

PHYGITAL DESIGN: BOOSTING LUXURY PURCHASE INTENTION BY  
ENHANCING CONSUMER PERCEPTIONS OF IN-STORE USEFULNESS AND  
PLAYFULNESS

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Natalie Rose Verdiguel

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## ABSTRACT

Phygital design has emerged as a novel approach for luxury retailers to draw customers in-store. Although previous studies have assessed customer and managerial opinions on the potential of phygital design, few empirical studies exist. This study aims to fill this gap by simulating a phygital luxury shopping experience through virtual 3D renderings. A between-subjects experiment with 280 participants recruited via Amazon Mechanical Turk investigated the perceived usefulness and playfulness of traditional vs. phygital stores and their effects on luxury purchase intention. Participants were randomly assigned to a traditional or phygital store condition, followed by surveys assessing the store environments. Results revealed that phygital store environments were associated with significantly greater perceived usefulness, playfulness, and luxury purchase intention. Playfulness fully mediated the relationship between store type and luxury purchase intention. This research provides insights into consumers' perceptions of phygital luxury retail environments and suggests managerial implications and directions for future research.

## BIOGRAPHICAL SKETCH

Natalie Verdiguel is a graduate student at Cornell University, where she is pursuing an M.S. in Human-Environment Relations with a concentration in Environmental Psychology and Human Factors. Originally from Miami, FL, Natalie earned her B.S. in Psychology with a focus in Human Factors from the University of Central Florida, where she was a Ronald E. McNair Scholar. Her undergraduate thesis examined how design interventions for fostering community positively influence student placemaking on urban university campuses. In March 2021, Natalie was awarded the National Science Foundation Graduate Research Fellowship. With the support of the NSF-GRFP, she continued her interdisciplinary research at Cornell's Department of Human-Centered Design. Her research interests span various domains, including healthcare, workplace, and retail design. Natalie's master's thesis investigates the impact of retail design and in-store experiences on consumer behavior.

To my family –

For the hard work and the sacrifice of the generations before me that gave me the  
opportunity to pursue an education.

For those who have stood by me with their unwavering love and support throughout  
my educational journey.

For you – Mom, Elliot, Louie, and Mama.

This achievement is yours just as much as it is mine.

With all my love,

Natalie Rose

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## TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION.....	1
1.1 Conceptual Background.....	5
1.1.1 Hedonic and Utilitarian Shopping Motivations.....	5
1.1.2 Technology Acceptance Model.....	7
1.2 Hypothesis Development.....	9
1.2.1 Phygital Design and Luxury Purchase Intention.....	9
1.2.2 Perceived Usefulness and Playfulness.....	10
1.2.3 Mediating Role of Usefulness and Playfulness on LPI.....	11
1.2.4 Moderating Role of Luxury Consumption Tendency.....	14
CHAPTER 2: METHODS.....	18
2.1 Stimuli.....	18
2.2 Pre-test for Stimuli Validation Check.....	22
2.3 Participants and Procedures.....	23
2.4 Measurements.....	25
CHAPTER 3: RESULTS.....	29
3.1 Manipulation Check.....	29
3.2 Hypothesis Testing.....	30
CHAPTER 4: DISCUSSION.....	33
4.1 Summary of Findings.....	33
4.2 Theoretical Implications.....	34
4.3 Managerial Implications.....	35
4.4 Limitations and Directions for Future Research.....	36
CHAPTER 5: CONCLUSION.....	40
REFERENCES.....	42

## CHAPTER 1

### INTRODUCTION

Historically, digital outlets have been seen as competitors to traditional brick-and-mortar retailers. However, many consumers now adopt a hybrid approach, moving between online and offline spaces throughout their purchasing journey (Zhang et al., 2021). The ease and extensive availability of online shopping has driven consumers to seek experiences in physical stores in addition to products (Batat & Hammedi, 2023). To adapt to these evolving consumer expectations, retailers are increasingly adopting the phygital model, which combines physical and digital shopping experiences (Batat, 2019). Unlike the omnichannel approach, which focuses on operating e-commerce platforms in tandem with physical stores, phygital design integrates digital experiences into the physical store environment, creating both a seamless and experiential shopping journey (Klaus, 2021). Companies such as Nike, Adidas, and Sephora have leveraged phygital tools, such as virtual reality, augmented reality, and interactive digital product displays to offer personalized, informative, and entertaining in-store experiences, which have been found to positively impact purchasing outcomes and net earnings (Mishra et al., 2021).

One sector that has resisted this transition is luxury retail. Traditionally, luxury brands have emphasized exclusivity and uniqueness to cultivate a sense of reverence through restricting access to products (Dion & Arnould, 2011). As a result, many luxury brands were slow to establish an online presence (Hyun et al., 2022). However, this approach is now seen as outdated by both existing and target consumer groups (De Lassus & Anido Freire, 2013). Phygital design offers luxury retailers

opportunities to modernize and enhance in-store experiences through the integration of interactive technology, which can be used to provide personalized and interactive experiences that cater to the evolving expectations of their clientele (Lawry, 2022). These innovations allow customers to visualize products in various contexts, receive tailored recommendations, and enjoy a more engaging shopping journey, bridging the gap between the convenience of online shopping and the tactile experience of physical stores (Banik & Gao, 2023).

Although brands such as Burberry, Cartier, and Gucci have implemented phygital experiences at select locations (Weiners, 2018), luxury brands generally lag behind the broader market in providing phygital shopping opportunities, despite their enhanced need for engaging customer experiences (Batat, 2019). Where implemented, phygital shopping experiences have been well received by luxury consumers, and extant research has shown increasing consumer desire for them. Moravcikova & Kliestikova (2017) found that 50 percent of consumers surveyed via Microsoft Digital Trends are interested in seeing more phygital shopping experiences. (Lawry, 2021) found that status-seeking and fashion opinion leadership are positively associated with interaction intentions toward phygital shopping experiences. Accelerating their adoption of phygital shopping experiences to meet evolving consumer interest may help luxury retailers stay competitive in a changing market.

In today's digital age, the consumer approach to gathering information about products has significantly evolved. Luxury products, in particular, are high-involvement items requiring significant time and effort from consumers to gather information before making a purchase (Lynch & Barnes, 2020). Traditionally, luxury

consumers relied on face-to-face interactions with sellers to make informed decisions (Hyun et al., 2022). However, with the rise of e-commerce and the ease of access to information online, many consumers now prefer to gather brand and product information online before making a purchase, reducing their reliance on in-store interactions (Petit et al., 2018; Zhang et al., 2021). (Remy et al., 2015) found that 78 percent of all purchases are influenced by online services. Although luxury companies were initially slow to embrace having an online presence (Hyun et al., 2022), luxury consumers are generally tech-savvy and often adopt a hybrid shopping approach, moving between physical and digital channels as they gather information (Arora et al., 2017; Hyun et al., 2022). Consequently, the in-store experience is no longer as critical for information gathering as it once was. However, phygital experiences can enhance information-gathering opportunities, drawing customers in-store by allowing them to shop independently while still accessing needed information (Lawry, 2021).

While in-store experiences are less critical for information gathering, they still provide a crucial opportunity for consumers to be immersed in a brand's image and narrative. Thus, it is still critical luxury retailers find innovative and entertaining ways to continue to draw customers in-store. Consumers have higher expectations for luxury stores compared to non-luxury settings and increasingly demand memorable experiences (Kim et al., 2012; Klein et al., 2016), which can be provided by phygital design elements. Banik & Gao (2023) identified the hedonic qualities of mental imagery, entertainment, and aesthetics of phygital display elements, such as smart mirrors and digital screens, as positively contributing to customer experience and purchase decision satisfaction. Furthermore, research by Holmqvist et al. (2019) on

"moments of luxury" emphasizes the importance of hedonism and escapism in creating luxurious experiences, suggesting that integrating these elements into the in-store environment can enhance the overall consumer experience and strengthen brand connection.

