications and return on investment (ROI) require careful consideration. The integration of AI-powered interactive displays, RFID technology, and cloud-based personalization systems involves significant upfront investments in hardware, software, and employee training. However, previous studies suggest that these technologies can increase customer engagement and boost sales conversion rates, ultimately justifying

their adoption (Loureiro, 2023). Despite these advantages, smaller luxury retailers may face budgetary constraints, necessitating a strategic approach to implementation, such as phased adoption or pilot programs to assess feasibility before full-scale deployment. The cIPMA results highlight that investing in visually refined, intuitive, and brand-consistent smart mirror experiences is not optional but rather a necessary condition to safeguard consumer satisfaction and preserve the luxury promise.

Additionally, while smart mirrors enhance the personalization and convenience of in-store experiences, they also raise societal concerns, particularly regarding data privacy and AI-driven retail interactions. Many smart mirrors utilize facial recognition or behavioral tracking to tailor recommendations, which may raise ethical concerns about data security and consumer consent (Xue *et al.*, 2022). Consumer resistance to AI-driven interactions is another challenge, as some luxury shoppers prefer human engagement over digital interfaces, fearing that automated experiences could diminish the exclusivity and intimacy of luxury retail (Kim and Kim, 2014). To address these concerns, brands must ensure transparency in data collection, provide opt-in privacy controls, and position smart mirrors as an enhancement to, rather than a replacement for, human-led service interactions.

7.3. Limitations and future research

While this study offers important theoretical and managerial insights, several limitations warrant consideration. First, respondents evaluated a video simulation rather than physically interacting with smart mirrors. Although this approach ensured consistency, it may lack ecological validity, as in-store experiences involve multisensory cues, brand prestige, and social interactions that can influence perceptions (Aiolfi & Sabbadin, 2019;

Turley & Milliman, 2000). Future research should incorporate real-world experiments or mixed-method designs (e.g., interviews, ethnographic observation) to capture these dynamics more fully.

Second, the study focused exclusively on luxury fashion, limiting generalizability to other segments. Consumer expectations may differ in contexts such as fast fashion or mass retail. Comparative studies across market segments and geographies could reveal important similarities and differences in technology adoption.

Third, although PLS-SEM is suitable for exploratory studies with small samples (Hair et al., 2019), the modest sample size (n=105) constrains representativeness. Future research should validate and extend these findings with larger, more diverse samples across regions and demographics.

Finally, the framework employed satisfaction as the main outcome variable. While satisfaction is a validated predictor of purchase intention in luxury contexts (Carpenter, 2008; Hyun et al., 2024), it remains broad. Future studies should integrate luxury-specific constructs such as prestige appeal, symbolic value, or brand desirability to capture affective and symbolic dimensions of luxury consumption.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Table 1. Variable items

Variable	Items
Aesthetic appeal	Smart mirror in clothing stores appeals to me visually Smart mirror interactions in clothing stores are aesthetically appealing Using smart mirror in clothing stores would be visually pleasing
Navigation	Using smart mirror would allow me flexibility in finding information in-store Using smart mirror would offer me a very free environment in which I could navigate as I saw fit Using smart mirror would allow me to navigate in the physical store Using smart mirror would allow me to move freely in the physical store
Perceived ease of use	My interactions with the smart mirror in clothing stores would be clear and understandable Interacting with smart mirror in clothing stores would not require much mental effort I would consider smart mirror in clothing stores easy to use I would find it easy to get the smart mirror in a clothing store to do what I want.
Perceived usefulness	Using smart mirror in clothing stores would improve my performance in the shopping process Using smart mirror in clothing stores would increase my productivity Using smart mirror in clothing stores would enable me to shop more efficiently
Purchase intention	I would purchase a product using smart mirror technology I would use smart mirror technology when shopping [considering available technology] I would recommend smart mirror technology to others
Satisfaction	I would be pleased with the result of using this technology I would be happy with the result of using this technology I would be contented with the outcome of using smart mirror Overall, I would be satisfied with the outcome of using this technology.

Source: Adapted from Carpenter (2008); Castillo and Bigne (2021); Park *et al*. (2021); Riedel and Mulcahy (2019); Song and Jo (2023) and Tzou and Lu (2009)

Table 2. Measurement information

Variables	**α**	**rho_c**	**AVE**	**1**	**2**	**3**	**4**	**5**	**6**
1.Aesthetic appeal	0.95	0.97	0.90	**0.95**	0.62	0.42	0.65	0.67	0.60
2.Navigation	0.85	0.90	0.69	0.56	**0.83**	0.38	0.63	0.70	0.84
3.Perceived ease of use	0.87	0.90	0.70	0.45	0.36	**0.84**	0.35	0.34	0.29
4.Perceived usefulness	0.95	0.97	0.91	0.61	0.56	0.36	**0.95**	0.78	0.65
5.Purchase intention	0.84	0.91	0.76	0.59	0.59	0.35	0.70	**0.87**	0.87
6.Satisfaction	0.93	0.95	0.82	0.56	0.75	0.31	0.61	0.77	**0.90**

Source: Authors own creation

Note: the square root of AVE is in bold in the diagonal; correlation information is in the lower triangle; HTMT information is in the upper triangle

Table 3. Hypothesis test

Path	Path coefficient	t statistics
Perceived ease of use → Satisfaction	-0.03	0.40
Perceived usefulness → Satisfaction	0.23	2.20
Aesthetic Appeal → Satisfaction	0.12	1.33
Navigation → Satisfaction	0.57	5.97
Satisfaction → Purchase intention	0.77	7.96

Source: Authors own creation

Table 4. IPMA (indicators) for purchase intention

Indicators		
AestheticAppeal1	0.03	77.14
AestheticAppeal2	0.03	78.10
AestheticAppeal3	0.04	77.86
Navigation1	0.12	70.95
Navigation2	0.12	53.97
Navigation3	0.15	60.95
Navigation4	0.14	55.48
PerceivedEaseUse1	-0.01	77.14
PerceivedEaseUse2	-0.00	80.48
PerceivedEaseUse3	-0.01	79.76
PerceivedEaseUse4	-0.01	66.67
PerceivedUsefulness1	0.06	62.38
PerceivedUsefulness2	0.06	55.48
PerceivedUsefulness3	0.06	58.81
Satisfaction1	0.22	71.19
Satisfaction2	0.20	54.52
Satisfaction3	0.22	58.33
Satisfaction4	0.22	67.14

Source: Authors own creation

Table 5. cIPMA for purchase intention

Variable	**Importance**	**Performance**	**% of cases that do not meet the necessity condition***	**Necessity effect size *d* (*p* value)**
table	0.09	77.74	53.81	0.365 (0.000)
Navigation	0.44	60.46	53.01	0.281 (0.000)
Perceived ease of use	-0.03	74.07	21.45	0.107 (0.490)
Perceived usefulness	0.18	58.90	0.00	0 (0.000)
Satisfaction	0.77	63.56	0.00	0 (0.000)

* Based on a desired outcome of purchase intention of 85%.