Traditional and digital shopping motivations are driven by both hedonic and utilitarian motives (Babin et al., 1994; Childers et al., 2001), and these may be positively influenced by technologies with corresponding attributes in store environments. Previous literature, including the Technology Acceptance Model, has shown that utilitarian and hedonic attributes significantly influence attitudes and behavioral intentions toward technology (Davis, 1989; Davis et al., 1989). Perceived usefulness and playfulness of phygital experiences have been found to drive positive attitudes, usage intentions, and post-adoption evaluations (Kim & Forsythe, 2008; Kim et al., 2017), which contribute to overall shopper attitude (Childers et al., 2001). This suggests that integrating functional and experiential phygital elements in luxury retail settings could enhance consumer engagement and positively influence purchasing decisions.

Luxury consumers, who have high needs for information gathering (utilitarian motive) and entertaining store environments (hedonic motive), show significant promise in adoption of phygital elements. While luxury consumption is primarily driven by hedonic motivations (Klein, 2016; Lowry, 2021), the extensive gathering of product information prior to purchase adds a utilitarian aspect. As luxury consumers seek both information and novel experiences (Arora & Sahney, 2017; Hyun et al., 2022), we expect incorporating phygital elements that are perceived as useful and

entertaining in the store environment will enhance in-store experiences, leading to greater purchase intention.

Although many studies in marketing and retailing have evaluated both customer and managerial perceptions of the potential of phygital design elements in luxury retail, comparative experimental studies between phygital and traditional stores are scarce. This research aims to fill this gap by evaluating the perceived usefulness and playfulness of phygital design elements for luxury consumers and their impact on purchasing intentions. The study explores the following research questions: (1) How does integrating phygital design elements in a luxury retail environment influence luxury purchasing intentions through perceived usefulness and playfulness? (2) To what extent does luxury consumption tendency moderate the perceived usefulness and playfulness of phygital design elements? To answer these questions, this study utilizes a high-fidelity 3D-modeled retail store to simulate customer shopping journeys in traditional and phygital luxury store environments. The study compares the indirect effect of perceived usefulness and playfulness on purchasing intentions, along with the moderating role of luxury consumption tendency on the relationship between store environment and these perceptions.

## **1.1 Conceptual Background**

### ***1.1.1 Hedonic and Utilitarian Shopping Motivations***

Shopping motivations can be broadly categorized into hedonic and utilitarian motivations, both of which play a significant role in shaping consumer behavior and experiences in various retail contexts. Hedonic shopping motivations are driven by the

experiential and emotional aspects of shopping (Hirschman & Holbrook, 1982). This type of consumption is characterized by its multisensory, emotive, and fantasy-related elements, where enjoyment of the product and the fulfillment of these motivations are measured aesthetically rather than functionally (Hirschman & Holbrook, 1982).

Consumers often describe the mood-altering qualities of a hedonic shopping experience (Thompson et al., n.d.), experiencing excitement, arousal, and enjoyment (Fischer & Arnold, 1990) as well as a sense of escapism and adventure: “Shopping is... an adventure. When you can’t or don’t find [what you’re after] it’s o.k. because there are lots of other places to look” (Babin et al., 1994, p.646). Overall, these descriptions of hedonic shopping experiences highlight the enjoyment derived from the activity itself rather than the acquisition of products, where the shopping “task” is fulfilled by the experience of amusement and sensory stimulation (Babin et al., 1994). As highlighted by Sherry, 1990), “seeking of such experiences is often far more significant than the mere acquisition of products” (p.27).

In contrast to hedonic shopping motivations, utilitarian shopping motivations are characterized by a more task-oriented, rational approach (Batra & Ahtola, 1991); Sherry 1990). Utilitarian shopping trips are driven by a particular consumption need, and the success of these tasks are often evaluated based on whether the shopping goal, such as purchasing a specific product, was achieved in a deliberate and efficient manner (Babin et al., 1994). Consumers motivated by utilitarian needs seek to minimize time and effort spent on shopping, viewing it as a chore or mission to be completed (Fischer & Arnold, 1990). Utilitarian shopping trips are often characterized by terms related to evaluating performance, such as success and accomplishment

(Sherry 1990; Thompson et al., 1990) and a sense of relief in completing the trip (Babin et al., 1994).

However, the purchase of a product is not necessarily the sole driver behind utilitarian shopping motivation. Utilitarian shopping may also be driven by a need for collecting information (Bloch & Richins, 1983). As highlighted by a focus group respondent in Babin et al., (1994): “Even though I may not purchase [the intended item], I could get some ideas and prices on some possibilities . . . and it would not have been a waste of time.” (p. 646). In summary, while hedonic shopping motivations center on the enjoyment of the shopping experience itself, utilitarian shopping motivations focus on achieving specific consumption goals efficiently and effectively, often with a pragmatic and task-oriented mindset.

For this study, it is essential to understand the interplay between hedonic and utilitarian shopping motivations when examining consumer perceptions of phygital elements in retail environments. Phygital stores can fulfill utilitarian motivations by enhancing shopping efficiency and hedonic motivations by offering an enjoyable experience. The integration of phygital elements must address both motivations to enrich consumer experiences and stimulate luxury purchases.

### ***1.1.2 Technology Acceptance Model***

The Technology Acceptance Model (TAM; Davis, 1989) is the most frequently cited theoretical framework designed to explain how users form attitudes and behavioral intentions toward technology. Based on the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975), which posits that an individual's behavioral

intentions are the primary predictors of their actual behavior, TAM proposes that two main factors influence an individual's decision to use a new technology: perceived usefulness and perceived ease of use. Perceived usefulness refers to “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989, p.3), while perceived ease of use is “the degree to which a person believes that using a particular system would be free from effort” (Davis, 1989, p.3). According to TAM, these perceptions lead to the formation of an attitude towards the technology, which subsequently influences usage intentions and ultimately results in actual use.

Although the initial TAM model focused on the utilitarian aspects of technology adoption (usefulness and ease of use), subsequent research has expanded the model to include hedonic motivations. Davis et al. (1989) and Childers et al. (2001) identified enjoyment as a critical predictor of usage intention, while Venkatesh & Davis (2000) introduced the concept of playfulness, highlighting the significance of hedonic motivations in technology acceptance. These developments led to subsequent iterations of TAM, incorporating perceived enjoyment and playfulness as determinants of perceived ease of use and perceived usefulness (Venkatesh & Bala, 2008). These models suggest that users are motivated not only by the functional benefits of technology but also by the enjoyment and engagement it provides.

In this study, hedonic and utilitarian attitudes in phygital shopping environments are measured via perceived usefulness and perceived playfulness. Perceived playfulness is defined as the experience of enjoyment, psychological stimulation, and interest (Csikszentmihalyi, 1990; Han et al., 2020). Previous research

has found both perceived usefulness and playfulness both directly impact technology acceptance in retail settings (Han et al., 2020). This study extends the application of perceived usefulness and playfulness to luxury retail, examining how the integration of phygital elements in a luxury retail setting impacts perceptions of the store environment's usefulness and playfulness.

## **1.2 Hypothesis development**

### ***1.2.1 Phygital Design and Luxury Purchase Intention***

Phygital design has emerged as an innovative approach to experiential retailing, which a significant body of research has identified as positively influencing purchasing intentions. Experiential retail stores, which are designed to offer immersive brand and product experiences, engage customers in ways that traditional stores cannot (Puccinelli et al., 2009; Nierobisch et al., 2017). They have been found to significantly enhance brand perception, identification, and loyalty intention (Kozinets et al., 2002); Dolbec & Chebat, 2013); Nierobisch et al., 2017), which have been shown to directly impact in-store purchasing intentions in both luxury and non-luxury consumers (Hung et al., 2011; Aziz & Ahmed, 2023). Additionally, Jahn et al., 2018 found that positive experiences in retail environments increase in-store and cross-channel purchase intentions for recreational shoppers, even when controlling for preexisting brand experience.

Phygital retail, which integrates the physical store environment with digital technology, aims to create a holistic shopping experience that appeals to modern consumers who seek both convenience and engagement (Verhoef et al., 2015).

Technologies such as augmented reality, smart fitting rooms, and interactive storefronts enhance the shopping experience by making it more entertaining and efficient, thereby increasing customer satisfaction and retention (Pantano, 2016; Batat, 2019). Interviews with luxury retail managers have suggested that phygital design elements contribute toward a seamless customer experience across physical and digital channels while offering an immersive in-store shopping experience, which boosts customer loyalty and patronage (Pangarkar et al., 2022)). These immersive phygital experiences enhance the affective dimension of the overall shopping experience, thereby increasing the likelihood of making a purchase (Lawry, 2021).

In summary, previous research on experiential design and phygital design (as a subset of experiential design) has shown significant potential for positively impacting purchasing intentions. Therefore, we hypothesize:

**H1a.** A store containing phygital elements (vs a traditional store) will result in greater luxury purchase intention.

### ***1.2.2 Perceived Usefulness and Playfulness***

Evaluating consumer perceptions of the usefulness and playfulness of phygital shopping contexts is crucial because they inform both technology usage intentions and shopping need fulfillment. Usefulness and playfulness, which are used here to measure the fulfillment of utilitarian and hedonic needs, have been identified as key factors influencing technology acceptance (Venkatesh & Davis, 2000; Childers et al., 2001; Kim et al., 2017) and shopping experience satisfaction (Belk, 1988; Fischer & Arnold, 1990; Sherry, 1990). Consumers simultaneously evaluate products and experiences on

utilitarian and hedonic values (Belk, 1987; Fischer & Arnold, 1990; Sherry, 1990; (Dhar & Wertenbroch, 2000) emphasizing the importance of measuring both in tandem when assessing the overall value of a shopping experience (Holbrook & Hirschman, 1982).

Utilitarian shopping motives are concerned with the functional and practical aspects of the shopping experience, such as obtaining product information, comparing alternatives, and making efficient purchasing decisions (Babin et al., 1994; Childers et al., 2001). Consumers with strong utilitarian motives seek to minimize the time and effort spent on shopping while maximizing the functional benefits they receive (Hirschman & Holbrook, 1982). Therefore the perceived usefulness of a store environment is influenced by the ease with which consumers can find and obtain the products they need, as well as the quality of information and assistance available to them (Renko & Druzijanic, 2014). In traditional store settings, consumers often find it challenging to gather comprehensive information due to limitations in available information and assistance (Burke, 2002).

Phygital elements offer opportunities to significantly improve the information-gathering process for consumers. Interactive technologies, such as touchscreens and digital product displays, provide consumers with instant access to personalized recommendations, product information, reviews, and comparisons, thereby fulfilling their utilitarian shopping needs more effectively than traditional stores (Pantano et al., 2018; (Grewal et al., 2020). Previous research has also found that digital tools increase customer satisfaction by streamlining the in-store experience and reducing wait times (Pantano & Viassone, 2014). By leveraging these technologies, phygital stores can

meet the utilitarian demands of consumers more effectively than traditional stores, leading to higher levels of customer satisfaction and loyalty (Pantano & Naccarato, 2010). In summary, the integration of phygital elements in luxury retail stores may enhance consumers' perceived usefulness by fulfilling the information-gathering needs and utilitarian shopping motives. Therefore, we hypothesize:

**H1b.** A store containing phygital elements (vs a traditional store) will be perceived as being more useful.

Compared to utilitarian needs, hedonic needs are more subjective and personal, stemming from fun and playfulness rather than task completion (Holbrook & Hirschman, 1982). Playfulness, which we define as the extent to which consumers find enjoyment, psychological stimulation, and interest in shopping activities (Csikszentmihalyi, 1990; Han et al., 2020) is critical to the fulfillment of hedonic shopping motives (Holbrook & Hirschman, 1982). Phygital stores have the potential to fulfill hedonic shopping motives more effectively than traditional store environments by offering opportunities for imaginative, entertaining, and aesthetically pleasing experiences (Banik & Gao, 2023). The enjoyment derived from phygital services with strong hedonic attributes motivates consumers to explore and play with associated product offerings (Grewal et al., 2019). Thus we hypothesize:

**H1c.** A store containing phygital elements (vs a traditional store) will be perceived as being more playful.

### ***1.2.3 Mediating Role of Usefulness and Playfulness on Luxury Purchase Intention***

A significant body of research has demonstrated the fulfillment of utilitarian and hedonic motives through technology as positively influencing usage and purchase intentions. Han et al., (2020) found that users' perceived usefulness and playfulness of a virtual reality (VR) shopping mall were positively associated with their future intention to revisit a VR shopping mall, purchase goods in a virtual environment, and use VR in other consumer settings. In an online shopping context, Childers et al., (2001) found that the perceived usefulness and playfulness of retail websites positively influenced attitudes toward online shopping. Elaborating on these findings for luxury consumers, Hyun et al., (2022) found that the emotional appeal and design of luxury brand websites positively influenced online shopping experience satisfaction, which in turn positively influenced repurchase intentions. In a phygital store context, Banik & Gao (2023) found that the hedonic factors associated with the use of phygital design elements in-store positively influenced customer experience, which in turn improved purchase decision satisfaction. Building upon these findings, we hypothesize that luxury phygital store environments will be perceived as more useful and entertaining than traditional store environments, which will indirectly impact luxury purchase intention in-store. Therefore:

**H2a.** Store condition will have a greater indirect effect on luxury purchase intention for the phygital (vs traditional) store through usefulness.

**H2b.** Store condition will have a greater indirect effect on luxury purchase intention for the phygital (vs traditional) store through playfulness.

#### ***1.2.4 Moderating Role of Luxury Consumption Tendency***

Luxury consumption tendency is defined as “the extent of an individual’s tendency toward the consumption of unique and expensive products/services, with their symbolic meanings that are arbitrarily desired for some reason such as to send a message to his/her surroundings, to display owned status to others, to promote the self, to render the self as distinct from its surroundings and to move toward higher social classes” (Dogan et al., 2020, p.936). Luxury consumption is an intrinsic, individual-level trait that is independent from the extrinsic reality of income level. It is often driven by the desire to construct and present the self by using possessions as extensions of one's identity (Belk, 1988; Dogan et al., 2020).

The luxury consumption tendency scale is comprised of five subscales (cite or according to). The first subscale, uniqueness, captures the extent to which individuals value the uniqueness of luxury products. Consumers motivated by uniqueness are inclined to purchase luxury items that differentiate them from others and express their individuality, perceiving these products as exclusive and providing a sense of distinction from the mainstream.

The second subscale, expensiveness, reflects the importance of the high cost associated with luxury products. Consumers scoring high on this dimension prefer expensive items, associating higher prices with better quality and status, where expensiveness signifies prestige and superior quality.

The third subscale, symbolic meaning, measures the symbolic and social meanings attributed to luxury products. Consumers driven by symbolic meanings purchase luxury items to convey messages about their status, wealth, and social

identity to others. These products serve as symbols of success and are used to gain social recognition and approval.

The fourth subscale, arbitrary desire, captures the intrinsic desire for luxury products regardless of their functional utility. This includes the personal gratification and pleasure derived from owning luxury items, often driven by emotional and impulsive factors, where luxury consumption fulfills an internal craving or indulgence.

Finally, the fifth subscale, belonging to an exclusive minority, assesses the extent to which individuals use luxury consumption to feel part of an exclusive, elite group. Consumers motivated by this dimension seek to belong to a select minority that has access to luxury goods, thereby reinforcing their social status and distinctiveness from the general population. These subscales collectively provide a comprehensive understanding of the factors driving luxury consumption tendencies, emphasizing both the personal and social motivations behind the purchase of luxury products (Dogan et al., 2020). Taken together, the luxury consumption tendency scale provides a comprehensive assessment of an individual's overall tendency to gravitate toward and purchase luxury products.

Previous research has highlighted luxury consumers' specific needs and affinity for fulfilling both utilitarian and hedonic motivations through phygital design. Lawry (2021) and Guzzetti et al., 2024 found that technologies such as self-checkouts and touchscreen displays are primarily valued for their functional benefits, such as enhancing the efficiency and ease of the shopping process. These technologies are perceived by luxury consumers as useful and time-saving, aligning with the practical needs of consumers seeking functional advantages. The practicality and efficiency of

such phygital design elements are crucial for consumers aiming to streamline their shopping experiences. Because luxury consumers have demonstrated desire to fulfil utilitarian motives via phygital design elements, we hypothesize that:

**H3a.** Usefulness will have a greater mediating effect on luxury purchase intention for individuals with higher luxury consumption tendency.

Research has also emphasized the hedonic motivations driving the use of more innovative and immersive phygital experiences, such as hololenses and smart fitting rooms. The novelty of these technologies caters to hedonic usage intentions by providing engaging, enjoyable, and emotionally rewarding experiences (Guzzetti et al., 2024), which aligns with our definition of playfulness (Csikszentmihalyi, 1990). Consumers reported these phygital experiences as evoking emotional responses of excitement and amazement, which fulfilled their desires for pleasurable and unique shopping experiences (Guzzetti et al., 2024). Additionally, Lawry (2021) found that self-gifting plays a crucial role in consumer acceptance of phygital shopping experiences. Self-gifting allows luxury consumers to indulge in personal rewards and escapism, enhancing the emotional gratification derived from shopping.

Self-gifting, a behavior where consumers purchase luxury goods for themselves to celebrate personal achievements or alleviate stress, is closely related to the luxury consumption tendency scale, particularly the subscale of arbitrary desire. Arbitrary desire captures the intrinsic and impulsive desire for luxury products, driven by personal gratification rather than need. Interviews with luxury consumers revealed that self-gifting acts as a generative mechanism that stimulates consumer interaction intentions towards phygital shopping experiences (Lawry, 2021). This behavior aligns

with the concept of arbitrary desire, where the purchase of luxury items is motivated by an internal craving or indulgence rather than necessity. Self-gifting embodies this intrinsic motivation, as it is primarily driven by the consumer's need for self-reward and emotional satisfaction (Dogan et al., 2020; Lawry, 2021). This highlights the significance of luxury consumption tendency as an individual-level trait in driving hedonic usage intentions toward phygital design elements, which supports our hypothesis:

**H3b.** Playfulness will have a greater mediating effect on luxury purchase intention for individuals with higher luxury consumption tendency

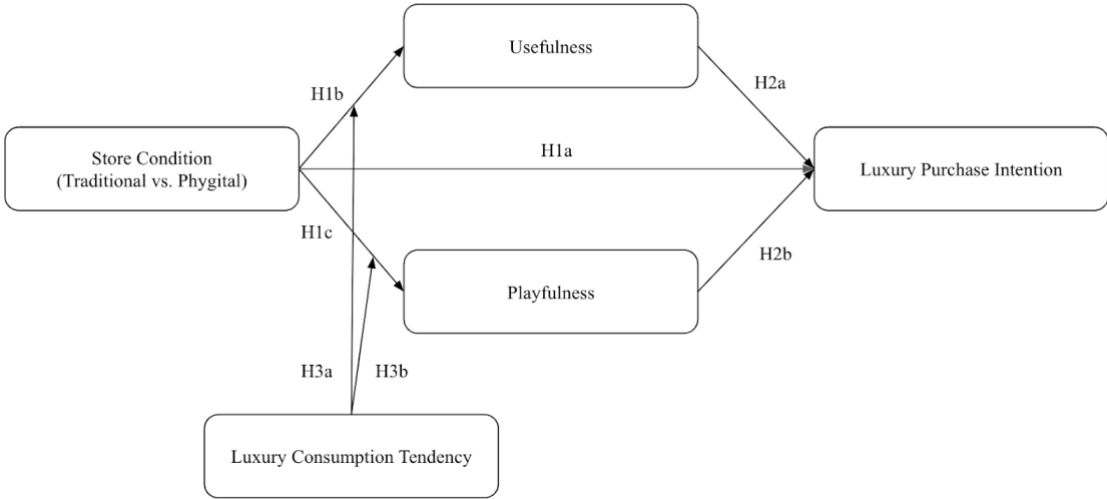


Figure 1: Overall Research Model

CHAPTER 2

METHODS

## 2.1 Stimuli

A luxury retail store was developed in Sketchup Studio 2022 and Enscape 3.4. The store was designed to be gender-neutral, containing men's and women's clothing and accessories to avoid any effects of gender bias. Previous research has shown that color impacts store perception and approach intentions (Baek et al., 2018), and the interior was thus designed with a neutral color palette. The store was not modeled after any existing luxury store and contained no brand logos to avoid any biasing effects of brand associations and perceptions. The interior was designed in a minimalist style with limited decorative elements to avoid extraneous distraction and to emphasize the digital product displays. Alawadhi and Yoon (2016) found that a symmetrical and linear store layout was associated with increased shopping intentions in fashion retail environments as opposed to an asymmetrical and curvilinear layout; thus, the store was designed in a simple, symmetrical and linear manner. The store was illuminated with bright, natural light for maximum visibility. Luxurious materials were used throughout the interior, including marble floors and countertops, chrome product displays, and suede furniture. Two professional interior designers validated the luxurious appearance of the store.

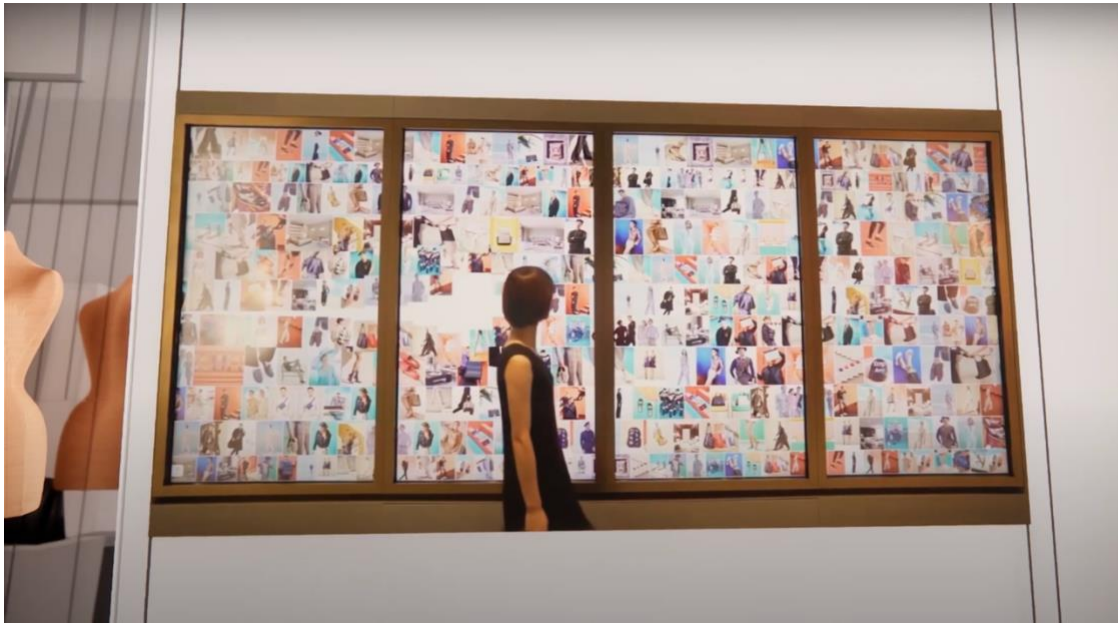
Phygital display elements were modeled after existing interactive digital display elements in luxury retailers Chanel (Deeny, 2020), Armani (Teamlab, 2020),



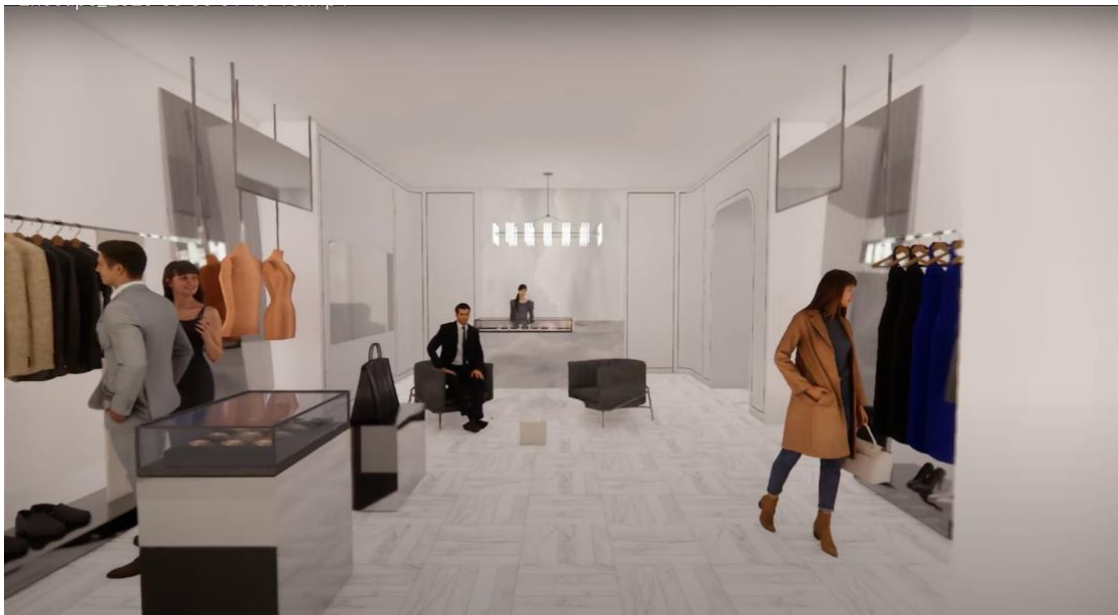
Figure 2: Interior view of the phygital store



Figure 3: "Lift and learn" product display



*Figure 4. Digital product display wall*



*Figure 5: Interior view of the traditional store*

and Neiman Marcus (Perch, 2018; Raydient, 2022). Interactions with the display elements were simulated using promotional demonstration videos as animated textures

in the 3D environment. The high phygital condition contained three phygital display elements, which were replaced with blank mirror surfaces in the control condition. All other store elements were kept the same between the two conditions.

## **2.2 Pre-test for Stimuli Validation Check**

A manipulation check was conducted before the main experiment using a single-factor (store type: traditional vs. phygital) between-subjects design. Manipulation check measures assessed differences between the two environments on three factors: perceived store luxury (Cho & Lee, 2017), store design preference (Baker et al., 1994), and perceived technology abundance (Huang & Liu, 2014). Thirty-two students at Cornell University participated in a three-minute survey for course credit (84.4% female, 15.6% male,  $M_{\text{age}} = 22.59$  years,  $SD_{\text{age}} = 3.27$ , age range: 18-29 years). The survey was distributed via Qualtrics. Participants were randomly assigned to one of the two conditions and watched a 30-second video walkthrough of the store before answering the questionnaire. Perceived store luxury ( $\alpha = 0.90$ ) was measured with a series of words that described the store, such as “premium” and “expensive.” Store design preference ( $\alpha = 0.89$ ) and technology abundance ( $\alpha = 0.92$ ) were measured using statements such as “The color scheme in the store was pleasing” and “This store contains digital technology,” respectively. Participants provided all answers on a 7-point Likert scale (1 = “Strongly disagree” to 7 = “Strongly agree”).

A series of independent t-tests by store type were performed on the perceptions of store luxury, design preference, and presence of technological elements. Only

perceived technological abundance was found to be significantly different between the two conditions ( $M_{\text{traditional}} = 3.98$ ,  $SD = 1.59$ ,  $M_{\text{phygital}} = 6.09$ ,  $SD = 0.72$ ;  $t(30) = -4.73$ ,  $p < .001$ ). There was no significant difference in perceived store luxury ( $M_{\text{traditional}} = 5.73$ ,  $SD = 0.76$ ,  $M_{\text{phygital}} = 5.56$ ,  $SD = 0.56$ ;  $t(30) = 0.71$ ,  $p = .714$ ) and store design preference ( $M_{\text{traditional}} = 5.34$ ,  $SD = 0.78$ ,  $M_{\text{phygital}} = 5.50$ ,  $SD = 0.76$ ;  $t(30) = -.594$ ,  $p = .557$ ). The results of the pretest measures indicate that the only discernible difference between the two stores was the presence of technology in the phygital condition and the lack thereof in the traditional store condition. Therefore, the manipulation was successful, and the main experiment was conducted using the pretested stimuli. The internal reliability (alpha value) of each scale, which is the degree to which all items measure the same construct, was found to be above .70. This indicates a satisfactory level of internal consistency of the study measures used (Nunnally & Bernstein, 1994)

Table 1: Manipulation check constructs and measurement items

Construct	Items	Factor Loadings	AVE	$\alpha$
Store Design Preference (Baker et al., 1994)	The color scheme was pleasing.	0.87	0.55	0.77
	The colors used in the store appeared to be currently fashionable	0.85		
	The physical facilities were attractive.	0.65		
	The merchandise in the store appeared organized.	0.36		
Tech Abundance (Huang & Liu, 2014)	This store contains digital technology	0.82	0.77	0.91
	This store provided clues (such as how the product might fit) to assist decision making.	0.69		
	This store provided information on clothing in a flexible way that I can understand	0.86		
Perceived Store Luxury (Cho & Lee, 2017)	Premium	0.74	0.38	0.75
	Expensive	0.68		
	Prestigious	0.66		
	Exclusive	0.70		
	Superior	0.71		
	Luxurious	0.69		

Note: Goodness-of-fit:  $\chi^2 = 102.87$  (df = 62,  $p < .001$ ), CFI = 0.786, GFI = 0.982, NFI = 0.617, TLI = 0.731, RMSEA = 0.144. The value of CFI (Comparative Fit Index), NFI (Normative Fit Index), TLI (Tucker-Lewis Index) are below the threshold 0.90. GFI (Goodness of Fit Index) is above the 0.90 threshold (Bagozzi and Yi, 1988). The RMSEA (Root Mean Square Error Approximation) is above the recommended value of  $< 0.08$  (Browne and Cudeck, 1992).

### 2.3 Participants and Procedures

A single-factor (store type: traditional vs. phygital) between-subjects experiment was designed. Two hundred eighty complete responses were collected for a 15-minute survey via Amazon Mechanical Turk (MTurk) in exchange for a monetary compensation of \$3. Previous studies have shown that participants recruited from Mturk are at least as demographically representative as those from traditional college and university participant pools, if not more (Paolacci et al., 2010; Berinsky et al., 2012; Casler et al., 2013; Paolacci & Chandler, 2014). Additionally, the diversity of MTurk participants can address the inherent limitations of WEIRD (western,

educated, industrialized, rich, and democratic) participant groups typically found in academic settings (Buchanan & Scofield, 2018).

Participants in this study are 46.79% male and 53.21% female, with a mean age of 30.59 years ( $SD_{age} = 17.10$ , age range: 18-72 years). 94.60% of participants identified as white, 2.88% as black/African American, 1.44% as Asian, and 1.08% as two or more races. 51.43% of participants reported holding a bachelor’s (4-year) degree, 38.21% a master’s degree, 6.07% a high school diploma, 2.50% some college but no degree, 1.43% an associate (2-year) degree, and 0.36% a doctoral degree. Income distribution was measured across twelve brackets, with a mode of \$40,000 to \$49,999 (see Figure 6).

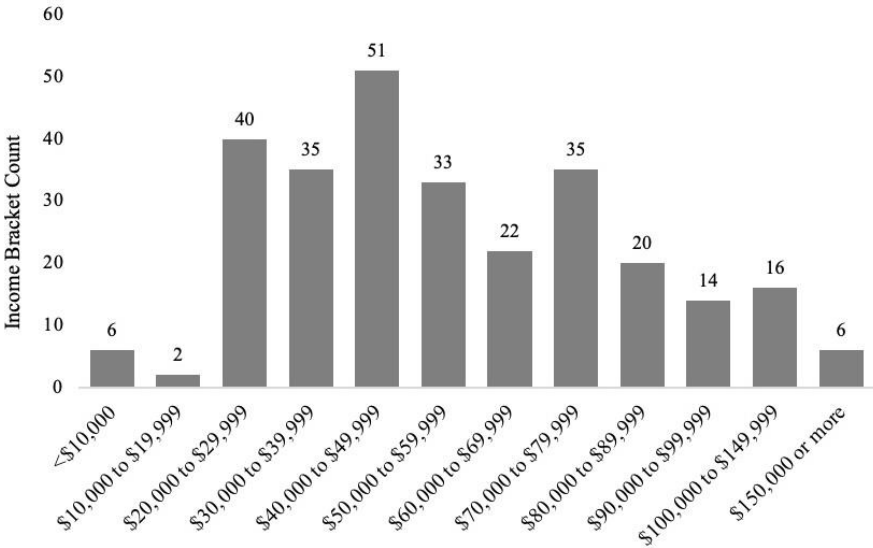


Figure 6: Income bracket distribution

In line with patterns observed across various countries and time periods, the wealth distribution in our sample is right-skewed (Benhabib & Bisin., 2018). The distribution of the data exhibits a skewness of 0.368 (SE = 0.146) and a kurtosis of -0.667 (SE = 0.290). The skewness Z-score of 2.52 suggests a significant positive skew

at the 5% level, indicating a slight asymmetry to the right. The kurtosis Z-score of -2.30 indicates a significant platykurtic distribution at the 5% level, meaning the data has lighter tails and a flatter peak compared to a normal distribution. This indicates a significant and rapidly decreasing concentration of wealth at the highest income levels. The wealth distribution in this study is closer to normal than in most other samples, which typically have thick tails (Benhabib & Bisin, 2018).

The survey was carried out via Qualtrics survey platform on participants' own computers. Participants were randomly assigned to one of the two conditions and were presented with a brief shopping scenario before watching a 30-second video walkthrough of the store. Survey questions were only displayed once the entirety of the video had finished. After each video, participants completed the manipulation check items for perceived luxury, store design preference, and technology abundance, followed by a series of questions on the dependent variables and demographics.

## **2.4 Measurements**

Measures that had been validated in previous research were used. Measures for usefulness ( $\alpha = 0.72$ ) and playfulness ( $\alpha = 0.85$ ) were adopted from three and six items from Han et al., 2020. The wording of the items was modified to better suit general assessments of the store and the context of the study (e.g., "The experience of the VR shopping mall would make me feel good" to "The experience of the store would make me feel good"). Luxury consumption tendency ( $\alpha = 0.95$ ) was measured using all twenty-three original items from Dogan et al. (2020). Luxury purchase intention ( $\alpha = 0.81$ ) was measured using all four items from Bian & Forsythe (2012). Participants

provided all answers on a 7-point Likert scale (1 = “Strongly disagree” to 7 = “Strongly agree”).

Skewness and kurtosis values for each measure were within the recommended range for normal distribution (skewness  $> |2|$ , kurtosis  $> |7|$ ) (West et al., 1995). Multicollinearity was examined using the variance inflation factor to assess the correlation among focal variables. The VIF values for all constructs examined were less than 4.5, which is under the 5.0 threshold (O’Brien, 2007), confirming the absence of multicollinearity among the constructs. confirmatory factor analysis was conducted using JASP 0.18.3 (JASP Team, 2024). One item for perceived technology abundance (“This store provided clues (such as how a product might fit) to assist decision making”) was deleted for having a standard parameter estimate below 0.5. Standardized loadings on all other manipulation check and main survey scale items were above the standard parameter estimate of 0.5 (Anderson & Gerbing, 1988). Average variance extracted for each construct exceeded the recommended minimum standard of 0.5 (Hair et al., 2013). The internal consistency of all other scales, as measured by Cronbach’s alpha, was satisfactory, with values exceeding the recommended threshold of 0.70 (Nunnally & Bernstein, 1994). Table 1 shows the values and the descriptions of items used in the analyses. Further analysis was conducted with all items based on the evidence of the constructs’ convergent and discriminant validity.

Table 1: Constructs and measurement items

Construct	Items	Factor Loadings	AVE	$\alpha$
Store Design Preference (Baker et al., 1994)	The color scheme was pleasing.	0.65	0.46	0.77
	The colors used in the store appeared to be currently fashionable	0.75		
	The physical facilities were attractive.	0.52		
	The merchandise in the store appeared organized.	0.80		
Tech Abundance (Huang & Liu, 2014)	This store contains digital technology	0.77	0.54	0.69
	This store provided information on clothing in a flexible way that I can understand	0.69		
Perceived Store Luxury (Cho & Lee, 2017)	Premium	0.74	0.49	0.85
	Expensive	0.68		
	Prestigious	0.66		
	Exclusive	0.70		
	Superior	0.71		
	Luxurious	0.69		
Usefulness (Han et al., 2020)	This experience of the store would improve my shopping productivity.	0.79	0.53	0.72
	This experience of the store would improve my shopping ability.	0.60		
	This experience of the store would be useful in buying what I want.	0.67		
Playfulness (Han et al., 2020)	The experience of the store would make me feel good.	0.79	0.47	0.85
	The experience of the store would be enjoyable.	0.66		
	The experience of the store would be exciting.	0.71		
	The experience of the store would be fun for its own sake.	0.65		
	The experience of the store would involve me in the shopping process.	0.66		
	The experience of the store would be interesting.	0.70		
Luxury Consumption Tendency (Dogan et al. (2020)	I buy a product/service because it is different from other products/services	0.62	0.48	0.95
	In my purchasing decisions, I consider whether the product/service has unique features	0.56		
	I am interested in products/services that have unique features that other products/services do not have	0.60		
	I desire to purchase a product/service that is specially produced for me	0.70		
	I happily buy expensive products/services	0.70		
	I do not care about finding the best deal/price	0.75		
	I do not prefer to buy low-priced	0.62		

	products/services			
	I prefer an expensive product/service over a cheap product/service	0.80		
	I care more about what a product/service symbolizes than its functional features	0.78		
	I would buy a product/service if it has a luxury symbolic meaning to the people around me	0.74		
	When I am buying products/services, I consider what these products/services mean to people around me	0.77		
	I shop according to my desires, even when I do not need to shop	0.74		
	When I am buying products/services, I do not question whether I need this product/service	0.79		
	I usually buy products/services that I do not need physically but rather emotionally	0.77		
	I do not enjoy buying a product/service that can be bought by the vast majority of society	0.72		
	It bothers me when many of the people around me have a product/service that I have	0.73		
	I would like to feel that I belong to an exclusive minority through products/services I purchase	0.74		
Luxury Purchase Intention (Bian & Forsythe, 2012)	If I were going to purchase a luxury product, I would consider buying from this store.	0.72	0.53	0.81
	If I were shopping for a luxury brand, the likelihood I would purchase from this store is high	0.69		
	My willingness to buy this luxury brand from this store would be high if I were shopping for a luxury brand	0.68		
	The probability I would consider buying a luxury brand from this store is high	0.81		

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Note: Goodness-of-fit:  $\chi^2 = 4535.022$  (df = 819,  $p < .001$ ), CFI = 0.560, GFI = 0.933, NFI = 0.512, TLI = 0.537, RMSEA = 0.127. The value of CFI (Comparative Fit Index), NFI (Normative Fit Index), TLI (Tucker-Lewis Index) are below the threshold 0.90. GFI (Goodness of Fit Index) is above the 0.90 threshold (Bagozzi and Yi, 1988). The RMSEA (Root Mean Square Error Approximation) is above the recommended value of  $< 0.08$  (Browne and Cudeck, 1992).

## CHAPTER 3

### RESULTS

#### 3.1 Manipulation Check

Three independent t-tests were conducted to evaluate the effectiveness of the technological manipulation between conditions. Participants that experienced the phygital store condition ( $M = 5.98$ ,  $SD = 0.77$ ) perceived a higher level of technological abundance than those in the traditional store condition ( $M = 5.49$ ,  $SD = 1.17$ ;  $t(278) = -4.07$ ,  $p < .000$ ), which confirms that the main manipulation was successful. However, store design preference ( $M_{\text{traditional}} = 5.66$ ,  $SD = 1.01$ ,  $M_{\text{phygital}} = 5.89$ ,  $SD = 0.74$ ;  $t(278) = -2.18$ ,  $p = .030$ ) and perceived store luxury ( $M_{\text{traditional}} = 5.73$ ,  $SD = 1.04$ ,  $M_{\text{phygital}} = 6.04$ ,  $SD = 0.67$ ;  $t(278) = -2.98$ ,  $p = .003$ ) were also significantly higher for the phygital store than than the traditional store. Although store design preference and perceived store luxury were not intended to be significantly different between the two conditions, we continued with hypothesis testing because the main manipulation of perceived technology abundance was still significantly different between the two conditions.

Correlation analysis indicates that there is a significant and strong positive relationship between store design preference, perceived technology abundance, and perceived store luxury. Specifically, store design preference is highly correlated with perceived technology abundance ( $r(278) = 0.84$ ,  $p < 0.001$ ), indicating a strong positive relationship between these two measures. Similarly, store design preference shows a strong positive correlation with perceived store luxury ( $r(278) = 0.84$ ,  $p <$

0.001). Perceived technology abundance and perceived store luxury are also strongly correlated ( $r(278) = 0.79, p < 0.001$ ). Because technology abundance is the only difference between the two stores, we speculate that the increased presence of technology positively influenced store design preference and perceived store luxury.

### **3.2 Hypotheses Testing**

Three independent t-tests were conducted to evaluate the effect of phygital design elements in luxury retail environments on luxury purchase intention (H1a), as well as the perceived usefulness (H1b) and playfulness (H1c) of the store. Participants in the phygital store condition ( $M = 5.83, SD = 0.82$ ) reported significantly higher luxury purchase intention than those in the traditional store condition ( $M = 5.56, SD = 1.11; t(278) = -2.3, p = .023$ ). Thus, H1a was supported. The second t-test revealed that participants in the phygital store condition ( $M = 5.80, SD = 0.90$ ) reported significantly greater perceived usefulness than those in the traditional store condition ( $M = 5.54, SD = 1.07; t(278) = -2.2, p = .026$ , supporting hypothesis H1b. H1c was also supported, with the final t-test revealing that participants in the phygital store condition ( $M = 5.84, SD = 0.90$ ) reported significantly greater perceived playfulness than those in the traditional store condition ( $M = 5.60, SD = 1.03; t(278) = -2.1, p = .035$ ).

To test the parallel mediating effect of perceived usefulness (H2a) and perceived playfulness (H2b) between store type and luxury purchase intention, Hayes PROCESS Model 4 with 5,000 bootstrapped samples was used ((Hayes & Little, n.d.)). The mediating effect for perceived usefulness was not significant, as the 95%

confidence interval (CI) for the indirect effect included zero ( $b = .05$ ,  $\text{BootSE} = .04$ ,  $\text{BootCI} = [-0.01 \text{ to } 0.16]$ ). Thus, H2a is not supported. However, the mediating effect of perceived playfulness is significant, as the 95% CI for the indirect effect did not include zero ( $b = .17$ ,  $\text{BootSE} = .08$ ,  $\text{BootCI} = [0.01 \text{ to } 0.34]$ ). The positive and significant coefficient of  $b = .17$  indicates that a store containing phygital elements is considered more playful than a traditional store, leading to increased luxury purchase intention. Store condition positively affected perceived playfulness ( $b = 0.23$ ,  $\text{SE} = 0.11$ ,  $p = .036$ ). Playfulness also positively affected luxury purchase intention ( $b = 0.74$ ,  $\text{SE} = 0.06$ ,  $p < .001$ ). The direct effect of store condition on luxury purchase intention was statistically non-significant ( $b = 0.05$ ,  $\text{SE} = 0.06$ ,  $p = .446$ ), demonstrating full mediation supporting H2b.

A moderated mediation analysis was conducted using Hayes PROCESS Model 7 with 5,000 bootstrapped samples to assess the indirect effect of perceived usefulness (H3a) and playfulness (H3b) on luxury purchase intention as moderated by luxury consumption tendency. The index of moderated mediation revealed that the effect of luxury consumption tendency as a moderator was not significant for both usefulness ( $b = -0.02$ ,  $\text{BootSE} = 0.03$ ,  $\text{BootCI} = [-0.98 \text{ to } 0.01]$ ) and playfulness ( $b = -0.12$ ,  $\text{BootSE} = 0.08$ ,  $\text{BootCI} = [-0.29 \text{ to } 0.01]$ ). Therefore, H3a and H3b are not supported (see table 2). Spearman's rank correlation was computed to assess the relationship between income and luxury consumption tendency. There was a significant negative correlation between the two variables ( $r(278) = -0.190$ ,  $p = 0.001$ ), indicating that luxury consumption tendency decreased as income increased.

Table 2: Results of the moderated-mediation model

Independent variables	Usefulness			Playfulness			LPI		
	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>	<u><i>B</i></u>	<u><i>SE</i></u>	<i>p</i>
Constant	1.07	0.24	0.000	1.33	0.21	0.000	0.37	0.19	0.048
Store type	0.72	0.37	0.052	0.94	0.33	0.005	0.05	0.06	0.446
LCT	0.83	0.04	0.000	0.80	0.04	0.000	-	-	-
Store type x LCT	-0.11	0.07	0.085	-0.16	0.06	0.008	-	-	-
Usefulness	-	-	-	-	-	-	0.19	0.06	0.001
Playfulness	-	-	-	-	-	-	0.74	0.06	0.000
Index of moderated mediation (usefulness)							Index -0.02		
							BootSE = 0.03		
							BootCI [-0.10 to 0.01]		
Index of moderated mediation (playfulness)							Index -0.12		
							BootSE = 0.08		
							BootCI [-0.29 to 0.01]		
Model summary	$R^2 = 0.682F$			$R^2 = 0.697F$			$R^2 = 0.749F$		
	(3, 276) = 197.073			(3, 276) = 211.660			(3, 276) = 275.077		

Note: B = unstandardized coefficients; SE = standard error; BootCI [LCI to UCI]; LCI = lower confidence interval, UCI = upper confidence interval, LCT = luxury consumption tendency, LPI = luxury purchase intention

## CHAPTER 4

### DISCUSSION

#### **4.1 Summary of Findings**

This study aimed to explore the impact of phygital design elements on consumer perceptions and purchase intentions in luxury retail environments. The results showed that phygital stores were perceived as significantly more useful and playful compared to traditional non-phygital stores. Additionally, phygital stores were associated with significantly higher luxury purchase intentions. Perceived playfulness was found to fully mediate the relationship between store type and luxury purchase intention, indicating that the engaging and enjoyable nature of phygital elements is a key driver of consumer behavior. Conversely, perceived usefulness, despite being higher in phygital stores, did not significantly mediate this relationship. This suggests that the practical benefits of phygital elements are secondary to their hedonic appeal in influencing luxury purchase intentions. Previous research has found that while utilitarian motives may motivate consumers to visit a store, the fulfillment of hedonic motives has a greater impact on purchasing behaviors (Dawson et al., 1990; Khan & Dhar, 2006). Nevertheless, the usefulness of phygital elements should not be overlooked, as consumers prioritize hedonic experiences in-store only once necessary levels of functionality in shopping environments have been met (Chitturi & Raghunathan, 2008).

Moreover, the study found that luxury consumption tendency, which reflects consumers' inclination towards purchasing luxury goods, did not significantly moderate the effects of perceived usefulness and playfulness on luxury purchase

intention. This suggests that the positive impact of phygital elements on consumer behavior is consistent across varying levels of luxury consumption tendency. Therefore, phygital design may be broadly appealing to a wide range of consumers, regardless of their inherent preference for luxury goods. While inconsistent with our hypotheses, this finding has important implications for luxury and non-luxury retailers, indicating that investing in phygital design elements can attract and engage a diverse consumer base.

This study's findings highlight the potential benefits of creating technology-mediated shopping environments that are both functional and enjoyable in order to positively influence purchasing behaviors. By offering playful phygital experiences in-store, retailers can enhance the overall customer experience and increase the likelihood of purchase. These insights are particularly relevant for luxury brands, which traditionally emphasize exclusivity and uniqueness but must now adapt to the evolving expectations of tech-savvy consumers. The results suggest that phygital design elements can effectively bridge the gap between the convenience of online shopping and the tactile experience of physical stores, offering a holistic shopping journey that appeals to modern consumers.

#### **4.2 Theoretical Implications**

The findings of this study contribute to the growing body of literature on phygital retail by empirically demonstrating its positive impact on consumer perceptions and behaviors in a luxury context. This study applies the theoretical basis of the Technology Acceptance Model (TAM) to phygital retail settings by

investigating the role of perceived usefulness and playfulness in influencing behavioral outcomes regarding luxury purchase intentions. While previous studies have applied the TAM to evaluating online (Childers et al., 2001; Kim & Forsythe, 2008), mobile (Sheng & Teo, 2012), and virtual reality (Han et al., 2020) shopping experiences, few studies have applied the TAM to an in-store context. Furthermore, it is one of the first studies to extend the TAM to luxury retail, offering novel insights into the effectiveness of phygital design in this sector.

This study is notably significant due to its experimental design. To our knowledge, it is the first to directly compare consumer perceptions between phygital and non-phygital store environments. Utilizing high-fidelity virtual 3D renderings to simulate in-store shopping experiences, the study offers an immersive and controlled methodology to examine the impact of these environments on consumer perceptions. The store design was carefully designed to simulate a realistic shopping experience while minimizing extraneous variables, thereby ensuring the robustness of the results. This approach not only enhances the validity of the findings but also sets a new standard for future research studies of retail environments.

### **4.3 Managerial Implications**

This study's findings offer several practical implications for luxury retailers looking to enhance their in-store experiences. First, the significant mediating role of perceived playfulness underscores the importance of creating engaging and enjoyable shopping environments. Previous research has emphasized the characteristics of novelty and immersiveness in phygital experiences that fulfill hedonic shopping

motivations (Guzzetti et al., 2024). By carefully choosing phygital experiences that consumers find captivating and innovative, such as hololenses and smart fitting rooms, retailers can enhance consumer engagement and increase the likelihood of purchase, thereby driving sales and improving customer satisfaction.

While perceived usefulness did not show a significant mediating effect on purchase intention, it remains an important aspect of the overall shopping experience. The phygital store was perceived as more useful than the traditional store, emphasizing the practical benefits of phygital design elements. Retailers should consider including phygital elements that offer opportunities for information gathering and convenience to shoppers, such as instant access to product information and reducing wait times. This dual focus on functionality and entertainment can help retailers cater to both utilitarian and hedonic shopping motivations, thereby enhancing overall consumer experience and satisfaction.

Finally, the broad appeal of phygital design elements across different levels of luxury consumption tendency suggests that these enhancements may be effective in attracting a diverse range of consumers. Retailers should consider implementing phygital elements in their stores to stay competitive and meet the evolving expectations of modern consumers. By investing in phygital technologies, luxury retailers can create innovative and memorable shopping experiences that may positively impact future in-store and cross-channel purchasing intentions (Jahn et al., 2018).

#### **4.4 Limitations and Directions for Future Research**

Despite the valuable insights provided by this study, several limitations should be acknowledged. First, the use of virtual 3D renderings to simulate phygital and traditional store environments may not fully capture the nuances of real-world shopping experiences. While the high-fidelity simulations provided a controlled environment for testing hypotheses, they may lack the sensory and contextual richness of actual store settings. Future research should consider conducting in-store experiments to validate these findings and provide a more accurate representation of consumer behavior in real-world retail environments.

Second, CFA measures indicated poor overall model fit, which may be remedied by including future studies utilizing fewer scales with a larger number of items. Such an approach would allow for more detailed measurement of each construct, potentially leading to improved model fit. Conducting exploratory factor analysis (EFA) prior to CFA may also help in identifying and eliminating problematic items, leading to a more reliable measurement model.

Third, the sample used in this study was recruited via Amazon Mechanical Turk, which, although diverse, may not fully represent the broader luxury consumer population. The demographic and psychographic characteristics of MTurk participants may differ from those of typical luxury consumers. The income distribution of participants in this study is right-skewed, aligning with wealth distribution patterns observed across various countries and time periods (Benhabib & Bisin, 2018). However, this skewness results in a limited sample of high-income participants, potentially restricting the ability to accurately reflect the perceptions of consumers with the purchasing power to acquire luxury goods.

Despite this limitation, it is important to note that luxury consumers are not exclusively high-income. According to Dogan et al. (2020), luxury consumption tendency is an intrinsic trait separate from the extrinsic reality of income. In this study, luxury consumption tendency (LCT) was found to be negatively correlated with income. This finding suggests that individuals with lower incomes in this sample have a higher tendency toward luxury consumption, highlighting the aspirational nature of luxury purchases. While many luxury brands target upper-income consumers in their marketing and managerial practices (Dubois & Duquesne, 1993), research indicates that luxury consumers come from a diverse range of social classes and income brackets, with an increasing number of consumers allocating more of their discretionary income to luxury purchases (Husic & Cicic, 2009). Nevertheless, future research could benefit from measuring actual luxury consumption frequency rather than trait-level inclination toward luxury consumption, providing a more comprehensive understanding of luxury consumer behavior.

Lastly, this study focused on general perceptions of a store environment containing a specific set of phygital elements. While these elements were found to significantly impact consumer perceptions of the store environment and luxury purchase intention, other emerging technologies and design elements could also play a crucial role in enhancing luxury retail experiences. Future research should explore the impact of additional phygital elements, such as virtual reality, artificial intelligence, and personalized digital services, on store perception and purchase intentions. Additionally, longitudinal studies could examine the long-term effects of phygital

enhancements on consumer loyalty and brand perception, providing deeper insights into the sustained impact of these technologies on luxury retail.

## CHAPTER 5

### CONCLUSION

In conclusion, this study provides valuable insights into the role of phygital design elements in enhancing luxury retail experiences. By integrating interactive digital technologies into physical store environments, luxury retailers can significantly improve consumer perceptions of usefulness and playfulness, leading to higher purchase intentions. The findings highlight the importance of creating engaging and enjoyable shopping experiences to meet the evolving expectations of luxury consumers. As the retail landscape continues to evolve, the adoption of phygital elements can help luxury brands stay competitive and relevant in a digital age.

The results emphasize the need for luxury retailers to adopt a balanced approach that addresses both utilitarian and hedonic shopping motivations. While the practical benefits of phygital elements are appreciated, it is the hedonic attributes that primarily drive consumer behavior in luxury retail settings. By focusing on creating fun and stimulating shopping environments, luxury retailers can enhance consumer engagement and increase the likelihood of purchase. This balanced approach not only attracts consumers but may also foster long-term satisfaction and revisit intention, thereby ensuring sustained success in a competitive market.

Future research should continue to explore the potential of phygital retail in various contexts and with diverse consumer groups to further understand its impact on the luxury shopping experience. By addressing the limitations of this study and expanding the scope of the investigation, researchers can provide deeper insights into the ways in which phygital design elements can be leveraged to enhance consumer

satisfaction and drive purchasing behavior in the luxury sector. This ongoing research will be crucial in helping luxury retailers navigate the complexities of the modern retail environment and capitalize on the opportunities presented by phygital innovations.

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